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Air Traffic Control in Sweden - differences between a public and private alternative in an upcoming deregulation

Bachelor thesis in Business Administration

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Abstract

Background:	In Sweden, air traffic control is currently performed in a monopoly with the state owned Luftfartsverket as the only supplier. A deregulation process has been initiated with the rationale of cost reductions, both for airports and airline passengers.
Problem and purpose:	Economic arguments have been predominant for this potential deregulation and the underlying assumptions are that private alternatives would improve efficiency and reduce costs. This has lead the authors to identify what private alternatives would do differently than the current public operator in order to offer these benefits.
Method:	To fulfill the purpose the authors have used a qualitative approach based on interviews with the current public operator as well as a new potential private alternative. In addition to this, interest organizations and regulative agencies have been contacted and secondary data incorporated to provide a holistic perspective.
Conclusion:	The authors have identified differences in activities between a public and private alternative that would create an advantageous effect on the market. They are: a different management of retirement funds, prolonged retirement age, new compensation system, altered recruitment policy, a full utilization of staff and a seizing of non-value adding activities.

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1 Introduction

The introduction provides the reader with a background to the subject of the thesis with a problem discussion. The purpose of the thesis is presented, followed by a statement of the research question.

1.1 Background

Governments are responsible for deciding which services citizens want provided publicly and then providing (authorizing, empowering, administering) them at levels for which the citizens are willing to pay. Of those services provided by a government, parts can be produced or delivered by that government, while many others can be delivered better by alternative means (Finley, 1989).

This raises the term of privatization, first introduced by Peter Drucker (1968). The concept of privatization is however somewhat vague and there exist a large variety of definitions (Bailey, 1987). Privatization is often used referring to the sale of a government controlled entity to a private firm, but this definition only gives a narrow meaning of the concept of privatization. In a broader meaning "*privatization is a term which is used to cover several distinct and possibly alternative means of changing the relationships between the government and private sector...*" and refers to restrict government's role in society with a shift of government responsibilities into private actors (Kay & Thompson, 1986). A predominant ideology is that a successful economy should mainly be driven by a private sector governed by market competition, rather than by the social goal of wealth redistribution. Therefore many of the arguments in favor and opposition of privatization tend to be ideologically based (Hirsch, 1991).

Sweden is one of the many countries that have to a large extent implemented the idea of privatization where during the last years many industries have been deregulated (e.g. utility and postal services) combined with sales of public companies (e.g. Telia). However, there are still existing industries with only one supplier; due to both legal and natural monopolies. Air traffic control, the function to organize air movements over Swedish territory, is such an industry where there at the moment only exist one supplier of services, which is the state owned Luftfartsverket. This means that for private and municipality owned airports there is at the moment no free choice of supplier allowed.

This is inconsistent with the government's policy for transportation where the market should be exposed to open market competition (government proposition 1999/2000:140). The government has recently initiated the process of allowing private actors on the market by evaluating the current legal and technical obstacles. This was presented in a report that was presented during the fall of 2006 to the Swedish Government and a final decision is expected during the late fall of 2007 (G. Roos, personal communication, 2006-11-21).

1.2 Problem discussion

A deregulation that would open up the air traffic control market for private alternatives could be based on ideological arguments, but the economic arguments have been predominant. Nils-Gunnar Billinger, the managing director of Luftfartsstyrelsen which is the government agency that oversee the airline industry in Sweden, claim that "*if the market is opened for private companies we will get better efficiency and lower prices*" (Johansen, 2006). In the same article in Kristianstadsbladet (Johansen, 2006), the Airport Director of Kristianstad Airport, Thomas Bengtsson, quantifies this by stating that a deregulation would save his airport one million SEK per year (one third of their air traffic control costs). An interest organization for the non-state owned airports, the Swedish Association of Local Authorities and Re-

gions (SALAR; Sveriges Kommuner och Landsting), state that a deregulation of the market enabling private actors would create total annual cost savings for the non-state owned airports of 10-20 Million SEK, approximately 10-20 percent of their total air traffic control costs (Sveriges Kommuner och Landsting, 2006).

For a beneficial privatization, fair market competition must exist since it is not privatization per se that creates beneficial outcomes, but rather the creation of a competitive environment by allowing more actors on the market that puts pressure on organizations to operate more efficiently (Megginson & Netter, 2001; Granslandt & Nyberg, 2002). More efficient actors on a market generate rippling effects that create better market efficiency which in turn benefits the economy as whole and increases state revenue (Schwartz & Lopes, 2002). Other researchers do not agree with these views, claiming that privatizing markets based on the notion of creating competition is considered to be a failing argument (Sclar, 2000). Since often, when few actors are involved real competition is not apparent, but a risk for oligopoly is.

The concept of privatization is extensive, but in relation to air traffic control there are no generally accepted frameworks. One of the reasons for this is the lack of fully privatized air traffic control markets. There are, as of today, a couple of countries that have already taken this step towards a privatized air traffic control market with beneficial outcomes. Therefore experiences from those countries can be of great use when narrowing down general theories of privatization for identifying specific issues in the air traffic control industry.

The notion that privatization enables efficiency and benefits the society as a whole leads to the interest of *identifying* how a private alternative could operate differently than the current public. Any differences in parameters such as efficiency and costs must be due to a different configuration or composition of activities put together to perform the service. It is assumed that these dissimilarities generate a cost reduction and it is our purpose to identify these differences. This approach has not been incorporated in the publicly available information, which makes our research unique and of particular importance. It is therefore the ambition of the authors to contribute to the current deregulation discussion by conducting this research.

1.3 Purpose

The purpose of this research is to identify differences between a public and private alternative in an upcoming deregulation of the air traffic control industry in Sweden.

1.4 Research question

From the purpose mentioned above we have identified the following research question in order to help us to focus better and fulfill our purpose:

- What can and will a new private actor within the air traffic control industry do differently than the current public alternative in an upcoming deregulation?

Any differences in parameters such as efficiency and costs must be due to a different configuration or composition of activities put together to perform the service. The purpose of the research is to identify these differences in activities. The ambition is also to evaluate which of these differences that is important to and would be implemented by a new private alternative.

1.5 Delimitation

The time frame of this thesis does not fully correspond with the privatization process of the air traffic control market in Sweden. The thesis will therefore not be able to evaluate the results after privatization which makes much of the discussion hypothetical as it is not yet implemented in practice. In an effort to overcome this obstacle we have integrated secondary data on previous research conducted within this field on other already privatized air traffic control markets in other countries.

The competition within air traffic control services means that there is a competition of the market when contracts are offered, but when contracts have been signed one actor have the sole right to perform the service in the form of a temporary local monopoly in that specific airspace. Competition is in this aspect competition *about* the market and not *on* the market.

1.6 Target reader

The report will be particularly relevant for students, politicians and entrepreneurs who wish to gain insight into the differences between a public and private organization. Since the report is based on a case study of the Swedish air traffic control it will naturally be of interest to those taking an active role within this industry.

2 Method

In this chapter the chosen method to carry out the study is presented. After reading this chapter the reader will have a clear idea of how the researchers will perform the research.

2.1 Qualitative vs. Quantitative research methods

Within methodology a distinction between qualitative and quantitative methods is often made. Quantitative research is based on meanings derived from numbers and the collection of results in numerical and standardized data with the analysis conducted through the use of diagrams and statistics. Qualitative data, on the other hand, is based on meanings expressed through words and the collection results in non standardized data requiring classification into categories (Saunders et al., 2003).

The purpose of the research is to identify differences in activities rather than differences in quantitative measurements. We want to identify differences between two alternatives in a process that has yet not taken place. This requires the authors to collect all information through primary sources, such as interviews. These aspects completely demans the use of a quantitative approach. The question of how is in this research more relevant than how much.

We will approach our research by using a qualitative method in order to be consistent with our research questions and fulfill our purpose. Different methods of qualitative research methods will be further explained in the following section.

2.2 Qualitative research methods

According to Johnson and Christensen (2004) there are five different types of qualitative research:

- Phenomenology – a form of qualitative research in which the researcher attempts to understand how one or more individuals experience a phenomenon.
- Ethnography – is the form of qualitative research that focuses on describing the culture (including shared attitudes, values, norms, practices, language) of a group of people.
- Case study research – is a form of qualitative research that is focused on providing a detailed account of one or more cases.
- Grounded theory – is a qualitative approach to generating and developing a theory form data that the researcher collects.
- Historical research – research about events that occurred in the past.

According to Yin (1994) these approaches are of great significance when conducting a qualitative research. The purpose of the report does not intend to investigate how individuals experience a phenomenon, a cultural aspect, investigate events in the past or to develop a theory. A case study approach on the other hand enables a detailed investigation of a certain specific area (Johnson & Christensen, 2004). In the aspect of our research this approach is particularly appropriate due to the fact that the chosen area is a small and easily defined industry where all actors deliver the exact same service. The detailed approach also brings the benefit of being able to discover hidden factors and reasons behind differences

in activities. An in depth investigation will allow us to conduct a throughout analysis when identifying differences between a possible private and a public alternative in air traffic control business in a deregulation process.

For these reasons the authors have chosen a case study approach to this research over other qualitative approaches as they are not consistent with the purpose of our report. The concept of case study approaches and their strengths and drawbacks will be further explained in the following section.

2.3 Case study approach

A case study research is a form of qualitative research that is focused on providing a detailed account of one or more cases (Johnson and Christensen, 2004). This is interdisciplinary where many different concepts and theories can be used to describe and explain the case. Multiple methods of data collection are often used in case study research (e.g., interviews, observation, documents). The case study final report should endow with a rich and holistic (i.e. describes the whole and its parts) description of the case and its context.

Robert Stake in Johnson and Christensen (2004) classifies case study research into three types:

- Intrinsic case study (where the interest is only in understanding the particulars of the case)
- Instrumental case study (where the interest is in understanding something more general than the case)
- Collective case study (where interest is in studying and comparing multiple cases in a single research study)

By comparing the different scientific approaches of case study, one can understand that instrumental and collective case study approaches, focus on understanding something general and the latter on comparing multiple cases. In this research paper, there is only one case that is going to be examined and that is the upcoming deregulation of the air traffic control market. There is nothing general that is going to be investigated, therefore an instrumental case study is also neglected as a choice of method. However, an intrinsic case study approach, where specifics of differences between a public and a private alternative is going to be identified, is found to be the most appropriate.

There are also some criticism regarding the use of case studies. Gummesson (2000) points out that a case study can not generate a generalization for other parts. Other criticism is that case studies can contribute to hypothesis generation, but that these hypotheses can not be tested after they have been generated.

Our purpose is not to prove a hypothesis but rather to distinguish any patterns in differences of activities between a public and private alternative. This is in line with our choice of using the intrinsic case study approach, and according to Stake (1994 in Johnson and Christensen, 2004) a characteristic feature of the case study is that it is defined in the interest of the specific case, not as a generalizing method.

Yin (1994) discusses the choice of unit of analysis and mentions that there can be confusion when defining that unit. The authors have taken this under consideration. The companies and the people we have chosen to conduct the case study on are all highly relevant to the ongoing process and discourse of privatizing the air traffic control industry in Sweden.

A case study approach can appear as a more hands-on methodology to perform research (Yin, 1994). The lack of a strong theoretical model and strong focus on a specific industry support this statement.

2.4 Data collection

Since a deregulation has not yet taken place in Sweden and that there is no private actor allowed on the air traffic control market, there is no publicly available information regarding any differences between a public and a private alternative. Due to this the authors have collected their data through primary sources exclusively for the purpose of our research. Therefore the main way of collecting empirical data will be through interviews. In combination with this, the authors will also use secondary data mainly as a complement in order to achieve a rigid frame of reference to depart from.

2.4.1 Interviews

Using interviews is by the authors considered to be the best method of extracting new information that is not publicly available. The only way for us to gather data is through interaction with people within the industry.

The definition of an interview is a purposeful discussion between two or more people (Saunders et al, 2003). The use of interviews can help us gather valid and reliable data that are relevant to our research questions and objectives. According to Healy (1991) an interview is the most advantageous approach to obtain data where questions are either complex or open-ended or where the order and logic of questioning may need to be varied, as it is in our case. The complexity for this research is not in the questions per se, rather in their sensitivity, since some questions may seek to unfold confidential business strategies that are difficult to retrieve answers from. Most importantly, the nature of interviews will be consistent with the research strategy and its purpose (Saunders et al., 2003).

The authors have found that managers are more likely to accept to be interviewed in a face to face manner rather than to fill out a questionnaire or answering questions over telephone. An interview often enables them to reflect on events and their own work without having to write anything down (Saunders et al., 2003).

2.4.1.1 Interview selection criteria's

Below are the criteria's and justifications for selecting interviewees. The table is organized in a chronological order:

<p>Luftfartsstyrelsen Elisabeth Sallfelt & Ahti Hietala</p>	<p>To gain an independent insight into the industry and learn the surrounding environment, regulations and framework, the report is initiated with an interview with Luftfartsstyrelsen; the government agency that oversee the air traffic industry. Elisabeth Sallfelt is a director of air traffic control and Ahti Hietala is a senior advisor. Both these persons are very experienced within the field of air traffic control and they are also perfect representatives for the view of Luftfartsstyrelsen. Both have previously worked as air traffic controllers at Luftfartsverket.</p>
<p>Luftfartsverket Roland Sandelin</p>	<p>In order to identify differences between a public and private alternative, an interview with a representative from the current public operator has been conducted. Roland Sandelin works within the Executive Management of the Air Navigation department at Luftfartsverket. He has been an air traffic controller himself and is currently responsible for investigating eventual outcomes of a deregulation.</p>
<p>Swedish Air Traffic Controllers Association Marcus Wikerberg</p>	<p>The authors have also contacted several interest organizations in order to gain a holistic view and to cover different perspectives, including an organization for air traffic controllers; Swedish Air Traffic Controllers Association ("Svensk Flygledarförening"). This organization has been contacted to cover the employee perspective. Markus Wikerberg is a board member of the organization.</p>
<p>Jönköping University Thomas Andersson</p>	<p>We have also initiated contact with an expert of privatization in order to fully be sure to cover the wide concept of privatization. Thomas Andersson is a Professor at Jönköping International Business School and has previously been a researcher at the Organization for Economic Cooperation and Development (OECD). He is at the same time also the Dean of Jönköping University; one of the few private universities in Sweden and is therefore much informed about general differences between public and private operations. We have used this expertise to gain clarity in specific matters of privatization that are otherwise difficult to identify in the conventional privatization literature. Such a matter was for example the treatment of retirement funds.</p>
<p>Aviation Capacity Resources Jan Blyckert</p>	<p>In order to identify differences between a public and private alternative, an interview with a representative from a possible private alternative has been conducted. Aviation Capacity Resources AB is the only Swedish company that has currently expressed interest in supplying these services. Jan Blyckert is the CEO of the company. He also has a deep insight into the operations of Luftfartsverket where he previously have been a manager and as an air traffic controller.</p>
<p>SALAR Fredrik Jaresved</p>	<p>Another interest organization that has been contacted is The Swedish Association of Local Authorities and Regions (SALAR; Svenska Kommuner och Landsting). This is a lobbying organization for the interests of the Swedish municipalities. Fredrik Jaresved is active within their department of infrastructure and responsible for the matter of privatizing the air traffic control at non-state local airports.</p>

2.4.1.2 Structure of the interviews

The approach of using interviews for obtaining data will be conducted by using semi-structured interviews with the characteristic of being non-standardized (Healy, 1991). This means that the authors will have a list of themes and questions to be covered and that some questions may be omitted in particular interviews given the specific context that is encountered in relation to the research topic. This also means that the order of questions may be varied depending on the flow of the conversation. On the other hand, additional questions may be created during the interview depending on the interviewees answers, this approach is supported by Saunders et al. (2003).

The authors will use a digital audio recorder (“Casio Exilim”) to record the interview in order to be able to fully focus on the participation of the interview discussion. It also makes it possible to afterwards review the outcome of the collected data in order to be sure to have gathered the information correctly. Since there probably will be long conversations and some complexity in answers, a review directly after the interview is necessary for reducing data bias and an important detail for presenting accurate empirical findings. It is also of great benefit for the supervisor to be able to take part of material collected (Saunders et al., 2003).

Usually when research participants receive questionnaires through post they may be reluctant to complete them due to a number of reasons. Since they normally have not had personal contact with the constructors of the questionnaires they may feel that it is not suitable to provide them with sensitive and sometimes confidential information, as stated earlier. More so, if they do not even know for what the information will be used, this is however, clear in our case. All participants are well informed about the nature of this thesis and its purpose. Managers are often very busy and they may also be reluctant to spend their time on writing written descriptive answers, especially if any meaning of a question is not entirely clear. The use of personal interviews can therefore often achieve a higher rate of response and accuracy than using questionnaires (Healy, 1991).

2.4.2 Secondary data

The authors will re-analyze data that have already been collected for other purposes but that still is relevant for answering the research question (Saunders et al., 2003). Secondary data used includes books, articles, government reports (with replies from interest organizations) and industry press. The library coordinator (Thomas Matsson) for business administration and entrepreneurship literature has been of great help for this search of data.

Extensive internet (World Wide Web) searches has been conducted for gathering secondary data. Both common search engines such as Google and Google Scholar have been used, but also E- Julia, which is provided through our university library. The latter is a tool for simultaneously searching a large number of academic databases. Some of the secondary data that has not been available in electronic format have been ordered from libraries in other countries (Norway and Germany).

Keywords used for data search:

- “ATC”
- “Air Traffic Control”
- “Privatization” (US spelling)
- “Privatisation” (UK Spelling)
- “Deregulation”
- “Public Management”
- “Privatizing ATC systems” (US spelling)
- “Privatising ATC systems” (UK Spelling)
- “Flygledning” (Air Traffic Control in Swedish)

There are different types of secondary data available, some are quantitative and some qualitative. The inclusion of secondary data in the report is mainly to enhance credibility and support the empirical findings through providing a framework. The choice of using secondary data as a complementary tool to support primary findings in a case study is found appropriate according to Kervin (1999).

2.4.3 Data quality

While there are a number of situations favoring the use of qualitative research and interviews, there are also a number of issues associated with them; one of them being particularly relevant to our research is data quality issues. There are some issues of data quality that can be identified:

- **Reliability**

Interviews may lead to concerns about reliability when there is a lack of standardization. In relation to qualitative research, reliability is concerned with whether other researchers would expose similar information (Easterby-Smith, 2002; Thorpe & Lowe, 2002; Healy & Rawlinson, 1994). The authors believe that the subject of reliability is closely related to the issues of bias.

The majority of the interviews to support this thesis will be conducted in Swedish. As the report is written in English, this can lead to a potential translation error. The content in the report can therefore differ between the two versions. All interviews will also be recorded, and therefore we gain the opportunity to control the translation. Hence this will not give us a full control over the potential translation bias since all the conductors of interviews are native Swedish speakers.

In order to be sure to present the right information, the authors will for each interviewee produce an individual summary of the information supplied by her or him. In doing this, the authors will from the main report extract the quotes and references from each interviewed person into a document (in pdf format) that the authors will send out by email. The respondents are through this given the opportunity to comment on the content of this document. All feedback will then be taken into consideration before a final thesis is presented. The authors have chosen this approach due to that much of the information provided by the interviewees could be of a confidential nature and that they would not in any way want to complicate a competitive situation. It is also a way of ensuring a high level of reliability for the study and the information finally presented. This is also including reduction of potential translation error. These e-mails will be sent out to involved people in the beginning of December 2006.

- **Validity**

The degrees to which the authors gain access to their participants' knowledge and experience is often referred to as validity. When based on a small and unrepresentative number of cases qualitative research will logically not be able to provide generalizations about the entire population, which will be the situation in a case study approach (Yin, 1994).

Our primary data includes only one potential Swedish private operator of air traffic control (Aviation Capacity Resources AB). Therefore this affects the validity of our collected data. To overcome this obstacle we have incorporated secondary data from other countries where air traffic control is open for private competition. Experiences from other countries will be used for identifying key difference and obstacles related to the privatization of air traffic control. Since there is no publicly available information about differences between a private and a public operator in Sweden, input from other countries can be used as guideline and benchmark for identifying relevant factors needed for our analysis and fulfillment of the purpose.

- **Bias**

Bias refers to the subjective interpretation and treatment of data (Saunders et al., 2003). In order to extract non-biased information out of an interview there are certain aspects to consider before executing the interview. How the authors put the questions, the tone, and all sort of nonverbal behavior can create bias in how interviewees respond to the questions being asked. Common ways of doing this is to through the question one ask trying to impose ones own thoughts and beliefs. Another way is to demonstrate bias in our interpretation of the responses (Easterby-Smith et al., 2002).

This type of bias may be caused by perceptions about the interviewer, as referred to above, or in relation to perceived interviewer bias. However, the cause of this type of bias is not necessarily linked to any perception related to the interviewer. Taking part in an interview is an intrusive process. This is especially true in the case of in-depth or semi-structured interviews, when aiming to explore events or to seek explanations (Robson, 2002). If there will be any persons requesting to be anonymous during their session, the name and the recording will be kept confidential for unauthorized readers. This has been taken under consideration, as the authors have informed all the participants that their name will be published in this thesis and if a participant would choose to remain anonymous they would remain confidential throughout the report.

Even though the interviewee has agreed to participate he or she may nevertheless be reluctant to deeply discuss all requested matters, since many of the questions may reveal sensitive information regarding business strategies. This can also be due to that they do not have adequate authority to discuss those matters. (Robson, 2002).

Bias of the information collected can also arise as a result of whom have been arranged to interview. The people that really want to talk with may have delegated the interviews to others due to the time-consuming requirements of an interview, and this may bias the sample from whom data are collected (Robson, 2002).

The authors' bias might also impact the data quality of the research (Saunders et al., 2003). This has been identified and discussed within the group. One of the authors is politically involved in a party favoring liberalization of the economy. Relatives of two of the authors are at the moment involved in management of companies that are in competition with public alternatives. All authors are also business students and have been working both with and within private companies. Being aware of this, the authors have deliberately tried to keep a neutral and objective stance. For the mentioned reasons the authors have intensively worked with incorporation of contrasting views (including, for example, the World Socialist Website). The process of sending out a preliminary report counteracts some of the potential bias.

- **Generalisability**

The authors have earlier described data quality issues relating to semi-structured and in-depth interviews, we stated that there is a probability related to the surrounding of the generalisability of findings from qualitative research when using a small number of cases. In search of clarifying and modifying the approach of an adopted to the generalisability or transferability of qualitative research two arguments have advanced.

The first argument deals with the situation where a single case study is used due to the in-depth nature of the research. Bryman (1988) states: *"Within a case study a wide range of different people and activities are invariably examined so that the contrast with the survey samples is not as acute as it appears at first glance"*.

The single case may in fact include a number of surroundings where for example it involves a study in a large organization with sites domestically or internationally. Therefore a well performed and thorough case study is thus more likely to be useful in other contexts than one that is not as unassailable.

The second argument that questions the generalisability of qualitative research or a case study is related to the implication of this type of research to theoretical suggestions (Bryman, 1998; Yin, 1994).

The authors do not aim to provide a case study that can be applicable to other industries or other countries. Whether it is possible or not the authors have not considered this. There could also be a possibility to create a general theory from our report, but this is nothing the authors aim for as the situation is very specific to Sweden.

2.4.4 Summary of sources

Below is a summary of the data sources used in this report:

Published Material <i>Secondary Data</i>	A great number of books contributed to the information, mainly regarding privatization theory. We have also used articles from both the general press and more specific industry related journals to collect current and previous information about the air traffic control industry. Scientific journals were also used to gather research on privatization and air traffic control businesses.
Government reports <i>Secondary Data</i>	We have used government reports and material that was made available for us through both the internet and government agencies. Much of the information has been available to us according to the Swedish public information principle ("Offentlighetsprincipen").
Internet sources <i>Secondary Data</i>	International aviation organizations, government agencies and operators of air traffic control provide information on their websites that we have taken part of. Information regarding air traffic control in other countries and regulations are examples of data collected.
Top management interviews <i>Primary Data</i>	Interviews are performed with top management of one of the upcoming private air traffic control companies, as well as the current public alternative. This thesis aims to investigate the main differences in management issues from a business perspective, and issues regarding differences in activities and processes behind delivering the air traffic services.
Regulative agency <i>Primary Data</i>	To complement the information gathered from our case study we have interviewed air traffic control industry experts from Luftfartsstyrelsen who currently are regulating the industry in Sweden. This was done to get the framework for privatizing the market, regulations and views regarding the air traffic control. We have also been in contact with the Ministry of Industry, Employment and Communication.
Privatization Expert <i>Primary Data</i>	In order to gain a wide perspective of the subject. We have incorporated a discussion with an expert within the privatization field who is the Dean of Jönköping University. He has previously worked for OECD and investigated privatization.
Interest Organizations <i>Primary Data</i>	We have been in contact with interest organizations that have provided us with their viewpoints about privatizing air traffic control. This has increased the credibility of the report as we are enabled to provide a more nuanced view.

2.5 Structure of the research

The report initiate from the **frame of reference** which consists of two key parts. First is a presentation of current general theories of privatization (3.1). In order to be able to identify theoretical elements relevant to the specific industry of air traffic control we have included a second part. This second part is a summary of evidence from air traffic control privatizations in other countries (3.2). This will help the authors to gain insight into which factors that probably are relevant and important for this specific industry. We do however not know if these can be applicable in our research, since the specific situation and process in Sweden could differ from other countries. We will therefore be aware of this problem throughout the research. The findings from these two parts will be combined and concluded in the end of the chapter (3.5). By using this approach we will create a point of departure for collecting our empirical data and at the same time provide a foundation when analyzing our findings. This section will also discuss who decides to privatize in order to find the legitimization of the privatization process (3.4) as well as relevant methods for privatization (3.3).

Our **empirical findings** will be based on information from a the current public and a possible private alternative in order to compare key differences between them. Findings from privatization theory concluded in the frame of reference will provide a starting point to these investigations. To be sure to cover all aspects, other views will be incorporated by contacting interest organizations and government agencies. Another approach would be to map out all activities of the different actors for comparison. This would however not be possible for two reasons, first the complexity would make it a difficult task, while the fact that one of the actors at the moment does not have any operations of air traffic control makes such a comparison obsolete.

The third phase of the research is the **analysis and conclusions** aimed to fulfil our purpose. The structure of this chapter will follow the foundation provided in the frame of reference combined with the identified differences between the actors in Sweden from the empirical findings. This enables us to identify significant differences between a private and public operator which is the very purpose of this report. These findings will be summarized in the conclusion.

Further, due to the special characteristics of this industry the authors have provided the reader with information aimed to present a holistic view of the air traffic control. Since this is not directly related to the fulfilment of the purpose, this information can be found in the **appendices** attached to this report. These are further divided into three sections; *Definition of air traffic control*, *Air traffic control operators* and *The deregulation process in Sweden*. The authors strongly recommend the reader to first review this section before continuing further to the empirical findings.

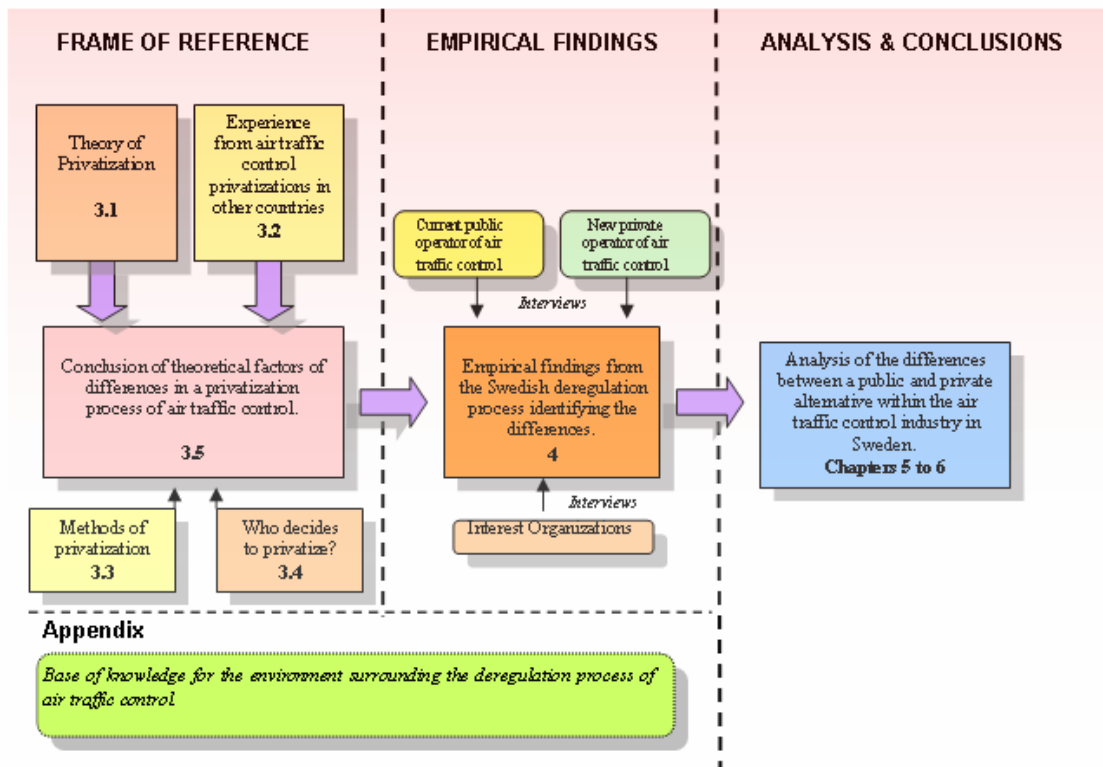


Figure 2.1: Illustration of research paper structure

2.6 Analysis of data

Our theoretical framework ends with a conclusion of theories related to the theoretical factors of differences in a privatization process of air traffic control (3.5). This chapter is derived from theories of privatization combined with experiences from other countries that previously have privatized their air traffic control industry. This has given the authors a framework specific for the privatization of air traffic control. As both pro's and cons are included in the process of creating this framework, it is assumed to create an objective approach for analyzing the potential deregulation of the Swedish air traffic control market. The authors aim to use this framework as a point of departure for the analysis of data collected for this study. This is to ensure that all aspects of the privatization is covered, while at the same time identifying the most important differences.

To be able to discover the most important information and to categorize the findings to get a structure, Strauss (1987) proposes coding as a method. Coding involves discovering and naming the categories of your material but it also has to go deeper and find the underlying information related to the main categories. The authors approach to this is to identify key differences from the empirical data and to present them one activity at a time. This enables a detailed study of each difference in activity in isolation. For the reader, it also contributes to a clear and coherent structure which is easy to follow.

The empirical data collected is expected to be of conflicting views as the sources for this information are in direct or indirect competition with each other. The interest organizations contacted for research also have certain aspects, favorable for themselves, that they emphasize. In an analysis the authors will be able to objectively analyze, compare and discuss this information in order to finally come to conclusions regarding differences. The secondary data will indirectly act as a foundation for the analysis as it is the lens with which the authors see the empirically collected data through. This data will thus also be of significant importance for the final analysis.

3 Frame of reference

The frame of reference will present theories of privatization. In order to be able to relate this to the context of the air traffic control industry these theories will be combined with privatization experiences from other countries. Important factors to the specific industry will be concluded and provide a framework for the empirical and analysis chapters.

3.1 Privatization

The term *privatization* was first introduced by Peter Drucker (1978). The concept of privatization is firstly based on a shift of responsibilities from government to the private sector and secondly a reduction or elimination of government interference in the private sector of the economy. The predominant ideology is that a successful economy must be driven mainly by a private sector governed by market competition, rather than by the social goal of wealth redistribution. Therefore much of the arguments in favor and opposition of privatization tend to be ideology based (Hirsch, 1991), meaning ideologies closely related to politics, especially in Sweden where some parties are more in favor of privatization whilst others may be less, or even reluctant.

Governments are responsible for deciding which services citizens want provided publicly and then providing (authorizing, empowering, administering) them at levels for which the citizen are willing to pay. Of those services provided by a government, parts can be produced or delivered by that government, while many others can be delivered better by alternative means (Finley, 1989).

Economic theory recognizes public ownership as a response to the failure of private markets to secure efficient and equitable outcomes. The belief is that when competition is fair the companies must control its consumptions of resources, which puts focus on operating more efficiently. This leads to lower prices and consumers are offered more variety and better quality in a stronger position. This is beneficial for society as a whole because society's scarce resources can be better distributed while at the same time entrepreneurship and innovation is encouraged (Megginson & Netter, 2001).

While the key task of a private organization is to maximize profits the state owned organization is often struggling with multiple objectives that often are in conflict with profit maximization. Some of these include general economic objectives, as well as control of delivery of essential goods and services, controlling strategic assets, employment policies and price control. There are also some non-economic objectives ranging from social obligations to political patronage (Schwartz & Lopes, 1993; Miller, 2000).

Proponents of privatization believe that private market actors can more efficiently deliver any good or service that government can provide, while opponents of privatization mainly believe that certain parts of the social setting should remain closed to market exploitation in order to protect them from unpredictability and that privatization means that governments cede responsibility for vital public services to unreliable private entrepreneurs. It is claimed that at its worst, privatization can raise costs and has the potential to undermine other important values, such as equity, quality and accountability (Gormley, 1991).

3.1.1 Rationale of privatization

Privatization has been widely and comprehensively adopted throughout the world on the rationale that privatization will:

- Raise funds and reduce borrowing to improve a nations effective economic management
- Increase efficiency at the enterprise level
- Reduce government and bureaucratic interference in the day-to-day business
- Increase the share in enterprise ownership
- Create competition in the market
- Promote discipline in the market place
- Increase revenue for the state

(Gould, 1990 in Moazzem and Malbon, 1998; Megginson & Netter, 2001)

3.1.2 Pro's

The fundamental economic argument supporting the concept of privatization is that governments do not have as strong incentives in comparison with private ownership to ensure that firms owned by them are managed in an efficient manner. The underlying principle for this is that private owners are profit oriented which creates a incitement for increased efficiency. This paradigm holds that as the privatized firms become more efficient this will benefit the whole economy and, ideally, privatization leads to the formation of social, organizational and legal infrastructures and institutions that are necessary for an effective market economy as a whole (Schwartz & Lopes, 1993; Miller, 2000).

Granslandt & Nyberg (2002) have summarized theoretical findings collected from a wide range of researchers. By being able to conclude findings from several researchers they have been able to declare five effect privatization are expected to have on the welfare of the state:

- Lower prices

A higher degree of rivalry between actual and potential competitors prevents the firms from raising prices or decreasing the output in the market.

- Internal efficiency in firms

A larger amount of competing firms in a market leads to a higher possibility of comparing the efficiency of different firms and also induces a pressure on the firms to utilize their resources in a more efficient manner.

- Economies of scale

As the rivalry in a market increase, the marginal profits decrease and thus leads to a pressure of improved economies of scale production, this in turn forces inefficient firms out of the market.

- Efficient dynamic selection

Even though firms do not act in a rational and cost efficient manner in the short term competition can lead to a dynamic selection of the most efficient and innovative producers as the inefficient producers, on the other hand, are driven out of the market in the long run.

- Speeds the pace of innovation

Rivalry between firms increases the incitements to innovate new products and production methods, which in turn affects overall economic growth. A temporary market leadership leads to strong incitements for the firm to innovate in order to strengthen their position in regard to competitors. In the long run, this could positively affect overall economic growth

(Granslandt & Nyberg 2002)

The previous notions are theoretical expressions of the benefits of privatization, the following are instead theories derived from empirical findings summarized from a wide range of researchers by Granslandt & Nyberg (2002):

- Actual competition amongst established actors seems to be more significant than potential competition from actors that has not yet been established on the relevant market. Few markets are in reality contestable (challengeable) in the short term which points to that there are barriers of entry in most markets. However, as the international market integration extends one can expect that the pressure from potential competition also will increase.
- Competition leads to generally increased cost efficiency. Firms that face intense competition have a better organizational efficiency. This effect is particularly strong when firms face competition from international market leaders. Additionally, active ownership is an important complement to market competition in order to achieve enhanced organizational efficiency. Private firms that have dominant external owners are shown to be more productive than other companies. Public firms which have realized a change of owners have a faster improvement of productivity than before the change.
- Few markets seem to be natural monopolies in reality. Even though some markets in theory can be characterized by static costs which makes the market a natural monopoly, the positive effects of competition seems to in most cases dominate potential benefits of economies of scale.
- Competition leads to significantly lower prices, but the direct price effects by increased competition are relatively small.
- The dynamic gains of competition are more important than the direct gains of lower prices. A large amount of empirical studies at firm- and market level shows that increased competition leads to faster product development. Competition has long term and lasting effects on the welfare through individual actors' incitement to develop new products and production methods as created by rivalry.
- The correlation between competition and innovation seems to have an inverted U-shape, with other words incentives to invest in research and development are the strongest as firms are competing, at the same time a temporary market leadership also fosters the same incentives.
- Some markets with major investments in research and with low marginal costs in production might be characterized by weak competition in a static sense (high concentration and profitability for the market leader), but at the same time have a significant pressure of competition in a dynamic sense. These markets face competition *about* the market rather than *on* the market.

In investigations where public and privately owned sectors are compared the latter usually outperforms the other (Kikeri, Nellis, & Shirley, 1992). This is not the result of sole privatization per se, but rather the competitive environment established in order to achieve market efficiency. Without the essence of competition a private monopoly would perform like any other monopoly, private or public does not matter (Schwartz & Lopes, 1993).

The benefits associated with a privatization of the air traffic control market are logically related to the benefits of privatization in general. The benefits would be to alter bureaucratic behavior and make the service providers to handle more air traffic, more efficiently, at a lower cost and while also increasing the speed of modernization (Sclar, 2003).

In conclusion it is possible to state that there is a rather strong positive correlation between competition and the welfare of the state as shown by empirical research (Granslandt & Nyberg, 2002).

3.2.3 Cons

In the pro privatization section we explored the benefits of competition, which has to be assumed is the very aim of privatization. However, the positive notions presented have been argued against by various researchers. The argument that privatization creates competition and therefore efficiency, has been challenged, especially regarding the context of the public sector. Due to the nature of public goods, which may be less profitable and more complicated to deliver, most public contracting has no competition; monopoly, or minimal competition among very few firms; oligopoly (Sclar, 2000). Sclar (2000) further concludes that public decision makers should not work towards privatization in the name of competition when they could be considering restructuring or reorganizing their own management.

A common argument against privatization, related to the notion of economies of scale previously presented, in the pro section (3.2.2), is that such conditions could lead to a natural monopoly in the market which in turn eliminates all the benefits of competition (Sclar, 2000).

Opponents of air traffic control privatization admit that it has been successful at reducing total costs, however they argue that the “*at what price*” question is rarely asked. They believe that the savings are a result of harsh cost saving strategies that put a lot of pressure on employees and thus argue that they are made on behalf of air safety and employee satisfaction (Sclar, 2003). Others point out that there is a likely possibility for an increase in passenger costs as the private contractor can increase fees for their services (www.atcmonitor.com).

The previous section also presented the notion that governments do not have as strong incentives in comparison with private ownership to ensure that firms owned by them are managed in an efficient manner. This has been argued against on the basis of the idea that governments are substitute owners answerable to the people. It is argued that governments which run their firms poorly will lose public support and votes, while a government which runs those enterprises well will gain public support and votes. Thus, democratic governments do have an incentive to maximize efficiency in their companies due to the pressure of future elections (Clarke & Pitelis, 1995).

Further, since in the pro privatization section it is indirectly argued for private ownership, it would be suitable to present some motives of public ownership:

- To create a national infrastructure in areas where private ownership is considered impossible due to heavy capital needs
- To pre-empt the flaws of the free market (so called “market failures”) by for example working against tendencies of monopolization or other competition barriers
- To support companies and industries in crisis and to sustain the welfare of some regions
- To increase state earnings distributable to the population
- To strengthen the national maintenance of some products and services, sometimes in combination with clear national defense matters

(Anell, Eliasson, Gerge, Henning, Hägg and Larsson, 1992)

There are also some different political lenses through which privatization is viewed rather negatively, for example as a way of rewarding allies; “tactical privatization” or to change institutional structures and societal ideologies; “systemic privatization” (Feigenbaum & Henig, 1994).

3.2 Privatization experiences from other countries

In the following section experiences from other countries will be presented as a part of the theoretical framework to see how the privatization process has been performed and what the consequences have been. Comparison between countries can bring additional value to our report.

The following information is mainly adapted from the report “*How to spin off air traffic control*” by Robert W. Poole (1993), but other sources have also been used to provide a nuanced as well as an updated view.

- New Zealand

New Zealand was the first country to deregulate its air traffic control system in 1987 when it was corporatized and incorporated as a commercial, but remained as a government-owned company. It was given a board of directors and required to value its assets and liabilities and keep its financial records in accordance with normal accounting practices it was also given the authority to charge all users of its services (Poole, 1993).

Airways Corporation of New Zealand is soon to celebrate the 20th anniversary. Its corporatization is considered highly successful throughout the aviation industry. Its accomplishments include introducing New Zealand's first air traffic control user fees, which are the sole method of financing Airways Corporation's operations, since it no longer receives any tax funding. After privatization the company directly implemented a four-year modernization program and a following navigation aids upgrade was launched in 1992. A major cost-cutting program, launched in 1988 reduces the firm's annual operating costs by 20 percent (Poole, 1993).

In the four years prior to corporatization, the service had expenses that were NZ\$21 million greater than its income. In the first four years of corporate operation, Airways Corp. posted a NZ\$30-million profit. In the last fiscal year the Airways Corporation presented a net profit of NZ\$11 (Poole, 1993) (1NZ\$ = 0.69US\$ = 5.31CNY = 0.54EUR = 4.98SEK, www.forex.se, 2006-11-21).

In 2003 the Airways Corporation of New Zealand was voted the best air navigation service provider in the world for value for money and quality of service, by the International Aviation Transport Association representing 280 of the world's airlines (www.airways.co.nz).

- **Switzerland**

In 1988 the Swiss Bundesrat (parliament) separated the air traffic control service from the non-profit RadioSchweitz telecommunications firm and set it up as a partially private company called Swisscontrol. The Swiss government retained 71 percent of the shares, with 7 percent owned by the two Swiss airlines, 12 percent owned by the three main airports, and the remaining 10 percent owned by various aviation employee and user groups. During its initial two-year probationary period, the company received all its funding in the form of user fees collected by the federal government (Poole, 1993).

The probationary period was considered a success, in terms of making the changeover to a commercial corporate form of organization. But the initial structure did little to change either the financing or the decision making authority. Transport Ministry studies led to recommendations for legislation, and versions of that legislation passed both houses of the Swiss parliament. The major changes were as follows (Richter, 2005):

- Swisscontrol itself allowed charging user fees and retaining the proceeds. (Previously, the government charged the fees and reimbursed Swisscontrol for its costs.)
- The government pays the company only for its own use of Swisscontrol services.
- The government's share of ownership was reduced to 51 percent.
- The government formally delegated responsibility for air traffic control operations to Swisscontrol (this had not been done previously, and had raised legal questions.)

It is here worthy to mention those opponents of air traffic control privatization who warns of safety hazards that can result as a side effect of cutting costs. Patrick Richter of The World Socialist Web Site, for example, points to what happened in summer 2002 over the Bodensee when two planes collided "*because of staff shortages and technical shortfalls at Swiss air traffic control*" (Richter, 2005).

- **Germany**

As of January, 1993, German air traffic control was turned into a newly created, government-owned company: Deutsche Flugsicherung, GmbH (DFS). The change required two constitutional amendments: one to merge civil and military air traffic control into a single organization, the second was to transform the organization into a corporation. DFS acquired 5,000 existing employees from its predecessors, and has recruited additional management staff from private industry. Some former military en route personnel now work for DFS, but other military controllers still work for the military (exclusively dealing with military air space). All capital facilities and equipment were transferred from the government to the newly created company (Poole, 1993).

The background to this decision, other than the alleged benefits of a competitive market, is the long-term European Union (EU) project to create a uniform European air space (Single European Sky). This involves a restructuring of European air space away from national delineation into larger air spaces oriented to the main traffic streams. However, the air traffic controllers union claim that what the EU is actually seeking to achieve is not the introduction of competition per se, *“which is rather illusory in this industry”*, but to create private enterprise structures in order to lower costs which, again, could result in safety hazards (Richter, 2005). However, the same source also maintain that *“DFS has so far set a very high standard for safety and punctuality, which presently puts it in first place in Europe”* (Richter, 2005).

In December 20, 2005, a sub company to DFS named The Tower Company was established. It provides air traffic control services to regional airports that previously have had their own air traffic control under the supervision of DFS. In a press release DFS explains that The Tower Company is an answer to potential competition in the air traffic control market due to the founding of new laws regarding a joint European airspace. DFS asserted that they could not provide market competitive prices, and that they therefore decided to create a low-price firm within the same segment in order to still have a share in that market (www.dfs.de).

- **South Africa**

In 1992, the South African government decided to corporatize its air traffic control organization. It is solely funded by user fees, which have not previously existed in South Africa. Safety regulations remain with the Department of Transport (Poole, 1993).

- **United Kingdom**

The mere 70 international airports in the United Kingdom are all separate business entities and not part of any national airport system. The largest owner of the airports is the British Airport Association (BAA). The Civil Aviation Authority (CAA) is responsible for all government engagement within the civil airspace (Poole, 1993).

The market for air traffic control services is partly competition based. It is either the airport itself or a contracted supplier that performs these services. The dominant actor within the air traffic control market is National Air Traffic Services (NATS) which until 1991 was part of CAA. With the creation of NATS the ownership was changed and owned by the state and private shareholders. NATS itself is divided into two separate entities; one that performs air traffic control en route and one that performs the services at the airports (Poole, 1993).

How the ownership of the infrastructure is distributed varies between the different airports, but in most cases it is the airport who owns the entire necessary infrastructure. Hence, when an airport is to change its supplier of the air traffic control service, it is mostly just a matter of changing the staff – or that the staff keeps working there but with a different employer than before. It is also the responsibility of each air traffic control firm to educate new employees (Poole, 1993).

Critics refer to that NATS has been forced to go to the government for financial bailouts and technological failures have led to multiple system shutdowns and operational irregularities (Sclar, 2003).

- **Canada**

In November 1996, Canada privatized its civil air navigation system (ANS), with the transfer of the system from the Government of Canada to NAV Canada. NAV Canada is a non-share capital corporation. The Company has no shareholders and no share equity. It is instead a non-profit company governed by members, who perform many of the traditional duties of shareholders. The four Members of NAV Canada are the airlines, business and general aviation, the federal government, and employee unions (www.navcanada.ca).

Momentum for the move to a private sector ANS in Canada began in the late 1980's and early 1990's as the Canadian ANS began to develop serious air traffic control bottlenecks and delays. Other problems such as operational understaffing, underinvestment due to limited government funding, delays and overruns in major system projects led customers to the realization that serious reform was required. As the air industry began to argue for fundamental change, it discovered several key allies who were of the same view, namely employees of the ANS and airline pilots. By the mid-1990's, the federal government also came around to the view that major change was required, at the same time as it was deciding to get out of the business of owning and operating major elements of the transportation infrastructure. After much consultation, it was decided that a private sector, non-share capital corporation was the surest way to meet the key objectives for the future of the Canadian ANS. A privatized ANS would:

- separate the ANS provider from the safety regulator, removing an inherent conflict of interest and adding a new layer of safety oversight
- improve customer service and reduce flight delays
- address system under-investment
- improve operational efficiency and reduce overhead costs
- eliminate political interference in ANS decision making
- be completely self financing through service charges
- address key employee issues following a wage freeze period under government
- implement a customer-focused organizational culture

(www.navcanada.ca)

NAV Canada claims that this has improved safety, increased operational staffing, reduced customer costs through more efficient flight operations, reduced administrative and overhead costs, modernized through a culture of innovation, addressed employee issues, and ensured a strong and stable financial foundation for the ANS (www.navcanada.ca).

The Company has taken an aggressive strategy to modernize and enhance the delivery of air traffic services across the country. In 10 years, NAV Canada has invested CA\$1 billion, renewing much of the infrastructure of Canada's ANS and buying or developing new systems, facilities and technology. They also claim that they have dramatically streamlined their capital spending and system development processes and that they today produce more technology, quicker and at less cost than when the government ran the ANS (www.navcanada.ca). Critics, however, call out that technological innovation in Canada has consisted of waiting for the US to develop new technology and then importing it (Sclar, 2003).

Beyond implementing systems in Canada, the company has sold or licensed some of the air traffic control systems – such as the oceanic system known as GAATS and the tower-terminal system known as EXCDS to air navigation service providers in other countries. These include UK NATS and Danish Naviair (www.navcanada.ca).

NAV Canada has made cost control a major focus. Through consolidation of regional administrative offices and other cost-cutting measures, NAV Canada reduced annual operating expenses by CA\$100 million, passing along cumulative savings of CA\$800 million to customers over the years. In 1996, 6,300 ANS employees from Transport Canada were transferred to NAV Canada. Today, the Company has just over 5,300 employees, while at the same time increasing the number of operational air traffic controllers by more than 250 on a net basis (www.navcanada.ca). (1CA\$ = 0.88US\$ = 6.72CNY = 0.68EUR = 6.31SEK, www.forex.se, 2006-11-21).

NAV Canada is financially self-sustaining, receiving no government funding or guarantees. The Company is financed through publicly traded bonds, and their main source of revenue is service charges applicable to airlines and the owners and operators of aircrafts. On a per passenger basis NAV Canada service charges are today at least 20 per cent lower than the tax they replaced. Their service charges have risen by a total of 10 per cent since 1999, which is 10 percentage points below inflation (www.navcanada.ca).

Sclar (2003) nevertheless argue that the privatized system has led to massive increases in user fees for passengers, and dangerous understaffing in towers. He continues with saying that NAV Canada has been successful at keeping costs low by negotiating with air traffic controllers to keep flexible schedules and that as a result, fewer controllers need to be hired and labor costs are kept low. As a result, he believes that controllers in Canada are stretched to the point of being unable to perform their jobs properly. Sclar (2003) also offers the information that by 2002, the average fee per traveler increased from \$12 to \$22 and he further states that *“the user fee system in Canada has definitely hit travelers as ticket prices have increased dramatically”* and that *“the system is structured in such a way that even when the control fee charged to airlines decreases, passengers end up paying more”*. He ultimately expresses that although NAV Canada is considered to be a privatization success by many *“a more objective assessment would have to hold that, at best, the result is still unclear”* (Sclar, 2003). Other voices have been that:

“NAV Canada's gotten things done on a much more cost-efficient basis than the FAA [Federal Aviation Administration], frankly, could ever dream of in terms of cost-and-time-to-implementation. I definitely believe in a move towards privatization”. (Robert Milton, CEO of Air Canada, *Airports International*, August 2002, retrieved from www.reason.org).

“The industry is pleased with the way that NAV Canada has evolved. It has been responsible on costs and tried to keep fees down. After the initial fees were set, there was a reduction and it was only recently, after September 11, that we saw an increase. We were pleased that they did everything they could to mitigate the negative effects, with the professional way that they communicated this to their customers”. (Cliff Mackay, president, Air Transport Association of Canada, *WINGS Magazine*, 2002 retrieved from www.reason.org).

- **Australia**

The air traffic control market in Australia was fully deregulated in October 1990 and Air services Australia is the corporatized but government-owned corporation providing the air traffic control services in Australia (www.airservicesaustralia.com). Proctor (1993 in Adams, 2005) has showed that the privatization of air traffic control systems in Australia has resulted in reduced operating costs, more profits, increased efficiency and increased air-safety. While critics allege that excessive demands on controllers have led to a series of strikes and that failures with new technologies have led to actual radar blackouts and major traffic disruptions (Sclar, 2003). Sclar (2003) further states that *"cost saving work rules have so infuriated controllers in Australia that a series of strikes have crippled air traffic movement for hours at a time at a high cost to Australians as a whole"*. In relation to these strikes, another critique has been expressed by Ruth Marlin of NATCA (The National Air Traffic Controllers Association; a labor union of air traffic controllers in US) when she said that: *"Advocates of air traffic control privatization hold Australia up as a model which the U.S. should follow. However, the reality of this situation makes it clear that profits should never come before the safety of the traveling public"* (www.reason.org). In direct defense of this critique, Robert Poole (2002) of the Reason Foundation says that: *"Airservices Australia is a government corporation, not a private, for-profit business. Its charter is to run efficiently in the interest of its users, covering its costs from fees and charges and making its own decisions about operating, expanding, and modernizing its business. That means its decision-making is not subject to constant second-guessing by politicians, as is FAA's unfortunate lot"* and that *"being able to run as a business means hiring skilled executives and managers and holding them accountable for delivering the services customers want, not constantly looking over their shoulders and altering their decisions. It has nothing to do with alleged conflicts between imaginary profits and safety"* (www.reason.org).

3.3 Methods for privatizing

There are different approaches used by governments for privatizing. Many of these methods are however not relevant to privatization of air traffic control. When reviewing experiences from other countries (described in the following section) the common methods for privatizing air traffic control appear to be corporatization and contracting-out. Both of them also match the current discussion of privatizing air traffic control in Sweden. As there already is a potential private alternative on the Swedish market, contracting-out is a relevant method. If there would not be an alternative to the public actor or in case the government would still like to have power in the industry, corporatization would be a preferred method. Both could also be used at the same time, where a corporatized public actor would be in competition with private actors. This would also allow the government to retain control for as long as it deems necessary while enabling the spin-off entity time to adjust to the corporate environment. Below, these two forms of privatization will be further explained.

3.3.1 Corporatization

Using the corporatization approach, the government creates a corporation having a governing board typically composed of members from the government as well as from the business community. The government owns all the stock in the new corporation. This process enables the newly created corporation to operate free of most of the constraints of government while still allowing the government to maintain control and ownership (Chang & Jones, 1992).

Often after the corporation has established itself and generated a credit history, it is sold on the open market. There are some who argue that the final sale of the stock (the actual privatization) is an unnecessary step. Proponents of this method, however, insist that privatization is essential to keep the corporation free of unnecessary government constraints in the long run. The two step process of first corporatizing and then privatizing is usually much more time consuming and expensive than a direct asset sale (Chang & Jones, 1992).

Corporatization itself provides no additional revenues, but it presumably enables the government to correct inefficiencies and bypass bureaucratic red tape (Chang & Jones, 1992).

3.3.2 Contracting-out

In theory, this is defined as governments contracting-out services to private firms (Adams, 2005). As the process in Sweden also enables private airports to choose a private supplier of air traffic control, the definition is not fully met. However since the concept is the same this can also be seen as a contracting-out.

There are many arguments in favor of contracting-out for public goods and services, but also some disadvantages. Those who advocate this method claim the following superiorities of it (Hartley, 1986, De Hoog, 1984, Moore, 1987 and Ascher, 1987 in Aktan, 1991):

Contracting-out is efficient and effective, because it fosters and initiates competition. The competition among firms bidding for a service contract drives the cost down. Empirical studies clearly prove that the cost of the services provided by government is much higher than when the services are provided by private contractors.

- Contracting-out also provides better management than its public counterpart. Since decision making under contracting-out is directly related to costs and benefits.
- Contracting-out helps to limit the size of government owned enterprises in terms of the number of employees. It is a fact that overstaffing is common in publicly owned enterprises.
- Contracting-out can help to reduce dependence on a government monopoly which causes cost inefficiencies and ineffectiveness in services.
- Under a contracting-out method, contractors can be penalized if their service is of poor quality and unsatisfactory. Contractors must provide good services in order to renew the contract which leads to good quality.
- Contracting-out is more flexible in terms of responding to the needs of citizens. Bureaucratic formalities are said to be very common when the service is delivered by government. Less tolerance and strict hierarchy in bureaucracy are the reasons of the inflexibility of publicly provided services.

(Hartley, 1986, De Hoog, 1984, Moore, 1987 and Ascher, 1987 in Aktan, 1991)

Conversely, opponents of the contracting-out method argue that this system mainly has the following deficiencies:

- Corruption may be widespread in the process of selling contracts to the private firms.

- Contracting may limit the flexibility of governments in response to emergencies since contractors are liable to default and can go bankrupt in their activities.
- Contractors may hire inexperienced temporary personnel at low wages and this could decrease the quality of the service provided. This is of special significance when the service is dependent on perfect quality – as in the air traffic control where mistakes can cost lives.
- Contracting-out usually involves laying off public employees. As a result of this, government has to pay unemployment compensation to the laid off public employees.

(Hartley, 1986, De Hoog, 1984, Moore, 1987 and Ascher, 1987 in Aktan, 1991)

Although there are some drawbacks to the contracting-out system as seen above, it has been asserted that they can be widely eliminated by taking some precautionary measures. Regular re-contracting should be implemented so that genuine competition is established. Regular re-contracting also forces contractors to work more efficiently in order to renew the contract (Hartley, 1986 in Aktan, 1991).

3.4 Who decides to privatize?

It is important to pinpoint the rationale behind a deregulation process of air traffic control. This is because it is then possible to isolate the benefits expected to be generated through a deregulation process from the decision makers point of view. For the deregulation process to continue there must be a legitimization for the politicians to decide on the issue as the process can not evolve without their support.

According to SALAR (F. Jaresved, personal communication, 2006-11-30) the deregulation process has originally been initiated by the non-state airports. The reason for this is a question of principle; that non-state airports should have a choice of supplier and be able to impact all its costs. But at the same time they believe that it is evident that the process also would create substantial cost savings. This is why SALAR has decided to actively take this issue to the agenda of the politicians (F. Jaresved, personal communication, 2006-11-30).

During the last years there have been an increased interest from the politicians and the government regarding the issue of deregulating the air traffic control market. In the Swedish parliament proposition 1999/2000:140 (“*Konkurrenspolitik för förnyelse och mångfald*”) about competition, the government concluded that it was its ambition to develop competition within air traffic control services. In a following proposition (Riksdagen 2005/2006:160, “*Moderna transporter*”) the government elaborates on a potential deregulation and concludes that a process should be initiated, starting with allowing non-state owned airports to choose their own supplier of air traffic control. Therefore the support of the process already exist, but the specific details remains to be decided. Luftfartsstyrelsen has recently published a report addressing these issues and the answers and opinions to the report are at the moment being concluded by the Ministry of Employment, Industry and Communications (“*Näringsdepartementet*”). If the government would like to continue the process to deregulate parts of air traffic control, there are according to Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) two options: either to directly make a decision to deregulate air traffic control and then let Luftfartsstyrelsen design the implementation or the alternative to let Luftfartsverket develop a new report outlining the exact details for a deregulation in order to later make a decision to privatize using that plan. Luft-

fartsstyrelsen is therefore at the moment awaiting a decision from the government with new instructions (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). According to the Swedish Ministry of Employment, Industry and Communication (“Näringsdepartementet”, G. Roos, personal communication, 2006-11-21) Luftfartsstyrelsen will soon “*probably*” be assigned by the new government to produce a follow up report outlining the exact details of a deregulation. Because a deregulation involves a number of changes in laws and regulations, the process will at the earliest open the market for private alternatives during the fall of 2007.

SALAR claim that there is a consensus among politicians that the deregulation is an important process that will contribute to lower costs. After a parliament election in 2006 there was a change of government in Sweden (to a right-wing direction), but it is claimed that also the previous government had the same positive view of the matter (F. Jaresved, personal communication, 2006-11-30). In the new government declaration it is stated that “*the government will act for new financial solutions for the infrastructure*” (Regeringsförklaringen, 6 October 2006). They elaborated on this view further in their first budget proposal where they declare that it is “*the governments ambition to evaluate the possibility for other actors than Luftfartsverket to supply air traffic control services*” (Proposition 2006/07:1). This positive view of the politicians is also evident in a discussion in the Swedish parliament on the 22nd of November 2005. In this debate, Björn Hamilton from Moderata Samlingspartiet, claimed that they fully support a deregulation with the main reason that all cost savings would be passed on to the airline passengers. In a previous debate on the 23rd of March 2005 Staffan Danielsson from Centerpartiet stated that they fully support the deregulation. The reason is that they would like to use the power of privatizations for higher economic efficiency. As both the Minister of Commerce (responsible for the Ministry of Employment, Industry and Communications; “Näringsdepartementet”) and the Minister of Infrastructure are members of this party, it can be assumed that this question has strong support in the government and that the process will be prioritized.

The primary reason for why politicians have shown this positive attitude to a deregulation process of air traffic control, is the regional dimension, meaning that the small non-state airports, that are not generally profitable and in need of financial support, should be able to remain in service. Their importance is enormous, both as a symbol of local independence, but also as securing communications and as a generator for the regions growth and attractiveness (J. Blyckert, personal communication, 2006-11-30). Luftfartsstyrelsen agrees in this view (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

As an additional effect, reduced air traffic control charges are expected to result in lower airline ticket prices. The entry of no frills airline alternatives have indirectly speeded up this process. When air ticket prices are high, taxes and charges (including the cost of air traffic control) are just a marginal part of the total price. As ticket prices recently have sharply declined the taxes and charges are today often the largest part of the total price which have unfolded these much more than before. The low frills airlines have also shown that when ticket prices are reduced more people are able to travel which is considered to be beneficial and appreciated by the public. It also benefits the regional and general economy as lowered airline ticket prices often result in increased trade and tourism (J. Blyckert, personal communication, 2006-11-30).

It is important to bear in mind that privatizing is very politically and ideologically influenced (Megginson & Netter, 2001). For understanding the political influences related to the subject of privatization nine factors are presented by Megginson & Netter, (2001):

1. The history of asset's ownership
2. The financial and its competitive position of the state owned enterprise
3. The current governments ideological view of markets and regulations
4. The past, present and potential future regulatory structure in the country
5. The need to pay-off different interest groups in the privatization
6. Governments' ability to credibly commit itself to respect investors' property rights after having using divestiture
7. The capital market conditions and existing institutional framework for corporate governance in the country
8. The sophistication of potential investors
9. The governments willingness to let foreigners own divested assets

To conclude the legitimization of the process, described above, there are two main arguments for supporting the deregulation. First is the regional dimension where small local airports benefit from expected lower costs when deregulating air traffic control which enables them to survive and the region to boost growth. The second argument refers to how this would be achieved and this in turn refers to higher economic efficiency evident in private organizations. The outcome of this is expected to result in lower airline ticket prices benefiting society as a whole through increased mobility and tourism. Therefore the deregulation must enable cost savings to be promoted by politicians.

3.5 Conclusion of theoretical framework

To be able to discuss privatization in the context of air traffic control, this section will combine key theories of privatization with experiences of privatizing air traffic control in other countries. This is done to highlight privatization issues related to the specific industry of air traffic control. The section will thus act as a framework for the empirical research and analysis of the privatization process of air traffic control in Sweden.

There has been some researchers who have developed models related to some aspects of the privatization process, but in order to be generally applicable and appreciable, they ignore many of required factors for being practically applicable (Megginson & Netter, 2001). Megginson & Netter (2001) therefore argue that there can not be any general model that can be used to show the value drivers behind a privatization. In the case of privatizing air traffic control, an industry adjusted model should be used, but such a model has not yet been introduced. The authors have therefore worked with a funnel approach that has introduced the reader to the different concepts of privatization in the previous sections of this chapter. The theories may or may not, however, be applicable in the case of air traffic control in Sweden. In order for the authors to identify required criteria's for identifying differences in activities between a private and a public alternative in the Swedish air traffic control market, key elements will be defined, argued for, and presented in this section. They will also be compared with differences identified in experiences from other countries to highlight important industry aspects.

Schwartz and Lopes (1993) and Miller (2000) declare that the key objective of a private firm is profit maximization, public firms in contrast to this, have other conflicting objectives such as control of delivery of essential goods and services, controlling strategic assets, employment policies and price control. It is also explained that this profit motive of private companies is the underlying foundation for incentives to optimize efficiency. Private firms are in the context of a competitive environment and this impose them to allocate their resources more carefully and to optimize their operations in order to survive. Thus, firms who face intense competition have been proven to have better organizational efficiency (Granslandt and Nyberg, 2002). This has also been proven to be the case for some of the countries presented, for example in the case of Airways Corporation of New Zealand where they were able to reduce their expenses with 20 percent directly after a privatization. Some public operators have realized that they have an un-advantageous cost structure. DFS in Germany has for example for this reason created a new low-cost subsidiary to be able to compete with potential new private operators.

Internal efficiency has also been a predominant factor for many of the presented countries where they have implemented cost cutting programs which has led to reduced operational costs. This is visible in the case of NAV Canada where a reduced labor force still is handling at least the same amount of traffic as before. This has partly been achieved through introducing more flexible schedules for air traffic controllers. Also related to internal efficiency is organization culture aspects. NAV Canada has for example worked hard to introduce a culture of innovation and as a consequence, been very successful in developing new technology and also exporting it to other countries. These are important factors that will be investigated when collecting empirical data for our case.

Differences in activities can be due to differences in environmental pressures that private organizations face, whilst a public organization, with no competition, can focus on different objectives (Schwartz & Lopes, 1993; Miller 2000). Thus, Sclar (2000) argue that governments that privatize for increased competition are doing so on the wrong criteria's. Many privatizations have not created a fair and open market competition but rather one consisting of few actors, resulting in replacing the monopoly of the previous market with a oligopoly. Another factor mentioned by Sclar (2000) is that government products often are less profitable than private ones due to their complexity in delivery, production and distribution.

From the theories explained the authors can conclude that the existence of a fair market competition seem to be a prerequisite for reaping the benefits of privatization. Differences in activities between a private and public alternative are then assumed to be due to discrepancies in objectives and environmental pressures. In an intense market competition an organization is forced to create internal efficiency for its survival, it has to focus on lowering operating costs and on being innovative in its solutions (Miller, 2000; Granslandt & Nyberg, 1993). As a result of this, the advantages associated with privatizing are also beneficial for the whole economy (Schwartz & Lopes, 1993; Gould, 1990 in Moazzem & Malbon, 1998; Megginson & Netter, 2001).

The privatization process of air traffic control in Sweden should be evaluated through a corporatization or contracting out approach. The way in which this will be done depends on a decision by politicians, which is further explained in appendix 3 where the current privatization process is presented in detail.

4 Empirical findings

This chapter compares activities that differ between a public and a potential private operator of air traffic control in an upcoming deregulation process.

That there is a difference between a public and private air traffic control provider is pointed out in several articles and by the actors within the field. A number of sources present the size of potential savings available, but few mention what will be implemented in order to achieve savings. This factor was for example not included in the assignment of the report by Luftfartsstyrelsen (2006) to the government (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). An organization for non-state owned airports have approximated annual cost savings of 10-20 million SEK (approximately 10-20 percent of the total air traffic control costs), but exactly how this amount is extracted remains confidential (F. Jaresved, personal communication, 2006-11-30). It has been the purpose of this study to answer this question, which is of particular importance since there is no publicly available information on this.

Before the market can be opened for private competition there must, according to Luftfartsverket (R. Sandelin, personal communication, 2006-11-13), be competition on equal conditions. This means that there are several issues that have to be solved before a deregulation can take place making the market available for private. Luftfartsverket especially points at two important issues that must be solved. The first being that education must be financed by all actors on the market. This is preferably solved by transferring this obligation to the government public education system (Luftfartsverket, 2006). The second important issue is that Luftfartsverket must be compensated for their backup capacity in the case where an actor does not fulfill its obligations. Some other issues are also important but according to both Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) and Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) they can be solved without larger efforts. A detailed discussion of these issues is available in Appendix 3.

Andersson (personal communication, 2006-11-23) claim that one of the most fundamental differences between a state- and private alternative is the pressure for change and improvement. This is due to that it becomes a question of survival as the government no longer provides a safety net. Fundamentally, this comes down to the people that work within the organization and how they are affected by the structure, traditions, culture, history and regulations. This is especially evident in markets without competition, such as a monopoly. This means that in a state monopoly market there are less incentive mechanisms for innovation and experimentation. For private actors, it is the competition that constantly pushes the company to operate faster, more flexibly and to find solutions for better economic efficiency. It is these conditions that result in a cost reduction for customers as well as suppliers (I. Andersson, personal communication, 2006-11-23).

The main reason to why Aviation Capacity Resources claims that they can create higher efficiency and lower costs is due to that a firm that has been in the industry a long time has built up traditions and dependencies that not easily can be changed. They refer to the example of the traditional airlines that can not match the cost structure of the new no frills airlines. A new company gain tremendously on that they build the company from scratch and start from a blank sheet of paper. Also, by being small and close to customers and em-

ployees a competitive advantage is achieved (J. Blyckert, personal communication, 2006-11-30).

Our research has examined the operations of air traffic control. Some issues are believed to be different between the alternatives and they are presented below:

- **Regulations of retirement funds**

All companies must allocate money to cover pensions for its employees. The way this is conducted is through investing money in a fund to cover future pension obligations. The method of managing these investments and allocation of financial resources differ between a state managed organization and a private alternative (T. Andersson, personal communication, 2006-11-23).

State managed organizations have more restricted regulations concerning pension funding. They must place their investments in state treasury bills with low risk and low yield. In 2005 these yielded an interest of 2.5 percent (Luftfartsverket, 2005). A private alternative has more flexible options to invest pension savings on open financial markets. They can therefore use alternatives that can yield in a higher return. However, if badly managed, the opposite can occur as a different risk/return ratio is more volatile (T. Andersson, personal communication, 2006-11-23).

For example, the University of Jönköping is one of the few universities in Sweden that is privately owned (through a foundation), enabling it to use a different alternative for pension funding than their state managed counterparts. This has according to Andersson (personal communication, 2006-11-23) resulted in a significantly higher return than if invested in state treasury bills. Despite that the university consider this to be a very successful approach, the university has recently converted to the state pension system. This was done to facilitate better movement of personnel between the university and its state owned counterparts as the pension system then would be the same. Worth mentioning is that the university has not yet transferred its investments into state treasury bills. The reason for this is that they instead want to transfer the benefits of the private alternative into the current state pension system. This is according to Andersson (personal communication, 2006-11-23) a great example of how a private alternative can push for institutional changes with new ideas and innovations, and this would have consequences also for the state universities, even though they are not actively pursuing this.

According to an alliance of Swedish non-state owned airports (Svenska kommuner och Landsting, F. Jaresved, personal communication, 2006-11-30) this is one of the foremost factor that will enable a private alternative to provide lower costs than the current public alternative. Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) agrees that this is one of the foremost reasons for how a private operator can lower costs. The Swedish Air Traffic Controllers Association also believes that this is the most probable factor in the business model of a new private alternative (M. Wikerberg, personal communication, 2006-11-23).

Aviation Capacity Resources (J. Blyckert, personal communication, 2006-11-30) has also identified this opportunity and agrees that it can give them a benefit. However they claim that this is not their main source of gaining competitive advantage, but can benefit a low cost strategy. They have in preliminary calculations neglected this advantage to be sure that other key elements of their strategy is what contributes to a lower cost structure (J. Blyckert, personal communication, 2006-11-30).

One of the reasons for why Aviation Capacity Resources do not consider this to give them a competitive advantage is because it is evened out with other financial elements. For example Luftfartsverket, as a part of the government, is able to borrow money from the Swedish Central Bank (“Riksgäldskontoret”) to very favorable conditions and also sign insurance policies through the state (“Kommerskollegiet”) creating lower costs. A private alternative must use other sources on the open market for this which creates higher costs combined with higher risks (J. Blyckert, personal communication, 2006-11-30).

- **Age of retirement**

Previously in the international regulations for air traffic (ICAO) there was a recommended retirement age for air traffic controllers of 60 years. This rule was therefore subsequently implemented as mandatory in Luftfartsverket. In the international recommendations this age has now been abolished. This means that both international aviation framework and Swedish legislation allows a higher retirement age (R. Sandelin, personal communication, 2006-11-13).

The Swedish Air Traffic Controllers Association claims that Sweden already has one the highest retirement ages in Europe and there are discussions about lowering the retirement age in other countries. To do the opposite in Sweden is considered to be unacceptable, as the Swedish Air Traffic Controllers Association refer to that few air traffic controllers at the age of sixty are able remain focus when handling traffic in a complex and high density environment. They claim that not raising the retirement age it is simply a matter of security (M. Wikerberg, personal communication, 2006-11-22).

All air traffic controllers employed by Luftfartsverket are retired at the age of 60 and the remaining five years needs to be financed by the company throughout their whole time of employment. This is because the pension costs from the age of 65 is covered by the government and the cost burden of the five years must be financed by the company. It is possible for a private operator to choose to not apply this rule and keep the employees working for five more years until they reach the age of 65 (assuming they live up to the medical requirements). A private alternative could then avoid to finance these five years and at the same time save resources as they need to replace fewer personnel (R. Sandelin, personal communication, 2006-11-13). Below is an illustration of the age of retirement where the additional cost for financing the final five years is marked with red. Luftfartsverket need to finance these five years throughout the employment time of personnel which makes the cost of personnel much higher.

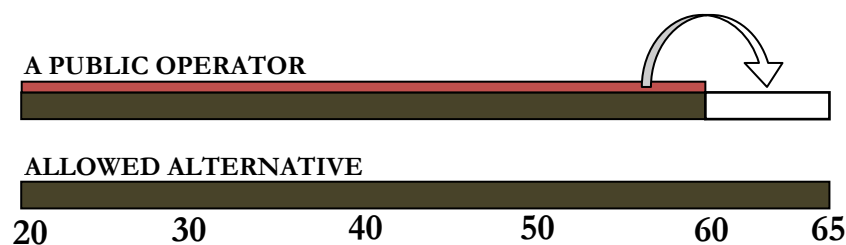


Figure 4.1: Age of retirement

The view of Aviation Capacity Resources is that they are open for allowing air traffic controllers working longer than the age of 60. The current retirement age is a general rule without connection to the individual. If an air traffic controller at the age of 60 is still healthy and excited to work, they should be given the opportunity to do so. The age span is not an important issue, but what is more relevant is what they can contribute with. After a long career an air traffic controller possess a great amount of experience and it would be of great benefit to use this expertise, even if it is in a related field and not operational as air traffic controller (J. Blyckert, personal communication, 2006-11-30).

- **Tariff based salary system**

Air traffic controllers today are paid according to a tariff based salary system. This means that they begin their career with a low entry level wage which during their initial years sharply increases annually, which then stagnates. In addition to this, there are general salary negotiations with the union that shifts the curve upwards with a small percentage every year (approximately 2-3 percent) (R. Sandelin, personal communication, 2006-11-13).

The graph below is an illustration of the tariff based salary system. The y-axis of the graph represents the movement of the salary of air traffic controllers, while the x-axis show the time of employment. The curve shows the tariff development of the salary in relation to the time of employment. The salary of air traffic controllers is sharply increased after a relatively short time on the job, after this, the salary keeps increasing over time but not in the same distinct manner. The arrows show the upward shift of the curve (salary increases) as a result of union negotiations. Please be advised that the figure is merely used for illustrative purposes and is not an exact display of the salary system.

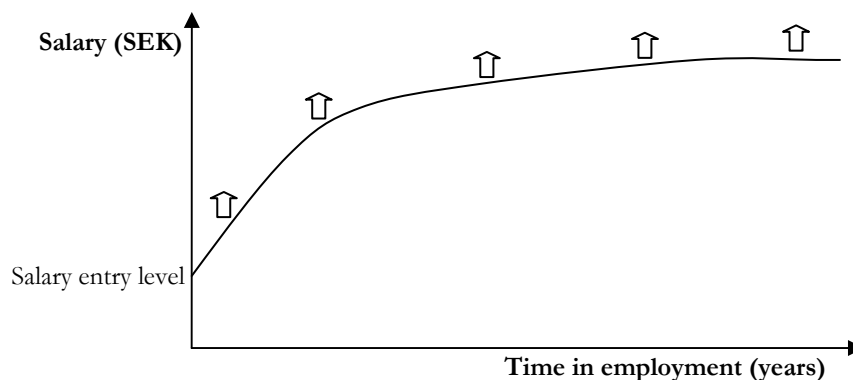


Figure 4.2: The tariff salary system

A private alternative in air traffic control is not forced to use the tariff based salary system. Individual salary negotiations could instead be used which according to Luftfartsverket would probably enable cost savings (R. Sandelin, personal communication, 2006-11-13). However, moving towards an individual salary based system is strongly opposed by the Swedish Air Traffic Controllers Association as they argue that their main priority is security and nothing else. The air traffic controllers security mindset and skills should be a standard, applicable for all individuals, either one lives up to the demands (practical and medical) set by the authorities or the person is not allowed to work as an operative. This results in that an individual salary system in the air traffic control business would not be a recommended method (M. Wikerberg, personal communication, 2006-11-23).

The entry level salary is approximately 19.000 SEK per month, while close to pension many air traffic controller have salaries of over 50.000 SEK per month (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). The Swedish salaries are considered low in an international comparison, and a deregulation and European cooperation is expected to raise them (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

A review of the tariff based salary system will probably be done by a new private actor since it is considered to be a highly unfair system. Compensation is given after time of employment without relation to the individual performance or competence. A lower entry level wage could be motivated, but after an introduction period when one is considered to be fully operational, it can not be motivated that two persons doing the exact same job with the same education and certification could have totally different salaries (in theory the difference could be over a double salary). Therefore an individual compensation system is preferred by Aviation Capacity Resources, but also because it is considered to be more dynamic. It is however, important to remark that it does not only have to be monetary compensation. If an individual approach is made, one could customize the rewards to each employee after their individual needs. The need for alternative compensation types could vary during the employment period, for example if one perhaps prefer one extra week of vacation or education before a higher salary. More responsibility should also be rewarded with higher compensation, as in any other commercial business (J. Blyckert, personal communication, 2006-11-30).

Aviation Capacity Resources is prepared and understand that there is a large resistance towards an individual salary system. This is seen as a consequence of the difficulty of introducing a new concept into a mature industry characterized by institutional thinking and procedures (J. Blyckert, personal communication, 2006-11-30).

- **Recruitment policy**

Unavoidably, people of all ages work as air traffic controllers as in any other organization. The different age segments have different salaries ranging from newly graduated, young people with lower salaries to people close to the retirement age with higher salaries. This may be an important factor for a private actor to look into. As this range makes it possible to lower the cost of a specific air traffic control by employing labor that require lower salaries (R. Sandelin, personal communication, 2006-11-13).

In theory it would also be possible to only hire the best people with the highest productivity rate. However, according to both Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) and Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) this selection would not provide a competitive advantage as the selection would be difficult and the education puts the employees in the same productivity spectrum.

According to Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) it might be possible to recruit personnel that match the company's culture. Meaning that employees who value the entrepreneurial atmosphere or would like to work in operations abroad could become more attracted to a new alternatives. The Swedish Air Traffic Controllers Association claim that many leaving Luftfartsverket for a new private employer would do that due to dissatisfaction. However, in an expanded answer this was applicable mainly to those who have chosen to move abroad for working in another country due to the higher salaries. It is claimed by the Swedish Air Traffic Controllers Association that there are no other major factors related to having Luftfartsverket as an employer other than

that salaries are not considered internationally competitive (M. Wikerberg, personal communication, 2006-11-22).

Aviation Capacity Resources claim to not have an ambition to employ younger persons, since without a tariff based salary system this would not mean any reduction of wage costs. Instead their recruitment policy is on employing personnel with the “right” attitude, meaning people that are attracted by a new innovative and flexible company (J. Blyckert, personal communication, 2006-11-30).

- **Labor contracts**

The current work conditions for air traffic controllers are regulated in a specific agreement called “LAVA” (“Lokalt Anställningsavtal”). A part of this agreement are specifics concerning the vacation. At the moment, all air traffic controllers employed by Luftfartsverket are in this agreement guaranteed a four week vacation during a three month period between the 15th of June to the 15th of August. This means that in theory, during any given day of this period, operations are at least down to 67 percent of the working capacity (as 33 percent of the personnel is on vacation). Therefore, this downturn in capacity must be supplemented by additional human resources. The tasks of air traffic controllers are of such nature that it is impossible to merely supply this additional working capacity through seasonal recruitment. Hence, this additional capacity remains within the company throughout the year. Consequently, this means that between the 15th of August and the 15th of June there is an overcapacity of air traffic controllers. According to Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) this situation is referred to as the “1.4 factor”. For example, in a local air traffic control service where four full-time employees are needed, this rule creates the need of employing six air traffic controllers. However, due to this overcapacity during most part of the year, there is a possibility of transferring personnel to other tasks, for example to support the internal education of new air traffic controllers and projects.

According to internal estimates by Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) if this regulation would be altered to that of air traffic controllers instead would be guaranteed a three week summer vacation instead of four weeks, or that if the vacation period is prolonged by four weeks, this would create an overcapacity of 66 air traffic controllers. Below is a figure illustrating this relation:

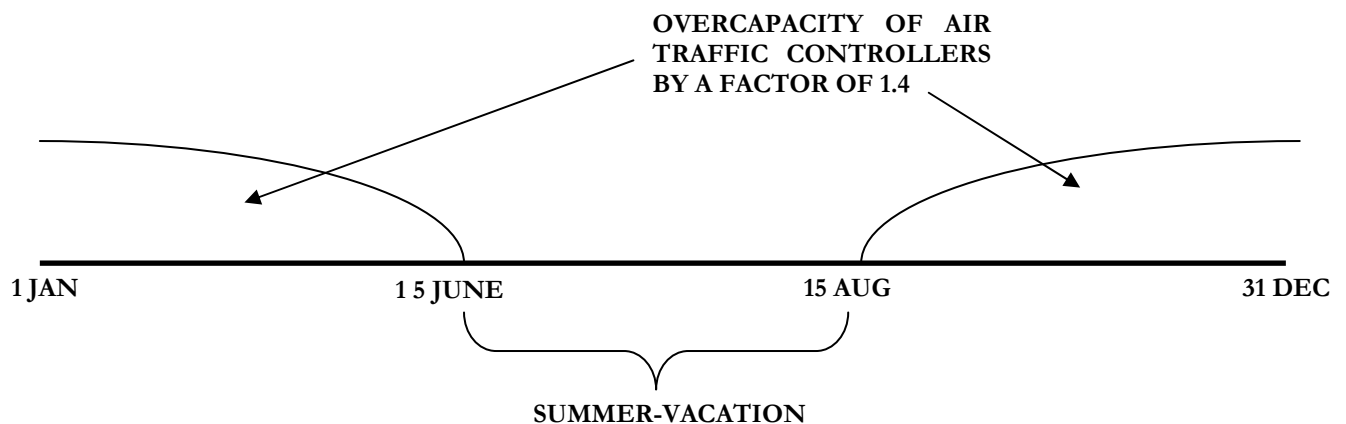


Figure 4.3: Overcapacity due to the vacation system

The union is an important part of the organization, especially if a new salary system is introduced. Aviation Capacity Resources (J. Blyckert, personal communication, 2006-11-30) even goes as far as claiming that the union is a part of the company. An agreement has therefore already been initiated with a union counterpart (“Flygarbetsgivarfacket HTF”) to establish good relations.

Aviation Capacity Resources claim that this overcapacity of personnel is a constructed item, which should not be viewed as a must as it is solely created by tradition. They claim that the phenomena could be managed and changed if more flexible and individualized methods are used. Blyckert (personal communication, 2006-11-30) gives an example of this where for example an air traffic controller could be offered a week of paid vacation in Spain for the whole family during the fall instead of one week vacation during the summer. If innovative and transparent tools are used in cooperation with the union and employees it could instead result in for example a 1.2 factor. It could also be possible to achieve a figure under 1 if personnel can be used across airports (J. Blyckert, personal communication, 2006-11-30).

- **Non-value adding activities**

The revenue model (further explained in appendix 3) of full cost cover means that it ensures payment of all costs. This leads to that no real incitements for improving productivity and efficiency (Luftfartsstyrelsen, 2006). Operations in such an environment is often characterized by building up non-value added elements, often in non-related activities, such as heavy administration (T. Andersson, personal communication, 2006-11-23).

This is according to Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) not the case for air traffic control as they have pre-empted competition by prioritizing a focus on this concern during the last years. They further claim that they are one of the most productive air traffic control services in the world. The interest from new private competition have also contributed, in this sense, to a positive impact on this focus. In the words of R. Sandelin (personal communication, 2006-11-13): *“There had long been a threat of a wolf that would come and take over our business, and suddenly the wolf became a reality which made all our employees fully realize the threat”*. This is one of the main reasons behind for enable a reduction of costs to users with 19 percent in 2005 (Luftfartsverket, 2005).

The Swedish costs for air traffic control are close to average in Europe (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

- **Air Traffic Controllers in other tasks**

There are two aspects to this. The first is to use the resources available at the airports in new tasks, but it could also be seen as the tower provides the relation and contact to offer more services relating to airport management.

Aviation Capacity Resources see great opportunities, but can not yet specify what kind of additional services that could be offered to the airports. They would like to stress that air traffic controllers are a highly skilled group and any new tasks must match their competence. To use educated air traffic controllers for example in baggage handling is not considered to be a good idea as it would be wasting their potential (J. Blyckert, personal communication, 2006-11-30). SALAR (F. Jaresved, personal communication, 2006-11-30) claim that this kind of high competence often is lacking at smaller airports and therefore a great

benefit for the airports to be offered and take advantage of this resource. Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) is currently evaluating to expand their offering to the airports and mentions the management of passenger lists as an example of additional tasks. SALAR (F. Jaresved, personal communication, 2006-11-30) gives writing reports as an example.

The Swedish Air Traffic Controllers Association has also identified this as one of the most likely ways for an private actor to be able to offer lower costs and increasing revenue by differentiating working tasks. However, this is considered to be difficult, as they claim that very few air traffic controllers are willing to accept such new tasks (M. Wikerberg, personal communication, 2006-11-22).

- **Keep operations at a minimum level**

To keep operations at a minimum level with the only aim to fulfill minimum standards might be part of a business concept (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). However, Sandelin (personal communication, 2006-11-13) opposes this suggestion since he claims that Luftfartsverket has gone through many rationalizations and reduced labor costs as much as regulations and laws allow.

- **Strike tendency**

Air traffic controllers have the capability to cancel thousands of flights which, in theory, gives them significant power. This power has not been disregarded and air traffic controllers all over the world have used it to put on strikes in order to pursue their determinations in working conditions, such as salaries and working hours. One of President Reagans most unforeseen and notorious decision was to fire eleven thousand air traffic controllers who, in conflict with federal law, went on strike. This surprisingly increased his popularity as people perceived the air traffic controllers as more interested in making money rather than ensuring safety and efficiency (Wolodarski, 2006).

Similar situations as the one in the US have also occurred in Europe, and in many countries, the national air traffic control organization is still a monopoly-employer for a small group of people with significant power (Wolodarski, 2006).

In the airline industry, this use of power, is well known and one of the foremost reasons to set the air traffic control market under competition (Wolodarski, 2006). Some strikes that have caught the attention of the Swedish and Norwegian media have been when in September 2004; chaos emerged as the air traffic controllers in Norway initiated a work stoppage just when the Norwegian spring vacation had begun. In April 2005, huge vacancies due to supposed illness in Malmö and Sturup caused hour-long delays and cancellations. In May 2005, during on-going wage negotiations several key workers in Malmö and at the Stockholm called themselves sick and their substitutes withheld which lead to huge traffic delays (Wolodarski, 2006). However, the Swedish Air Traffic Controllers Association decline that air traffic controllers have a higher tendency to strike than any other group of workers. They claim that it is the media: *“that love to write about these ‘catastrophe’ headlines simply because it sells”* (M. Wikerberg, personal communication, 2006-11-22). They also claim that these delays are due to the fact that Luftfartsverket is extremely slimmed down, meaning that they have just enough people for working on the margin (M. Wikerberg, personal communication, 2006-11-22). Being on the margin means that even the smallest setback in form of sick calls from employees can have a large effect on the tasks of the organization. This can result in the delays mentioned earlier, and this is what the media calls a strike. The

Air Traffic Controllers Association however argue that it is very uncommon among air traffic controllers to call in sick due to the responsibilities they have (M. Wikerberg, personal communication, 2006-11-22). At many airports in Sweden the tower is manned with only one person (R. Sandelin, personal communication, 2006-11-13), which in turn makes it difficult for an operative air traffic controller to be absent (M. Wikerberg, personal communication, 2006-11-22). Being absent is often claimed to be due to the need of good mental balance to perform the job and that the lack of sleep or personal problems might affect this and an air traffic controller therefore need to oppose when required (M. Wikerberg, personal communication, 2006-11-22). Vacancies due to sickness in Luftfartsverket (not only air traffic control) is on average 13.9 days per employee and year (Luftfartsverket, 2005).

In Sweden, the next large wage negotiations for air traffic controllers will take place during 2007 and it is impossible to forecast whether strikes would occur again (R. Sandelin, personal communication, 2006-11-13). In case strikes would occur, they would converge with- and perhaps affect the Swedish governments' decision to privatize the air traffic control market.

However, due to the economic difficulties of the smaller municipality airports in Sweden and their regional dependency, their air traffic controllers are less likely to strike as they often sympathize with their local community and their employer. That is why, strikes at these airports have been extremely rare and still, it would take great lengths for these air traffic controllers to go on strike. This is in contrast with the larger airports and En Route centres where strikes are more likely and have occurred more frequently (R. Sandelin, personal communication, 2006-11-13).

- **The view of Aviation Capacity Resources**

Aviation Capacity Resources (J. Blyckert, personal communication, 2006-11-30) points to three parts where they create a superior offering than the current public operator:

- Personnel (individual treatment, motivation and involvement of staff, no top down management)
- Union agreement (that enables flexibility)
- Dialogue with the customer (adjust offering to the need)

5 Analysis

The analysis aims to answer the research questions presented in the introduction chapter. Our empirical data is analyzed by using the theories from our frame of reference.

Since there are no generally accepted theoretical models to show the value drivers in a privatization process (Megginson & Netter, 2001), we will approach this chapter with a systematic discussion and interpretation of our empirical findings supported by our frame of reference.

At this moment a monopoly still exist within the air traffic control market in Sweden, but a deregulation process has been initiated by investigations that highlight issues regarding the actual implementation. According to the Ministry of Industry, Employment and Communication, there will be an assignment from the government to Luftfartsstyrelsen with a mission to investigate the exact details of a possible deregulation of the air traffic control market. Because this process involves a number of changes in laws and regulations, it will at the earliest open the market for private alternatives during the fall of 2007. In this research it has become evident that the process has gained support from politicians across the political spectrum, according Jaresved. The main reason behind this is claimed to be due to regional politics as it is a question of survival for the small regional airports. The non-state airports themselves see this as a way of being able to have influence over their own cost structure. This is especially important when it is assumed to enable an opportunity for lowering their costs. The politicians have the view that any potential costs savings will ultimately be distributed to the airline passengers through lower ticket prices. This is assumed to create a multiplier effect increasing tourism that will subsequently stimulate growth. These benefits for the society as a whole are argued to be the most considerable reasons for privatization according to Moazzem and Malbon (1998).

Some problems have been pointed out regarding the establishment of competition on equal basis and the actors have radically different views in some of these issues. One of the issues concerns the responsibility of educating air traffic controllers, which today is organized and financed by Luftfartsverket. Another large issue is the obligation of Luftfartsverket to always supply services if no alternative exist. Aviation Capacity Resources strongly reject these arguments and further consider them as deliberate attempts to delay the deregulation process. These arguments will, however, be further investigated in an upcoming investigation and it must therefore be assumed that these issues will be resolved before the actual deregulation is implemented. For a privatization of the air traffic control market to have beneficial effects, it is vital that it is based on equal and fair competition. As presented in the theoretical framework it is not privatization per se that cause the benefits associated with it, but they are rather the result of the competition created (Granslandt & Nyberg, 2002). Sclar (2000) argues that there are some important aspects that needs to be taken into consideration when privatizing as there may be few actors involved that might not be sufficient to create a dynamic competitive environment. As Statskontoret (2006) stated that the market probably is to small for doing this, there is a risk of a duopoly. One way of being sure that there is a market size large enough to support a number of actors who are creating a viable competition is by expanding the deregulation to also incorporate the state airports. This would then definitely attract interest from more actors, including foreign ones. However, some claim that what the government is actually seeking to achieve is not the introduction of competition per se, *“which is rather illusory in this industry”*, but rather to create private enterprise structures, in order to reduce costs (Richter, 2005). This

industry is highly regulated, dominated by state conglomerates and depends on infrastructure which leads to long contracts.

In a deregulated market, new private alternatives would be allowed to enter the market. These new actors have the possibility and the ambition to perform certain activities differently than the current public actor. It is these differences that are expected to yield a higher efficiency and reduced operating costs. Current privatization theory points out these arguments as key benefits from a successful privatization, together with economies of scale, efficient dynamic selection, and a faster pace of innovation (Granslandt & Nyberg, 2002). These are, however, of general nature and do not apply to all industries. A common rationale that most can agree on is that new actors can commence from a blank sheet. Hence, they are less internally regulated and institutionalized which enables them to have a more dynamic approach that allows them to operate faster and more flexibly. The purpose of this research is to identify the differences that enable this.

Our empirical findings have highlighted certain differences in activities between a private and public alternative and we can conclude that the most important aspects appear to be:

- **Treasury bills vs. open-market yields of retirement funds**

The opportunity for a private actor to invest retirement funds in more yielding alternatives is assumed to create a benefit. Even though the open market investment alternatives can be of higher risk, experienced management could successfully use this to achieve a higher return, as it has been for the case of Jönköping University.

As for public organizations, such as Luftfartsverket, they are obligated to follow a more restricted and heavily regulated policy for the management of retirement funds. This is an inhibiting factor for investment growth of retirement funds. However, if the Swedish government would change these regulations for public organizations, allowing them to place funding on the open market, an experienced management is required due to the higher risk and volatility that follows with a different risk and return ratio. Today the current yield ratio is 2.5 percent which the authors believe could be enhanced. The government has, as of today, no incentive to change restrictions for public organizations, as high investments in treasury bills create cheap and low risk finances for the state.

Luftfartsverket, Luftfartsstyrelsen, SALAR, and the Swedish Air Traffic Controllers Association assume that this issue regarding retirement funding is one of the most important factors that enables the creation of a low cost structure for private alternatives. Aviation Capacity Resources does, however, not see this as a mean for gaining a competitive advantage. It will impact their cost structure but the benefits are minor and leveled out with other features beneficial for state owned organizations. Though, it is clear that Aviation Capacity Resources have an interest in this issue since one of their board members is the managing director of the sixth Swedish national pension fund (“6:e AP Fonden”).

The authors believe that this is a clear benefit for a private alternative in this issue since it can, if managed well, enable a lower cost through higher yield on these investments. The current regulations for state-run organizations will probably sustain since there are no indications pointing for a change of this within a near future.

- **Retirement at 60 vs. retirement at 65**

All air traffic controllers employed at Luftfartsverket are retired at the age of sixty and the remaining five years up to the national retirement age must be financed by the organization itself. International recommendations and Swedish laws allows a retirement age of 65.

Aviation Capacity Resources see this as an opportunity, if the employees are healthy, willing and suitable to work longer. They claim that a retirement age should instead be determined by individual attributes and needs and that there are wide varieties of among employees. Hence, they perceive this rule as an unfair generalization that does not have to be implemented at all. However, this viewpoint is strongly opposed by the Swedish Air Traffic Controllers Association which further propose a *lowering* of the retirement age. Having interviewed both parts, we perceive this as a very likely clashing point between the Swedish Air Traffic Controllers Association (representing employees) and any potential private actor. If this would be implemented by a private actor it is possible that it would stimulate a more acceptable view of a retirement age beyond 60 and that it might even be implemented by the current public operator in a long term perspective.

The authors perceive the strict regulation concerning retirement age to be of a very generalized nature. If a person is capable and willing to work there are no reason for him or her to be forced into an early retirement. The retirement age regulation neglects the individuals capability and willingness to keep working and therefore a more flexible approach to retirement age would be more efficient and definitely contribute to reduced costs. If any physical or mental obstacles exist for an air traffic controller it should be the ambition of the employer to find other tasks that instead could be assigned. In addition to this, a more controversial viewpoint could be if an employee does not want to work, but is fully capable of it, he or she should still continue to work for five more years. If an actor would implement a higher retirement age it would be beneficial for the society as a whole as it otherwise would be a waste of working capacity. This could be evened out with the notion that a privatization would lead to lay-offs and that the government need to support these people. The difference here is that these people are still part of the labor force and could find new jobs, as in contrast with retirement where people permanently exit the labor force. This is still in line with the notion that privatization is beneficial for society as a whole and not just for the specific industry (Granslandt & Nyberg, 2002).

- **Compensation to employees**

Through our empirical findings, we have seen how the tariff based salary system is widely agreed to be outdated, inefficient and unfair. A private actor will put a lot of effort to change this system and replace it with an individually based approach. The current system is based on rewarding time of employment rather than competence. A private actor would in an individually based salary system introduce tools for rewarding for example individual initiatives which the current system lacks. These tools would allow rewards according to the needs and wishes of employees, which could for example be further education or the use of a company car, assuming this would be preferred over monetary compensation.

One could believe that there would be a positive response to this from employees, but the Swedish Air Traffic Controllers Association have not shown any interest in this, as they claim that competences of all employees are the same. The authors have the view that employees contribution to a organization consists of more than a formal competence. The statement from the Swedish Air Traffic Controllers Association can be regarded as deeply rooted traditions that are blind to alternative approaches. Aviation Capacity Resources acknowledges that there might be different reactions to this, by employees, but at the same time points out that those who want an alternative are the people that his company wants to work with. He is also aware of that this will be a controversial feature since it is so different to what is traditionally exercised. The tariff based salary system is also a deeply rooted and accepted paradigm of Luftfartsverket, a state-owned and institutionalized monopoly organization. There has not yet been any allowed alternatives to this system of

compensation and it has therefore been taken for granted and accepted as the only possible and “right” solution. For a private alternative, a transition away from this system would therefore be a difficult task to achieve, but still much easier than it would be for a public alternative. There is a possibility for Luftfartsverket to also change this, but since this has been such an accepted system, great internal resistance for change could be expected. If a private alternative is successful with another compensation system, it would probably influence Luftfartsverket to follow their example.

After a deregulation has taken place foreign alternatives would probably have the opportunity to enter the Swedish market. This would then assumingly visualize the differences in salaries between Sweden and other countries. According to Luftfartsstyrelsen Sweden has lower salaries than the average in Europe. The Swedish Air Traffic Controllers Associations identifies low salaries as a significant factor for dissatisfaction of employees at Luftfartsverket. Dissatisfaction related to salaries have proven to be the main reason for the strikes that have occurred in Sweden. The next large wage negotiation will take place during 2007 and as this converge with decisions from politicians concerning the deregulation, any conflicts might influence this process.

Avoiding strikes could be one of the motives for privatizing the air traffic control market (Wolodarski, 2006). In the sense of that a privatized market creates more alternatives that better can match the needs of an individual employee. Actors can beyond salaries also introduce attributes that create an attractive working environment, education programs and other privileges. These different alternatives of compensation can be aimed to satisfy individual needs of each employee. As a result of higher internal satisfaction the tendency for strikes can be diminished. Less disruptions of the service allows the market to function in a more consistent and uninterrupted way, as a market with less strikes ought to be more efficient and there through beneficial for the society and economy as a whole (Schwartz & Lopes, 1993; Miller, 2000).

According to Luftfartsverket small non-state airports are staffed with few air traffic controllers who often have strong personal bonds with the local airport and the region. This makes them very engaged in the survival and development of the airport. This would also probably make them more receptive for new ideas from a private alternative that focuses on increasing efficiency and reducing costs. A transition phase from a public to a private alternative would in this aspect probably be easier and more successful.

- **Recruitment policy**

According to Luftfartsstyrelsen it might be possible to recruit personnel that match the company’s culture. This is an important part of the recruitment strategy of Aviation Capacity Resources. It is important for them to find employees that have matching attributes valued by the company. This could for example be people who want to work in an entrepreneurial atmosphere or work in operations abroad.

Another possibility pointed out by Sandelin, is the recruitment of younger air traffic controllers with the purpose of talking advantage of lower salaries. Aviation Capacity Resources claim that this is not truly applicable in their case as they do not have the ambition to use the current tariff based salary system and thus hiring young people would not have any importance. However, young people are believed to be more attracted to Aviation Capacity Resources company culture.

- **Full utilization of staff**

A significant part of labor and union contracts (LAVA) is the guarantee of a four week summer vacation (between the 15th June and the 15th of August). This is what creates the so called “1.4 factor” which means that there is a 40 percent overcapacity during nine months of the year. Aviation Capacity Resources claim that this overcapacity of personnel is a constructed item by Luftfartsverket and that it should not be viewed as a must as it is solely created by traditions. They claim that this could be managed and changed if more flexible and individualized methods are used. Let us say that employees instead are given three weeks of vacation during the summer or offered different options one can preempt the overcapacity. A vacation during the summer is of course very attractive, but it is not impossible to offer other attractive alternatives, especially since having less vacation time during the summer would create a multiplier effect during the whole year.

The vacation rule, creating overcapacity, must be considered to be one of the most inefficient problems of the current public operator, since this aspect itself creates a need for overcapacity during the larger parts of the year. This is especially limiting since this overcapacity can barely be utilized in a larger scale resulting in poor internal efficiency. The only continuous way of using the overcapacity is as instructors during education of new air traffic controllers. Since there is according to Luftfartsstyrelsen only a need for about seven instructors during the non vacation time, only a marginal of this overcapacity can be put into use, and the remaining part could be considered a cost burden.

Air traffic controllers are perceived as a specialized work group without substitutes, seasonal employment is therefore basically impossible. Due to these reasons, the overcapacity is generally accepted by Luftfartsverket and currently not under review for any changes. As Aviation Capacity Resources, without going into specific details, points out, there are a number of innovative ways to change this dependency, especially since a private actor is more free in its options. They consider the current overcapacity of 40 percent to be a totally constructed matter and a smaller figure should be possible. Other options are either to decrease the need for the overcapacity, or to utilize the overcapacity in an economically efficient manner. In decreasing the overcapacity, labor contracts are the key, while in using the overcapacity differently, including other tasks in the air traffic controllers work is necessary. Many involved parties have identified this possibility of using air traffic controllers in additional tasks, including Luftfartsstyrelsen, Luftfartsverket and Aviation Capacity Resources. The airports show a great interest in using this competence, as higher valued administrative staff is uncommon at smaller airports. The Swedish Air Traffic Controllers Association has the view that few tasks will match the high level of competence of air traffic controllers. Due to confidentiality it has been difficult for the authors to retrieve information about the exact nature of tasks that might be assigned. However, some tasks such as managing passenger lists and general administrative work have been indicated.

The authors believe that there is an opportunity to offer a wider service package offering to airports. This package could be highly adjusted and customized to the specific needs of a certain airport. The authors are also of the opinion that this industry will follow the current managing trend of outsourcing. By managing local air traffic control at airports an operator would gain an a presence and a relation which would enable them to incrementally offer a wider array of services. These does not have to be limited to be performed by air traffic controllers per say, as they could be considered to be overqualified for some tasks. Evidence supporting that this is a part of the strategy of Aviation Capacity and Resources is that one of the board members is an executive of the staffing company; Proffice.

It is highly probable that a private alternative want to change labor contracts into a more flexible solution that would enable them to gain higher efficiency in use of internal resources in regard to the current vacation system. However, other opportunities include a higher utilization of personnel by allocating them in additional tasks. Experiences collected from other countries identify this as a key enabler of creating value in a privatization process, for example introduction of more flexible work schedules. This can also be related the benefits presented by Granslandt & Nyberg (2002) where the pressure of competition forces private firms to utilize their resources in a more efficient manner. A private firm need to constantly find new ideas and solutions for increased efficiency which in turn allows generation of profits. This pursuit for profits is what creates this divergence in objectives between a private and public alternative according to Schwartz & Lopes (1993) and Miller (2000).

- **Non-value adding activities**

Due to the full cost cover charging model there is a lack of incitements for making operations more efficient. This could according to research of privatization lead to added costs that are not tied to the core operations of the organization as this model provides compensation for all costs no matter whether they are directly relevant or not. The authors believe that Luftfartsstyrelsen as a regulative agency must focus increasing this transparency in order to control costs. This should also be a diminishing problem as Luftfartsstyrelsen soon receives new tools to examine these costs (including the right to perform inspections on site). This is however further complicated by the operational and organizational complexity of Luftfartsverket as there exist many cross divisional projects within the organization. In theory, there could also be benefits by having the airports within the same organization as it, for example, could facilitate negotiations between the different departments and personnel transfers. The airports, through SALAR, claim that Luftfartsverket has been much better at decreasing their overhead costs and they have not been as vast as before, but still they point out that the costs for air traffic service could be further decreased. Luftfartsverket, on the other hand, assert that they are already fully slimmed down and operate on to the margin with practically all personnel in operations.

Luftfartsverket has recently announced dramatic price cuts of some air traffic control charges. These price cuts concern the en route service, but it is fair to assume that its cost structure is not much different from the air traffic control at airports, for example an interesting issue then becomes that the price cuts have not been explained by any causes or visible reasons. There has for example not been any lay-offs which definitely should be the highest generator of costs savings. The lack of any declared or obvious reasons for these dramatic price cuts leads to suspicion that there is an oversupply of resources that easily instead could be distributed to decrease charges. Also, that this radical event is happening right now could be a sign that they are trying to forestall the deregulation, especially since up until recently the costs have instead been increasing which is the very reason for why the airports have initiated and sought for a deregulation. This is interesting since when air traffic control has been privatized in other countries, large cost-cutting programs have been initiated in many cases. These have mainly lead to lay-offs in personnel. For Luftfartsverket the main source of cost consists of 95 percent labor costs and consequently this is where most saving can occur. Aviation Capacity Resources claims that lay-offs are not necessary as new working tasks could instead be added.

5.1 Limitation of analysis

Having declared all these possible and probable differences, it is important to keep in mind that they are explored, discovered and treated with the current public actor and its way of operating as a point of departure. In reality, a private actor will act from its own paradigm and not from anyone else's, and they would perhaps have completely different ideas on how to operate which are closely tied to their competitive advantage as a company in an open market. It has been evident to the authors that potential new actors of air traffic control could not reveal or discuss everything that they would do differently as this, very understandably, is confidential and part of an actors core business strategy for creating competitive advantage. There is therefore a possibility that some differences in activities has not been revealed to the researchers. There also exist a possibility that ploy activities have been presented to the researchers in an effort to use our report to confuse competitors. However, even if certain details are not part of the report, the authors are confident that the key differences have been detected after extensive contact with industry expertise. Regulations also prohibits too large deviations from the current operations.

Another limitation is that the authors have only investigated one potential private actor within the market. This limits the possibility for generalizing those findings to be applied to all potential private actors. Also when comparing a private alternative with the current public operator, it is easy to find differences between them, but, if one instead would compare two private actors with each other it would be much more difficult, but also probably more contributing in the sense of detecting innovative solutions.

At the current stage, the report lacks practical evidence of its findings as the deregulation process has not yet been finalized. Nevertheless, this is what actually adds value to the report as it is unique in its context and contributes to the current discussion.

6 Discussion

The authors have identified a number of differences between a public and a private actor. However, if competition instead would be between two private alternatives, few of these differences would exist between the alternatives. The authors have mainly identified two factors relevant to such competition. Company culture would be a vital component to operate more efficiently with for example an exceedingly motivated personnel. The other component would be the relation with the airports where operators could be partners for other services as well. Aviation Capacity Resources seem to have already initiated this notion with a probable expansion of work tasks and a close cooperation with Proffice, one of the largest staffing company of Sweden.

Let us also point out that a possible scenario could be that the airports themselves could integrate air traffic control into their own operations. An airport could in a deregulation process easily manage the tower operations themselves by recruiting the staff in the specific tower. It is also possible that an interest organization, such as SALAR, could establish a specific company for this task and there through enable economies of scale.

Many of the proposed changes might be assumed to face resistance from labor unions and employees. However, the reasons for this are natural since any established and deep-rooted system is difficult to transform. And also, any changes cannot be beneficial for all parts of an organization, and some people will undoubtedly feel threatened.

There is also some criticism claiming that the air traffic control market in Sweden is too small for creating truly dynamic and efficient competition, some even claim that the market size at its best will create a duopoly (Statskontoret, 2006). It is also true that the market is highly limited in the current proposal of a deregulation. Even though it is only the non-state airports that are part of this process, this does not pose as an obstacle for private alternatives to show interest in entering the market. A new private actor is expected to yield enough cost reductions to motivate its existence on the market. Also, if a new private actor is able to offer cost reductions while maintaining the same required safety standards, there is no reason for why the state airports also should not be included in this process. In the long run, it is already expected that the state airports will be included in the deregulation. Consequently, even though the current market might seem small it is therefore still very attractive. The en route service is also in the eyes of private actors and could also be expected to be deregulated some time in the future. The authors have discovered that there is not the same level of experience in privatizing the en route service in other countries, which could make it less appropriate in Sweden as well. The possibility to offer additional services by using air traffic controllers in wider tasks or using the relation established through the towers at airports also makes the market further attractive. The current market estimations are therefore not entirely accurate and larger market value is probably to be expected.

7 Conclusions

The authors will in this chapter summarize the findings of the research and fulfill the purpose of this thesis.

The purpose of this research was to identify differences between a public and private alternative in an upcoming deregulation of the air traffic control industry in Sweden. The authors have identified the following differences that all can, and most probably will, be implemented by a new private operator:

- **Treasury bills vs. open-market yields of retirement funds**

A private alternative will definitely take advantage of the possibility to achieve a higher yield on its pension funding investments through placing them on the open-market.

- **Retirement at 60 vs. retirement at 65**

The mandatory retirement age of 60 years with no connection to capability and willingness to work will definitely be a subject to change for a private actor.

- **Compensation to employees**

The current tariff based salary system is widely agreed upon to be outdated, inefficient and unfair. The introduction of individually based salaries is believed to enable increased internal efficiency for a private actor.

- **Recruitment policy**

To establish alternatives beside the current monopoly employer introduces a variety of company cultures that better can match employee needs.

- **Full utilization of staff**

A private actor will definitely take advantage of utilizing staff more efficiently. This is mainly achieved through introducing more flexible solutions for schedules and vacations. To increase efficiency and revenues air traffic controllers will probably also perform additional tasks.

- **Non-value adding activities**

A private actor will construct its operations in such a way that it will minimize non-value activities in overhead costs. This is possible due to that the business can be constructed according to the needs of the customer.

A privatized market would be small, and many claim that the few actors involved might not be sufficient to create a dynamic and competitive environment. However, in an extended privatization where also the state-owned airports could be included (and possibly the en route service), together with an international convergence, the full beneficial effects of a privatization would be generated. As identified above, many of the differences are due to a static market as caused by a monopoly. These differences in activities would therefore create an immediate effect after a privatization as the increased efficiency already has been acknowledged.

7.1 Suggestions for further studies

As the deregulation process has not yet been finalized the report is written through a hypothetical approach as there still are no private companies operational in Sweden. It therefore becomes evident that there is a potential for a continuation of our work where the industry and the differences are evaluated *after* the actual deregulation have taken place. A follow up study would be of a more practical approach and the possibility to add physical evidence to the findings would add credibility impossible for us to gain in this current research. The authors have the ambition to make ourselves, our data and material available for a project with this approach as it benefits our understanding and learning of the knowledge creation in this thesis project.

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APPENDIX 1 | Definition of Air Traffic Control

Appendix 1 defines the air traffic control industry including customer framework and market size.

The primary purpose of the air traffic control system is to prevent collisions between aircrafts. The task is therefore to keep aircrafts safely separated from each other while operating in controlled airspace as well as on the ground, during take-offs and during landings (Noland, 2004).

There are different types of air navigation services provided to support these functions. A main separation can be made between the En Route service (flights over Swedish territory) and the air traffic control service at airports (during takeoff and landing, see figure A.1). To support these there is a couple of additional support services, such as infrastructure and weather information. In the current deregulation process there are at the moment no plans to open all these air navigation services for private alternatives. The only part where a deregulation might become accessible for private alternatives is the air traffic control at the airports. Another constraint is that the private alternatives will only be allowed to operate at non-state airports (privately- and municipality owned) which further limits the volume of services provided to the national air navigation system by private alternatives (R. Sandelin, personal communication, 2006-11-13).

This can be further explained in the illustration below adapted from R. Sandelin, personal communication (2006-11-13). (The Area Control, ACC inserted in dotted lines is the En Route service and the access provided for private alternatives to these services is highly limited in the current deregulation).

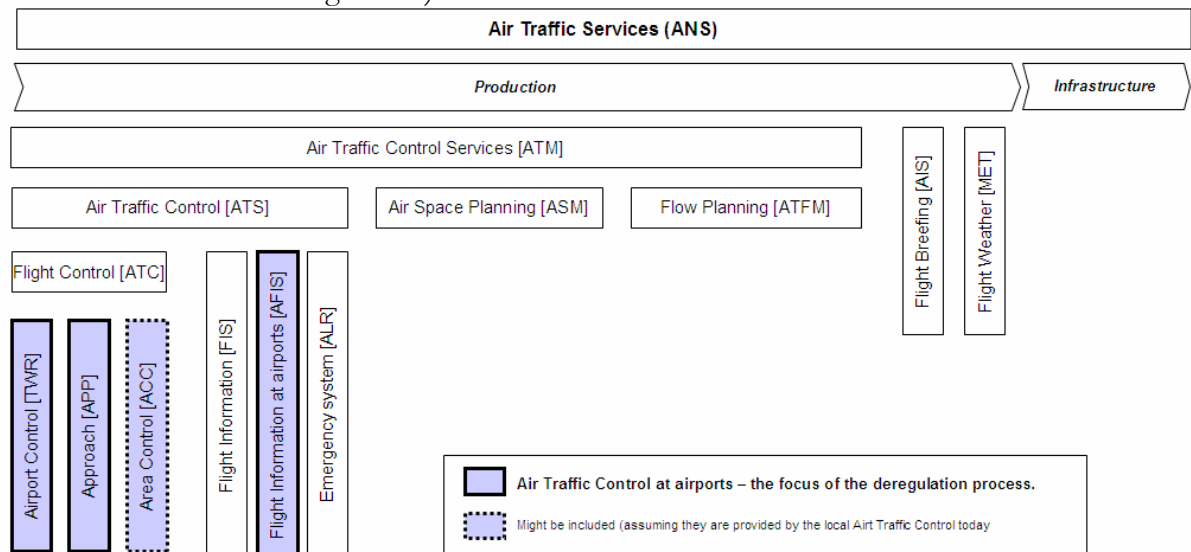


Figure A.1: Air navigation services at Luftfartsverket

Since air traffic control services in Sweden today are performed in the form of a monopoly by Luftfartsverket, it becomes of interest to examine the current organization of air navigation services. Below is a simplified illustration showing the current organization of Sweden's operative and regulative authority for air traffic control (Illustration adopted after personal communication with R. Sandelin at Luftfartsverket, 2006-11-13).

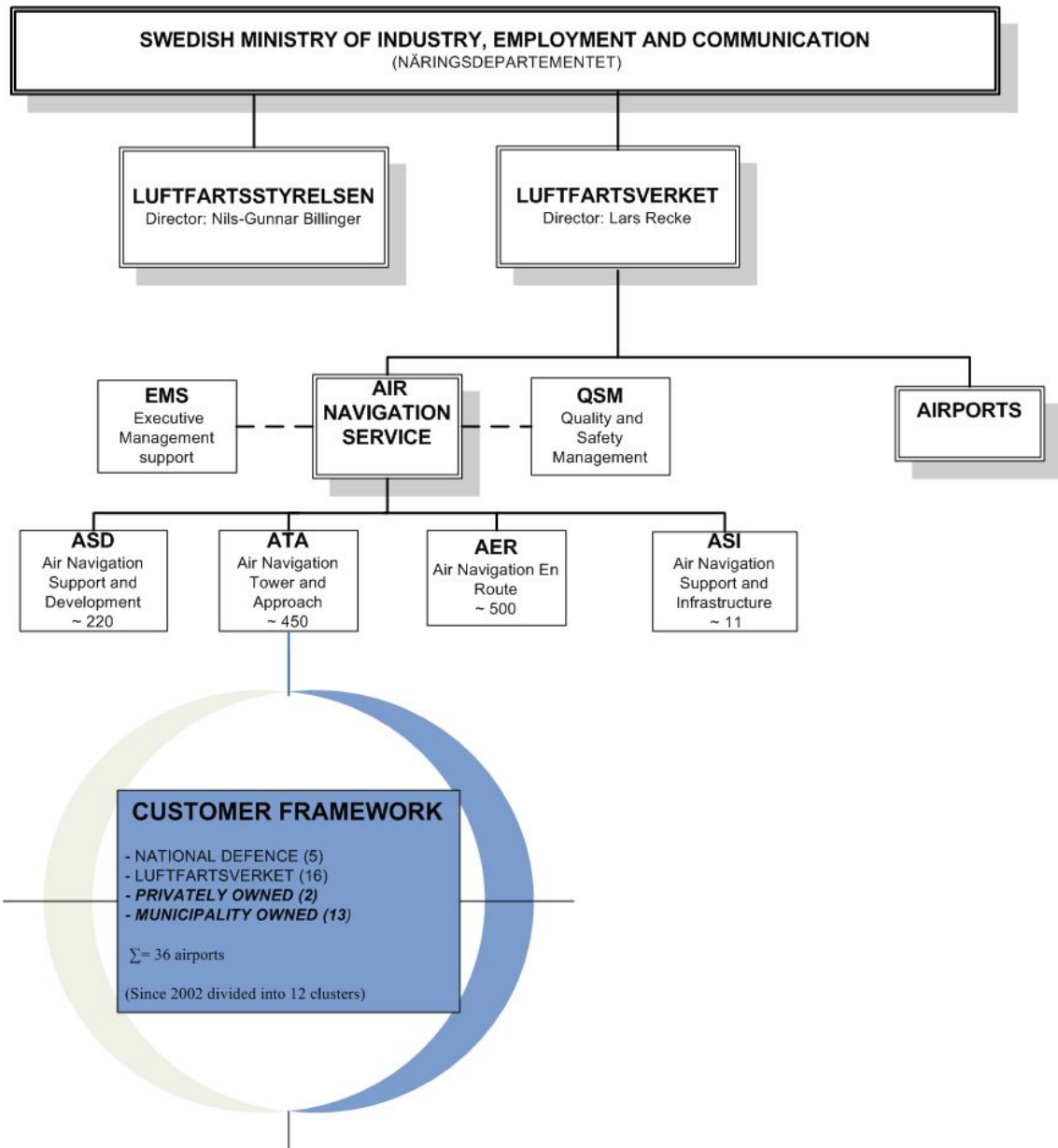


Figure A.2: The organization of Sweden’s operative and regulative authority for air traffic control (simplified model)

In 2005 (through government proposition 2004/05:10) Sweden separated the regulative and operational production of air services. Luftfartsstyrelsen oversee and control the market while Luftfartsverket handles the state airports and air traffic control. Both of these organizations report to the Swedish Ministry of Industry, Employment and Communication (“Näringsdepartementet”).

Luftfartsverket has subsequently divided its operations into two divisions, one managing the airport operations and the other handling the air navigation services, including air traffic control (R. Sandelin, personal communication, 2006-11-13).

The air navigation service (ANS) is further divided into four divisions together with two support functions. The management and development of infrastructure is divided into two of these divisions; Support & Development (ASD) and Support & Infrastructure (ASI). The Support & Development division manage and develop the technical infrastructure on the assignment from the Support & Infrastructure division. The reason to why infrastructure is separated in two divisions is that one should act as an internal consultant to the one responsible and there through constantly motivating its costs and internal funding. The approximately 220 employees in Support & Development, mainly with a technical background, provide services to the Support & Infrastructure where 11 employees coordinate the efforts (R. Sandelin, personal communication, 2006-11-13).

The actual production of air traffic control takes place in the remaining two divisions. The En Route (AER) division is responsible for leading and controlling airplanes in the air over Swedish territory from two centrals located in Malmö and Stockholm. There are a total of 500 employees ensuring this service. This part of air traffic control is not at the moment part of the deregulation process (R. Sandelin, personal communication, 2006-11-13).

In addition to the En Route services, air traffic control also consists of services at the airports, organized in a separate division, Tower & Approach (ATA). This division is organized in 12 clusters responsible for supplying 36 airports in Sweden with air traffic control in the airport towers. There are four customer groups: the state owned airports (16, managed by Luftfartsverket), municipality owned (13 airports, often organized in the form of a company), privately owned airports (Skavsta and Linköping) and airports belonging to the Swedish National Defense. This is the part of Luftfartsverket that in a deregulation process would be in competition with new private alternatives. It is however not all operations that will be subject to competition as not all customer groups will be able to contract a private operator at the moment. The state airports (including the Swedish National Defence) will continue to use Luftfartsverket as their only supplier of air traffic control services. It is therefore only to the municipality and private airports (a total of 15) that a private operator will be able to supply with their services (R. Sandelin, personal communication, 2006-11-13).

The Tower & Approach division is supported by a staff of 450 air traffic controllers, with almost all are operational in the production of the service. An important feature is that since all infrastructure is organized in another part of Luftfartsverket this division is primarily a staffing organization with 94-95 percent of the costs related exclusively to labor (R. Sandelin, personal communication, 2006-11-13). Luftfartsverket claim that because 95 percent of the costs are personnel costs there exist no room for extensive cost cutting as rules and regulations minimize the potential for cutting these costs. Aviation Capacity Resources has another perspective on this issue. The important part for them is not the percentage cost, but how the 95 percent is used. By being more efficient one can achieve higher production through current resources. Therefore the wages will probably remain as 95 percent of costs, but with an increased efficiency creating additional value (J. Blyckert, personal communication, 2006-11-30).

This separation of infrastructure and air traffic controllers in separate division means that all airports must have two negotiations with Luftfartsverket. One for infrastructure and one for staff to provide the service. These negotiations are mainly performed around only one parameter, which is price. The airports have however at the moment limited space for negotiation as they need the product which is only supplied by one actor (R. Sandelin, personal communication, 2006-11-13).

Luftfartsverket promotes two main benefits with their current way of organizing. The main one is that airports are separated from air traffic control in a separate part with no links in-between them. The other benefit is that infrastructure is separated from the air traffic control operations, which enables different suppliers of the two (R. Sandelin, personal communication, 2006-11-13). These separations ease the problems in a deregulation process (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

A new air navigation system has recently been installed and put into use during 2006. The new system, Eurocat 2000E, offers an increased automatization and air traffic controllers have now left the manual system with printed labels on bricks. The system has already enabled rationalizations, but the major benefit is that productivity can increase without increasing staff (Luftfartsstyrelsen, 2006).

Customers of air traffic control

Both airports and airlines are the customers of air traffic control. However in the specific services that are part of the current deregulation process the airports are the strategic customer as they make the decision of who to contract.

The Swedish airport market are dominated by state and municipality airports. The state airports also dominate the traffic as they include the major airports, including the three largest, Stockholm Arlanda, Göteborg Landvetter and Malmö Sturup (Luftfartsverket, 2005). The airports in most other countries in Europe are also characterized by a large government ownership, but some countries have initiated a privatization process of the airports (Denmark's largest airport Copenhagen Kastrup is for example owned by an Australian company) (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). At the moment the Swedish parliament have initiated an investigation with the assignment to review the airports in Sweden with the findings presented in December 2007 (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). In the government budget proposal for 2007 (Proposition 2006/07:1) the new government informs that additional instructions will be included to this assignment including to investigate if the state should sell airports to private operators.

Many airports in Sweden are not profitable, but still remain in service due to regional politics. Luftfartsstyrelsen (2006) approximate the total loss of the airports to approximately 500 million per year. About half of this loss is from state airports. The state airports are however part of a so called airport system where Luftfartsverket use internal cross subsidies from the profitable airports to support the other airports. Also the airports owned by municipalities and private companies are supported by the government through a state contribution (mainly designed to supports flights to and from Stockholm). This covers approximately half of their deficits (Luftfartsstyrelsen, 2006).

For many of the airports the highest cost item after salaries is the cost for air traffic control. This is at the same time one of the only costs that the airports have no possibility to impact, due to the current Luftfartsverket monopoly on these services. According to an alliance of Swedish municipalities (Sveriges Kommuner och Landsting, 2006) there was in the beginning of the millennium a period of air traffic control cost increases without any explaining reasons which are seen as a proof that Luftfartsverket fully decides on how the service is performed and to which price (Sveriges Kommuner och Landsting, 2006).

Market size

The market value of air traffic control at non-state airports in Sweden is by Luftfartsstyrelsen (2005) approximated to between 50-60 million SEK. The overall market value, including the state airports, is approximated to be over 400 million SEK (Luftfartsstyrelsen, 2005).

In a reply to Luftfartsstyrelsen, Banverket (2006) criticize that no calculations have been made to evaluate the cost to implement a deregulation of these services, which is expected to somewhat minimize the potential gains that this process can create. Statskontoret (2006) has a similar view where they are not sure that the small market size is enough to create conditions for a well functioning competition. They on the other hand promote that also the state owned airports should be included in the process and there through drastically enlarging the size of the market (Statskontoret, 2006).

Aviation Capacity Resources (2006) argue that the market of air traffic control is significant higher and approximate the market in Sweden to 2 billion SEK. Included in this figure is in addition to the state owned airports also the En Route centrals. They further approximate the total market for air traffic control in Europe to 70 billion SEK (ACR, 2006).

APPENDIX 2 | Air Traffic Control operators

Appendix 2 is a brief summary of potential actors of the air traffic control in a deregulated market.

Luftfartsverket

Luftfartsverket is a business oriented government agency (“affärsdrivande verk”). Approximately 4000 employees create a yearly turnover of 5.7 billion SEK. The vision is that the customers should consider Luftfartsverket as the good example of cost efficiency, safety and functionality (Luftfartsverket, 2005).

Since 2002 there is an ongoing cost saving program, which along with a prudence in investments is designed to create a financial stability in all market conditions (Luftfartsverket, 2005). In November 2006 Luftfartsverket announced that as a result of these savings they will do their largest cost reduction of air traffic charges ever (www.lfv.se).

The main source of income is based on fees from airports and air navigation services, accounting for 60 percent. The remaining 40 percent of the revenue is from other businesses than the core service, mainly from property and retail operations in and around the airports (Luftfartsverket, 2005).

During 2005 Luftfartsverket directed 298 055 landings, totalling in over 29 million passengers (Luftfartsverket, 2005).

Aviation Capacity Resources AB

Aviation Capacity Resources AB was founded in September 2003 to supply air traffic control services in Sweden. The business idea is to in a cost-efficient manner operate air traffic control services En Route and at airports, both in Sweden and internationally. Some of the key aspects are to act as a part of the customers organization, minimize the customers overhead costs, tailored solutions, long term focus and always put safety first (ACR, 2006).

As the deregulation process have taken time a subsidiary has been created, ACR International, that offers air traffic control education on the international market. The company has today contracts in the Middle East and are constantly evaluating offering similar services in that region (J. Blyckert, personal communication, 2006-11-30). It is according to Blyckert (personal communication, 2006-11-30) a great advantage to be a Swedish company during contract tenders in this region, especially when in competition with UK and US companies. This is mainly due to Sweden’s neutral policy and the Swedish Queen.

The CEO, Jan Blyckert, is the former manager of the Luftfartsverket air traffic controller education. One of the main owners and chairman of the board, Jan Carlzon, is the former CEO of Scandinavian Airlines (ACR, 2006). Other board members are the CEO of Profice, one of Sweden’s largest staffing companies and The Sixth National Retirement Fund (“6e AP Fonden”).

Foreign operators

The aviation industry is in its essence international with actors operating across national borders. The air traffic control is however still performed within national borders. In a deregulation process foreign actors would be allowed to supply their air traffic control services as long as they are certified by a government agency in any of the EU member states. This certification guarantees that all actors fulfill the same safety standards (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

Luftfartsverket believes that no foreign operators would be interested in supplying air traffic control services at the airports that now potentially will be open for private companies, due to their small size (R. Sandelin, personal communication, 2006-11-13). Sveriges Kommuner och Landsting has another view and is certain that foreign actors will be interested in entering the Swedish market. They have previously initiated contact with private air traffic control operators in other countries, including DFS in Germany and NATS in UK. The small size of the market could in itself not be attractive, but the interest lies in a expected expanded deregulation where the state airports also would be included. It would then be a great confidence attribute to already be established on the Swedish market (F. Jarved, personal communication, 2006-11-30). Aviation Capacity Resources fully agrees in this view (J. Blyckert, personal communication, 2006-11-30).

APPENDIX 3 | The deregulation process in Sweden

Appendix 3 provides the reader with an insight into the environment surrounding air traffic control, describes the current process and identify issues important in a deregulation process.

The air traffic control is part of the Swedish transportation system which has the main goal "to ensure a for society efficient and long-term sustainable supply of transportations for the citizens and corporate community in the whole country" (Riksdagen Proposition 1997/98:56, *Transportpolitik för en hållbar utveckling*). In the same framework the Swedish government outlines two dimensions to ensure this efficiency in transportation. The first is to supply and price infrastructure in a way that is beneficial for efficiency. This is emphasized in order to force users to use infrastructure in the way that is the most optimal for society as a whole, in other words that taxes and charges are distributed upon the users based on the costs created (while on the other hand for example environment friendly solutions are rewarded with incentives). The second part is to ensure that the suppliers of transportation services participate in a competitive environment. This is in order to make suppliers closely match pricing after their costs (otherwise someone else will take over and deliver more value to the customers; so called creative destruction). By competition suppliers are also given incentives to increase productivity by improvements and innovation (Riksdagen Proposition 1997/98:56, *Transportpolitik för en hållbar utveckling*).

Transportation is by the European Union (EU) classified to be one of the most important areas, especially because it is considered to be the key behind a European integration with the goal to "to make Europe the place where business initiatives can unfold most easily in the world" (Prodi, 2002 in WSWS, 2002). At the heart of this was earlier the deregulation of the airline industry. In 1993 the EU introduced regulations that enabled new airlines to establish themselves anywhere in Europe, and in 1997 all airlines based in the EU became allowed to supply traffic within and between all the member states of the EU (Luftfartsstyrelsen, 2005). There is in parallel to this a process of privatization of the airlines from protected "flag carriers" to parts in a fully deregulated competitive market. This have exposed many of these companies to new competition (including "no frills" alternatives) on real market conditions without a safety net and during several years European airlines have therefore been synonymous with mass sackings, wage cuts and business collapses (WSWS, 2002). The Swedish international and domestic air traffic market is due to the implementation of these regulations characterized by a open competition where all actors must match costs and prices closely in order to survive. This open competition is however not evident in all parts of the airline transportation value chain. The air traffic control is such a function where there for the Swedish national airspace and at Swedish airports, only exist one supplier, Luftfartsverket. There is therefore at the moment a nonexistent competition including the pricing of these services (Luftfartsstyrelsen, 2005).

In addition to this there is the process of the Single European Sky project which has been initiated by the European Union with the long-term vision to create a uniform European air space. The idea is to improve efficiency, capacity and safety by restructuring the European air space away from national limitations and boundaries into larger air spaces oriented to the main traffic streams (WSWS, 2005). This is mainly due to pressure from the airlines (Luftfartsverket, 2005). The organization Eurocontrol, which Sweden is a member of since 1996, has the mission to oversee this integration. The background is that every country still will be responsible and free to decide which actor should provide the air traffic control services over the own national territory, but the idea is to coordinate and cooperate over borders in larger geographical areas. In the parliament proposition 2005/2006:160 the Swedish

government believes that the best solution for this process would be to integrate the other Nordic countries into one joint airspace. Luftfartsverket has for that reason been ordered to investigate how cooperation with the other Nordic countries can be designed. Luftfartsverket are therefore at the moment working with Naviar in Denmark to investigate how a common airspace could be created in a project called NUAC, which might be implemented sometime after 2008 (R. Sandelin, personal communication, 2006-11-13). The ambition is to also implement more countries in this cooperation (Luftfartsverket, 2005). This would however only concern the on route air traffic control services and would therefore not hinder or impact a deregulation enabling private actors to operate air traffic control at the airports (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). One of the key ideas behind creating a uniform European air space is also to overcome the legal and technical differences that at the moment splinter it. In Europe 2002, 49 air traffic control centers operated within the context of 31 national systems. The computers used 22 different operating systems and 30 programming languages (WSWS, 2002). Deregulation, privatization and competition is supposed to harmonize much of these differences.

The World Socialist WebSite (WSWS, 2005) claims that it is certain that only a handful of the current approximately 40 providers of air traffic control in the EU will remain. This is something that is also evident to Luftfartsverket (2005) which have observed an intensified creation of cross national alliances. According to the World Socialist WebSite (WSWS, 2005) smaller countries will be swallowed up in larger air spaces and their own air traffic control systems either taken over or be shut down making the market dominated by a few large actors. This is also an issue that Luftfartsverket (2006) raise pointing to the potential entry of foreign, often state owned, air traffic control operators. As Sweden would be one of the first countries to open up for competition in air traffic control services these foreign companies would be able to operate in Sweden, as the Single Sky framework allows all operators to supply services in all the other EU member countries, if certified in one of the member states, while Swedish operators can not (yet) compete on their home markets (Luftfartsverket, 2006). If more countries however would be deregulated Luftfartsverket would like to take an active part of this process (R. Sandelin, personal communication, 2006-11-13). They are at the moment evaluating the competition in several countries and are especially attracted by this due to evidence that many of the foreign competitors are experienced to be far from the Swedish efficiency in air traffic control services (R. Sandelin, personal communication, 2006-11-13). In a potential entry to foreign markets it is important to motivate this expansion with having a fair competition on the home market and the current deregulation process in Sweden could therefore be in the interest of Luftfartsverket, despite that their monopoly is abolished (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

In a process to deregulate and open air traffic control for private companies there is a couple of steps that need to be initiated. In the regulations around the Single European Sky that was implemented in 2004 there was a demand of a separation between the governmental control and producing part of air traffic control (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). The main idea behind a separation of these functions is that the supplier of a service should not control itself (but also including the credibility problem due to the confusion over where the government duties ends and the private begins). This separation was therefore implemented in Sweden in January 2005 through Riksdagen proposition 2004/05:10 (*En ny Luftfartsmyndighet*). The content of this law was to separate the previous Luftfartsverket into two parts: Luftfartsverket that continues to run the state owned airports and air traffic control, while creating Luftfartsstyrelsen who is responsible

for control and coordination without any revenue generating activities. The idea was however initially (Riksdagen proposition 1999/2000:140) to also separate the airport operations from the air traffic control. This was however not incorporated in the law and today both of these activities remain in Luftfartsverket. Aviation Capacity Resources (ACR, 2006) claims that a separation between air traffic control and the management of airports are crucial for a successful competition. Private and municipality airports that compete with airports managed by Luftfartsverket should with a separation not be forced to buy services from their biggest competitor. It would also create an incentive for state airports to use the competition on the market to use the supplier that offers the best quality to the best price. A separation between airports and air traffic control services would also make revenue and costs fully transparent and there through prevent any potential cross subsidies (transfer of resources from monopoly part into the part where competition exists) (ACR, 2006). According to Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) this is not an issue as the two activities are organized in standalone divisions without any links or cross subventions.

This separation of the government and control functions from Luftfartsverket in January 2005 was assumed to enable private companies to offer air traffic control services to privately owned airports. Four airports (the privately owned Skavsta & Linköping and the municipality owned Kristianstad & Växjö) immediately initiated the process of enabling for other operators of their air traffic control services. In the end of 2004 they cancelled their contracts with Luftfartsverket in order to begin a procurement process including new private alternatives (Luftfartsstyrelsen, 2005). Tenders were received from both Luftfartsverket and a new supplier, Aviation Capacity Resources AB. However during the treatment of the tenders there was a number of issues emerging creating uncertainty around the process. The main concern was that Luftfartsstyrelsen can certify and approve a new operator of air traffic control services, but can at the moment not appoint (“designera”) any other supplier than Luftfartsverket. Luftfartsverket can through a paragraph however appoint another actor to supply air traffic services, but the regulation was originally incorporated to enable suppliers such as SMHI (Swedish National Weather Agency) to deliver weather services to Luftfartsverket and therefore not fully tailored to the current situation. This means that the market is open for private companies, but the right to operate the specific service must be transferred to them from Luftfartsverket (their biggest competitor). Due to these problems and unclarities the Swedish Ministry of Employment, Industry and Communications (“Näringsdepartementet”), that both Luftfartsstyrelsen and Luftfartsverket reports to, decided that the old regulations were valid until the new regulations could be further investigated and developed. This meant that the Luftfartsverket monopoly on air traffic control services remains and the procurement process was therefore aborted. The private alternatives has therefore today not the same access to the market as Luftfartsverket decides not only if a competitor can enter the market, but also which one. According to Aviation Capacity Resources (2006) it is unreasonable that Luftfartsverket can decide who should supply the air traffic control services as that should be decided by the airports themselves as long as the supplier is approved and certified by Luftfartsstyrelsen (or similar authority in another EU country). The current situation also means that Luftfartsverket gains access to the competitors tenders and business secrets. As a consequence of this confusion the Government gave Luftfartsstyrelsen an official assignment to investigate what potential legal and technical problems that would be faced in a deregulation of air traffic control. The result was the Luftfartsstyrelsen, 2006:4 (“*Flygtrafik tjänst – bara i statens regi?*”) report. Luftfartsstyrelsen had already initiated this process earlier by writing a previous report (Luft-

fartsstyrelsen, 2005:5, “*Flygtrafiktjänst i Sverige*”) on its own initiative with the intention to examine the prerequisites for allowing private actors of air traffic control in Sweden.

These reports points out a number of problems that would exist in a deregulation process and that needs to be solved. The latest report have during 2006 been distributed to a number of actors that have added their opinions to the report. Almost all the replies support a deregulation process. Many of them point to specific problems due to that Luftfartsverket would remain a very dominating actor. Statskontoret (2004:28) claims in a report that all companies controlled by the government should act and be exposed to the same conditions as other companies on the same market. Therefore the key to a privatization process is not only to legally allow private companies, but also to manage the specific issues that might hinder an efficient competition. Some of these key issues are further explained below:

Infrastructure

There is a problem in a privatization process that potential new service providers will be dependent on parts of Luftfartsverket infrastructure, their biggest competitor (Luftfartsstyrelsen, 2006). According to Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) the issue is almost completely solved by the fact that most of the equipment is owned by the airport itself. Nevertheless there still exist predicament, for example that Luftfartsverket owns and controls all the radar and communication systems which is necessary for air traffic control operators to have full access to (Luftfartsstyrelsen, 2006). Services like this are today made available to all the airports for a “reasonable” cost (for example the transfer of radar data where only the telecommunication cost for these must be paid) as these are not created with the aim to supply air traffic control at airports (but mainly to operate the En Route air traffic control service) (R. Sandelin, personal communication, 2006-11-13). It is therefore the view of Luftfartsstyrelsen that this would not create a problem in a privatization process (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). Luftfartsverket agree in this view (R. Sandelin, personal communication, 2006-11-13; Luftfartsverket, 2006). This issue could however become a problem if the state airports also would be made able to contract a private operator to supply their air traffic control services, due to that all the infrastructure on those airports are owned by Luftfartsverket.

Statskontoret claims in a report (Statskontoret, 2004:28) that the best solution in markets with high dependence on infrastructure that must be shared is to introduce a vertical separation. This means that all infrastructure is separated from the previous monopolist and organized in a standalone organization. This is assumed to be the organization form that creates the best conditions for competition between the operators, mainly due to that a pure infrastructure company has less incitements to prevent competition than a company that have downstream production in competition with other companies. This is also the approach that OECD (Organization for Economic Cooperation and Development) recommends. If instead of implementing a vertical separation and only enable access for new competitors to the former monopolists infrastructure there exist a number of limitations. One of them is the difficulty to decide the cost for the access to these systems, but it is also assumed to limit the incitements for development and larger investments in infrastructure. A standalone entity that solely manage the infrastructure would have no incentive to provide benefits to one of the actors and access would be priced after cost (Statskontoret, 2004:28). According to Konkurrensverket (in Luftfartsstyrelsen, 2006) there is in previous cases of similar deregulation in Sweden (in the telecommunication and post markets) evi-

dence of that the dominating former monopoly actor have tried to limit competition by using the wrong pricing for access to infrastructure.

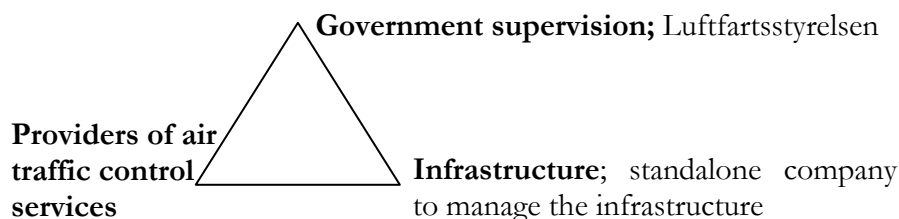


Figure A.3: The recommended organization according to Statskontoret and OECD

Luftfartsstyrelsen (2006) point to the train deregulation case where the infrastructure was separated in a standalone company, Banverket. In this case it was however considered impossible to separate the traffic control from the infrastructure and both these activities still remains in Banverket and are not open for external private operators (R. Sandelin, personal communication, 2006-11-13).

The view of Luftfartsstyrelsen is that infrastructure will be available to new actors at competitive conditions in a deregulation process with their supervision (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). However to have the ability (the legal right) to oversee these transactions (“särreglering och prisövervakning”) they will need to be given this assignment by the government in an extension of their assignment (Svenska Kommuner och Landsting, 2006). Luftfartsstyrelsen also points to the need to investigate this specific issue in a more detailed study (Luftfartsstyrelsen, 2006).

Education

In a privatization process of air traffic control it is vital that new actors can gain access to education and educated personnel (Luftfartsstyrelsen, 2006). This education is not per se performed in the form of a legal monopoly, but due to the monopoly in air traffic control it is in practice. The education of air traffic controllers are today performed by Luftfartsverket which recently together with their Norwegian (Avinor) and Danish (Naviair) partners have founded a jointly school, Entry Point North in Malmö (Luftfartsstyrelsen, 2006). The school was inaugurated in 2006, owned by one third each and is at the moment the sole provider of this education in all three countries. Previously all students was guaranteed a job at Luftfartsverket, but this is no longer the case (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

The school has as its ambition to in the long term also accept students from other companies and countries (Luftfartsstyrelsen, 2006). One issue complicating this is that the education of air traffic controllers is not government founded. The complete education is organized, managed and financed by actors in the market through Luftfartsverkets charges on air traffic (but the students receive loans (CSN) from the state to support their personal costs) (Luftfartsstyrelsen, 2006). Many (including Luftfartsverket, 2006; Sveriges Kommuner och Landsting, 2006; ACR, 2006) would like that the government incorporated this education into the ordinary education systems where education is financed by the state budget. The government opposes this in the government proposition 2005/2006:160. According to Luftfartsstyrelsen (E. Sallfeldt & A. Hietala, personal communication 2006-11-01) this is believed to be due to that the government has no incentive in taking on the costs of this

education which today is financed outside the state budget. This would however make a privatization process easier as the issue of Luftfartsverkets natural monopoly on education would be ceased and all actors would have the same access to educated personnel. An integration like this has previously been made for the education of airline pilots where it today is offered through Lund University, a state financed university (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). There is also at the moment plans of initiating an education of air traffic controllers in Arvidsjaur by Luleå Technical University (“Luleå Tekniska Universitet”) through a state financed approach, but the plans are still at a theoretical level (J. Blyckert, personal communication, 2006-11-30).

Luftfartsverket has the view that this issue must be solved before a deregulation can take place in order to create a fair competition on same conditions (R. Sandelin, personal communication, 2006-11-13). If it is only one of the actors organizing and financing the education of a whole industry then a new supplier of air traffic control services could simply recruit air traffic controllers from that actor and there through taking advantage of that the education and training of these already are paid by their largest competitor (R. Sandelin, personal communication, 2006-11-13).

The education is today financed through charges on En Route traffic. The cost for the education is therefore attributable to the airlines, and in the long link to ticket prices paid by airline passengers. Therefore no cost of education is attributed to the air traffic control at airports. According to Aviation Capacity Resources this issue should therefore not impact a deregulation or make the competition unfair in any way (J. Blyckert, personal communication, 2006-11-30).

Obligation to supply service

Sweden is member of the United Nations sub organization ICAO (International Civil Aviation Organization) and as a member the Country of Sweden has committed to supplying air traffic control services in accordance with the Chicago convention (the framework for international air traffic) (Luftfartsstyrelsen, 2006). This means that the Swedish government are obligated to supply air traffic control over Swedish territory. This becomes a problem if a private operator of air traffic control services stop supplying their service to an airport (for reasons such as bankruptcy or cancellation of contract). Another supplier must then step in to ensure that there is no impact on air traffic in and over Sweden, something the Swedish government have committed to in international agreements.

In the Luftfartsstyrelsen (2006) report this backup (“tillhandahållandeplikt”) should be organized by ordering Luftfartsverket to step in and supply the service if no other suppliers are available. This is something that Luftfartsverket heavily opposes in their reply to the report as they would be forced to always have a constant backup of personnel and resources to cover a potential takeover of services from private actors (Luftfartsverket, 2006). If this regulation would be incorporated in the final legislation Luftfartsverket (2006) demand that the industry should help to cover the cost of this backup capacity. Even if this would be the case Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) declare that it in practice would be a very demanding and difficult task as they in theory would be forced to have personnel standing by to take over all the privately operated air traffic control services as it can not be assumed that the current personnel stays in a potential cease of service. This is therefore one of the key issues that must be resolved before private companies can be allowed enter the market (R. Sandelin, personal communication, 2006-11-13).

According to Aviation Capacity Resources this is a theoretical argument designed to forestall the privatization process and claim that this issue would not be a problem. If a private actor would go insolvent Luftfartsverket could easily take over the actual staff and continue operations without any complications (J. Blyckert, personal communication, 2006-11-30). Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) claims that a new private actor in theory could cease operations in Sweden and move staff to operations in other countries. This is not possible according to Aviation Capacity Resources as that would destroy the confidence of the company which would make it impossible to attract new customers. Aviation Capacity Resources also ask Luftfartsverket to define any costs for supplying this backup capacity; something they claim is zero (J. Blyckert, personal communication, 2006-11-30).

Revenue

The revenue model for air traffic control at airports is a combination of two sources in a so called 45/55 charging scheme (also a 90/10 charging scheme exist for some airports). Below is a graphical illustration of a horizontal view of the airspace (adapted from R. Sandelin, personal communication, 2006-11-13). The image is used for illustrating where and to which user (airports and airlines) the costs are charged.

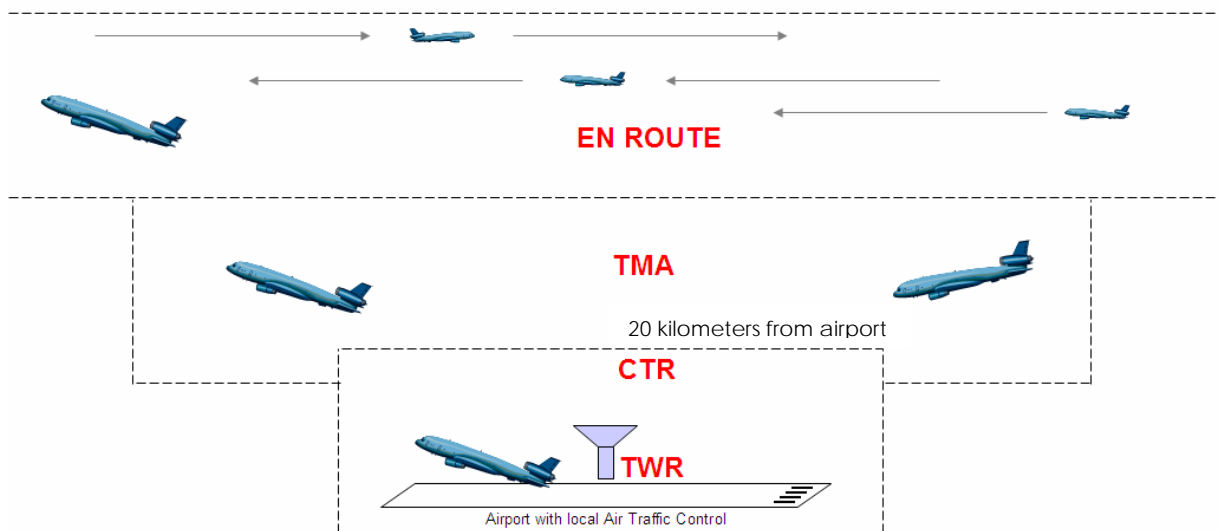


Figure A.4: Cost chart of air traffic control services

As displayed above the local air traffic control at an airport offers two major kinds of services. The natural one includes ground movements of airplanes (TWR) and the takeoff and landing of aircrafts, which includes aircraft movement within 20km of the tower in the Controlled Zone (CTR). The other is that the airports provide air traffic control services to the national En Route system outside this range, mainly when the planes are approaching or leaving in the Terminal Area (TMA). This zone is entered because it takes time for the airplanes before they reach their cruising attitude and at the same time they descend long time before they land. Based on these two activities the traditionally accepted rule split the cost model into two parts, made up of 55 percent En Route fees while the remaining 45 percent is paid through the local airport (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

The process is that the local air traffic control service at the airport summarizes all its costs for delivering its services. These are examined by Luftfartsstyrelsen for approval (which legally have full transparency into the financial figures and from 2007 inspections on site will also be implemented according to new EU directives). These figures are also compared in European benchmarking (where Sweden is approximately average) (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). 55 percent of the costs are summarized and presented to the airlines who settle the cost. The 45 percent attributable to the local airport is paid by the airport, but subsequently covered through a Terminal Navigation Charge or a start/landing fee to the airlines. The rule of a 45/55 split is only a theoretical approach which has been used for a long time (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). According to Luftfartsverket (R. Sandelin, personal communication, 2006-11-13) this charging scheme is up for review and is highly probable to change within the coming two years (change by charging airlines directly). This system means that it is the users (both airports and airlines) that settle the cost outside the state budget and accepting all the financial risk (Luftfartsstyrelsen, 2006).

Since the charging model is based on full cost cover, it also means that all costs savings will be distributed to airports and airlines, as the system does not include a profit prerequisite for the air traffic control provider. This means that it needs to be a change in some aspects in order to be attractive for a private profit oriented company.

Not a full privatization

There are two major limitations in the ongoing privatization process that limit its size. First is that it is only the private and municipality owned airports that potentially will be able to choose their own supplier of air traffic control. The state owned that represent a majority of the air traffic are at the moment not part of this process. The size of the market is therefore limited from its full potential. Luftfartsstyrelsen believes that the state airports also can be part of the privatization process, but in a later stage (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). Aviation Capacity Resources (2006) see no reason to why the state airports should not be part of this process.

The other large limitation is that it is only air traffic control at the airports that are included and the en route air traffic control will not be opened for private operators in the current process (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

Aviation Capacity Resources believes that approximately half the Swedish air traffic control market (including also the state airports) provides significant economies of scale. Because the operations are between a service and a staffing company there is a need of volume to achieve efficiency and profitability (J. Blyckert, personal communication, 2006-11-30). To operate just one (1) airport is not optimal for efficiency and there is a need of some volume (F. Jaresved, personal communication, 2006-11-30). This creates a problem in the sense that a public monopoly could be exchanged towards a duopoly, with two strong actors. The best solution according to SALAR (F. Jaresved, personal communication, 2006-11-30) would be to use some kind of segmentation where airports are clustered together in the purchase process, making an operator responsible for a number of airports and there through reaching the critical volume for optimal efficiency.

This would also solve another problem. The cost of operating a specific service is highly related to the persons working in the specific tower. Because salaries are and will remain the absolute highest cost item the cost will differ between similar towers and over time. If airports are clustered together in the purchase process it will even out the differences between the different airports, making no specific service suffer due to a high age structure.

Air safety

Some argue that air safety might be impacted due to the cost savings associated with enabling private companies to operate air traffic control services. The WSWS (2005) especially points to two accidents that have occurred during the recent years in Europe. In the summer of 2002 two planes collided over Bodensee in Switzerland due to staff shortages and technical shortfalls at Skyguide, the Swiss air traffic control operator (WSWS, 2005). There is also an incident in October 2001 where a small plane crashed into an airliner (from Scandinavian Airlines) at Milan Linate airport in Italy where an Italian court later passed prison sentences on the air traffic control personnel (WSWS, 2005).

Since a new actor to supply air traffic control must be certified by Luftfartsstyrelsen (or similar authority in another EU country) the view is that a deregulation would not impact air safety (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). Sveriges Kommuner och Landsting (2006), an alliance of Swedish municipalities, has an analogy with an airline pilot to explain their support of this view where there today is no difference if a pilot works in a private or public company, as long as the pilot have the right authorization and the same should be applicable to air traffic controllers.

Aviation Capacity Resources claim that competition can never be on safety as it is the fundamental base for all operations. No compromises can be allowed and safety is always put first (J. Blyckert, personal communication, 2006-11-30).

Military and civil air traffic integrated

Sweden is one of the few countries whose military air traffic is integrated with the civil. The Swedish National Defense (“Försvarsmakten”) have therefore participated in the creation of the reports by Luftfartsstyrelsen (2005; 2006). An issue during a privatization is if a foreign company shows an interest in supplying air traffic control services in Sweden. This is a problem because there is and will continue to be a demand that the air traffic controllers at certain airports must be of Swedish nationality (as they lead Swedish military fighter planes). This means that a foreign operator will probably be forced to employ Swedish personnel (E. Sallfeldt & A. Hietala, personal communication 2006-11-01). Even if an airport is exempted from this rule, a language barrier still exists as Swedish is the internally spoken language at the airports and many smaller airplanes do not communicate in English with the towers (F. Jaresved, personal communication, 2006-11-30).

The Swedish Air force also themselves have a couple of airports that the National Defense have decided not to open for other suppliers of air traffic control services than Luftfartsverket (E. Sallfeldt & A. Hietala, personal communication 2006-11-01).

Due to these reasons, the probable way for a foreign operator to enter the Swedish market is through a joint venture with a Swedish partner (R. Sandelin, personal communication, 2006-11-13).