

AVIATION TRENDS

STATISTICS, ANALYSIS AND INFORMATION FROM THE SWEDISH TRANSPORT AGENCY 2010



SWEDISH
TRANSPORT
AGENCY

FACTS

- 25.5 million passengers using scheduled and charter traffic at Swedish airports, 9.3 per cent (equivalent to 2.6 million passengers) fewer than in the previous year.
- 19.46 million international passengers – a decrease of 9 per cent.
- 5.99 million domestic passengers – a decrease of 11 per cent.
- The average passenger load factor reached 69.9 per cent in 2009, 1.7 percentage points more than in 2008.
- Total air freight to and from Swedish airports in 2009 was just over 141,100 tonnes, 24 per cent less than in 2008. International freight decreased by 23 per cent to 139,700 tonnes. Domestic freight, which accounted for 1 per cent of the total freight volume, decreased by about 63 per cent.
- There were 372,400 landings in 2009 – over 20,500 fewer than in 2008, and representing a decrease of 5.2 per cent. There were 235,091 scheduled and non-scheduled traffic landings, 8.4 per cent fewer than in 2008.
- Stockholm-Arlanda handled 16.04 million passengers, 11 per cent fewer than in 2008.
- In absolute terms the increase was greatest at Stockholm-Bromma, which had 150,000 more passengers in 2009.
- In 2009 there was scheduled and non-scheduled commercial traffic from 41 airports in Sweden.

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FOREWORD

For the second year running we have the pleasure of publishing Aviation Trends, an English-language edition of the magazine of the Swedish Transport Agency (Transportstyrelsen) for our international readers.

The international issue is a selection of articles from our quarterly report Flygtendenser, which includes flight safety and passenger statistics, analyses and a selected topic for each issue. Within the scope of these topics we do more detailed studies of various parts of the aviation market. During 2009 the following topics were dealt with: the financial crisis, domestic aviation, flight safety cultures and air freight. Before Sweden assumed the EU presidency in July 2009 we published a special issue focusing on EU and European civil aviation.

All issues of Flygtendenser (in Swedish) and Aviation Trends (in English) are available on our home page, www.transportstyrelsen.se – Luftfart, where they can also be ordered as printed versions.

Aviation Trends 2009 will give you interesting insight into the Swedish aviation market. It is wide-ranging – from Sweden's EU presidency to our efforts to get to grips with laser beaming against aircraft and airports.

Lena Byström Möller
Director, Civil Aviation Department



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FLYGTENDENSER

STATISTIK, ANALYS OCH INFORMATION FRÅN TRANSPORTSTYRELSEN 02/2009

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TRANSPORTSTYRELSEN



Det som under 2007 började som en oro på de amerikanska bostadskreditmarknaderna visar idag tecken att ha utvecklats till en av de största...

FLYGTENDENSER

STATISTIK, ANALYS OCH INFORMATION FRÅN TRANSPORTSTYRELSEN 03/2009

TEMA SÄKERHETSKULTUR



Med ökande globalisering har transport av gods med flyg blivit allt viktigare. Flygfrakten har under de senaste 30 åren uppvisat en markant utveckling och är en viktig faktor för den globala ekonomin. Transport av flygfrakt motsvarar endast en procent av det totala internationellt transporterade godset mätt i volym, men värdet av flygfrakten uppgår till 40 procent av det totala volymvärdet. Under 2008/09 visade branschen den största nedgången på 30 år.

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SWEDISH EU PRESIDENCY AUTUMN 2009

Sweden took over the EU Presidency on 1 July 2009 for the period July–December 2009. During the six months of EU Presidency Sweden chaired all the Council meetings and was the voice of the EU in relation to third countries and international organisations.

During the Swedish Presidency a number of issues were up for discussion in the Working Party on Aviation, e.g.:

- Proposal regarding a Directive of the European Parliament and of the Council on aviation-security charges;
- Proposal regarding a Regulation of the European Parliament and of the Council on investigation and prevention of accidents and incidents in civil aviation;
- Draft decision by the Council authorising the Commission to open negotiations on a Memorandum of Cooperation in Civil Aviation Research and Development with the Federal Aviation Administration of the United States of America;
- Draft Council Decision authorising the Commission to negotiate a bilateral agreement between the European Community and Brazil in the field of civil aviation safety;
- Recommendation by the Commission that the Council authorise the Commission to negotiate on behalf of the Community a Memorandum of Cooperation between the European Community and the International Civil Aviation Organisation (ICAO), providing a general framework for enhanced cooperation.

During the Swedish Presidency negotiations were also held with third countries in the field of civil aviation, and there were two ICAO conferences:

- ICAO High Level Meeting on International Aviation and Climate Change (October 2009) and
- ICAO Conference on Aviation and Alternative Fuels (Rio de Janeiro, 16–18 November 2009).

The environmental issues during the Swedish Presidency will be dealt with in a separate chapter.

PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON AVIATION SECURITY CHARGES

On 14 May 2009 the Commission submitted the above proposal. Its objective is to ensure that the aviation security charges are set and levied in a way that ensures non-discrimination and transparency, provides sufficient opportunity for consultation with respect to the level of the security charges and ensures that these charges are directly related to the cost of providing aviation security. The issue of financing aviation security has been a source of differences between the European Parliament and the Council during previous negotiations on the framework Regulation (EC) No 300/2008 on common rules in the field of civil aviation security. During the final negotiations between the Council and the European Parliament concerning this Regulation the European Parliament asked the Commission to submit, in due time, a proposal on aviation security charges. However, several Member States expressed their doubts about the need for a specific proposal on aviation security charges, and a number of states had problems reconciling the proposed system with their national system.

The Working Party on Aviation started its examination of the above proposal in July 2009, under the Swedish Presidency. Right from the beginning the discussion revealed Member States' differing views on main aspects of the proposal. In spite of several meetings and several proposed compromise solutions the Working Party on Aviation was unable to agree during the autumn. On 17 December 2009 the Swedish Presidency decided to submit a progress report to the TTE (Transport, Telecommunications and Energy) Council, which took note of the report and invited its preparatory bodies to continue their discussion of the proposal. This was done under the Spanish Presidency.

BAN ON LIQUIDS ONBOARD AIRCRAFT

Another issue arising during the autumn was what the next steps might be when it comes to the ban on taking liquids onto aircraft as hand luggage. The present rules (Commission Regulation 1546/2006, replaced by Commission Regulation 820/2008) no longer apply. When these rules were developed it was presumed that the development of suitable

screening technology to identify liquid explosives carried in hand luggage would have progressed further. Various types of equipment have been the subject of laboratory and operational tests, though some work remains to be done before they are fully ready to be installed in airports. Therefore, transitional arrangements beyond April 2010 have been put in place to phase-in the deployment of detection methods, including technologies, at all EU airports without compromising aviation security. According to the decided schedule presented by the Commission, transfer passengers from third countries will be permitted to take liquids on board as of 29 April 2011 and all departing passengers will have this possibility as of 29 April 2013.

PROPOSAL REGARDING A REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON INVESTIGATION AND PREVENTION OF ACCIDENTS AND INCIDENTS IN CIVIL AVIATION

On 5 November 2009 the Commission presented a proposal regarding a regulation on investigation and prevention of accidents and incidents in civil aviation. The proposal was first introduced to the Working Party on Aviation on 25 November 2009. The discussion on the proposal continued under the Spanish Presidency.

INTEROPERABILITY OF AIR TRAFFIC MANAGEMENT SYSTEMS

At its meeting on 9 October 2009 the TTE Council adopted a decision authorising the Commission to open negotiations with the US Federal Aviation Administration (FAA) on a memorandum of cooperation in civil aviation research and development. The memorandum is intended to ensure interoperability between the European air traffic management (ATM) programme SESAR and its American counterpart NextGen, which is destined to replace the present US ATM system. To this end, the memorandum is aimed at creating a legally binding framework for business activities relating to development of the new systems. It should also have the potential to cover other related civil aviation research and development issues.

CIVIL AVIATION SAFETY AGREEMENT WITH BRAZIL

On 9 October 2009 the TTE Council also adopted a decision authorising the Commission to open negotiations with Brazil on a bilateral agreement in the field of civil aviation safety. The objective of the future agreement is to facilitate trade in aeronautical products and services whilst ensuring that the relevant safety standards are respected.



More particularly, the agreement aims to achieve, where possible, reciprocal acceptance of certification findings and standards. This would primarily concern airworthiness and environmental aspects of aeronautical products, parts and appliances. It could also include the approval and monitoring of maintenance services. Such mutual recognition of certification and supervision would enable both parties to limit duplication of work as much as possible.

MEMORANDUM OF COOPERATION WITH ICAO

At its meeting on 17 December 2009 the TTE Council adopted a decision authorising the Commission to open negotiations on a Memorandum of Cooperation with the International Civil Aviation Organisation (ICAO), providing a general framework for enhanced cooperation. The development of mutual cooperation between the EU and ICAO would ensure that EU interests are taken into consideration as much as possible within ICAO. On the other hand, it would allow ICAO and its contracting parties to better benefit from developments in the EU in the field of civil aviation.

NEGOTIATIONS WITH THE US

The EU-US "Open Skies" agreement was signed in 2007 and has been provisionally applied since March 2008. While the 2007 agreement established a framework for regulatory cooperation with the US and brought new commercial freedoms for airline operators, it is fair to say that a number of the negotiating objectives on the European side were not achieved. The agreement thus included a roadmap for second-stage negotiations, which were initiated in May 2008.

On 24 June 2010 the Council of the European Union adopted a decision on the signature and provisional appli-

cation of a protocol to amend the air transport agreement between the EU and the US. Following the adoption, the signature of the protocol by the EU and the US took place in the margins of the Council.

EXTENSION OF THE EU-US AIR TRANSPORT AGREEMENT TO ICELAND AND NORWAY

The TTE Council has given its political endorsement to an agreement extending the air transport agreement with the US (the EU-US "Open Skies" Agreement), signed in 2007 and applied since 2008, to Iceland and Norway. The agreement is accompanied by an ancillary agreement with procedural provisions.

The EU-US Open Skies Agreement explicitly provides for the accession of third countries to that agreement. Iceland and Norway, which are members of the European Common Aviation Area (ECAA) and have adopted the complete Community legislation in aviation policy, applied for accession in 2007.

The new agreement will give EU air carriers the right to operate flights between Iceland and Norway and the United States; reciprocally, Icelandic and Norwegian carriers will be allowed to operate between the EU and the USA.

THIRD COUNTRY NEGOTIATIONS

During the Swedish Presidency the EU also held negotiations with a considerable number of other countries, besides the US. It is in particular worth mentioning the negotiations aimed at creating a harmonised and integrated market by applying Community civil aviation legislation to negotiating partners. Such negotiations were conducted during the second half of 2009 with among others Ukraine, Georgia, Israel and Lebanon.

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PASSENGER DEVELOPMENT AT SWEDISH AIRPORTS

During 2009 the number of passengers at Swedish airports fell by 2.6 million (equivalent to 9.3 per cent) compared with 2008. Of the 41 airports with scheduled traffic, 37 displayed declining figures and only 4 saw an increase, though at many regional airports the decline was largely offset by an increase in charter traffic.

Most of the airports only have domestic traffic, while Göteborg City Airport (Gothenburg), Stockholm-Västerås and Linköping only have international traffic. Norrköping and Stockholm-Skavsta are almost wholly international, with only one domestic route each.

The total number of passengers to and from Swedish airports increased fairly constantly between 1985 and 2008 (see Figure 1), dropping in 2009 by about 9 per cent, equivalent to 2.6 million passengers.

NORTHERN SWEDEN

Most of the airports in northern Sweden have Stockholm-Arlanda and Stockholm-Bromma as their final destinations. There is a fair amount of charter traffic from Luleå and Umeå, and some from Skellefteå and Örnsköldsvik. There have been some incoming charter flights to Åre-Östersund, Kiruna and Arvidsjaur over the past few years.

Over the ten years up until 2008 there was an increase in the total numbers, and those airports with more than 100,000 passengers annually displayed growth, with the exception of Sundsvall. At many of them the increase was due to the advent of charter flights from the regional airports. At the northern airports the biggest increase in charter flights was at Luleå and Umeå, which was also where domestic competition was greatest. Kiruna and Åre-Östersund saw a big increase in incoming charter flights.

FIGURE 1 Passenger development 1970–2009

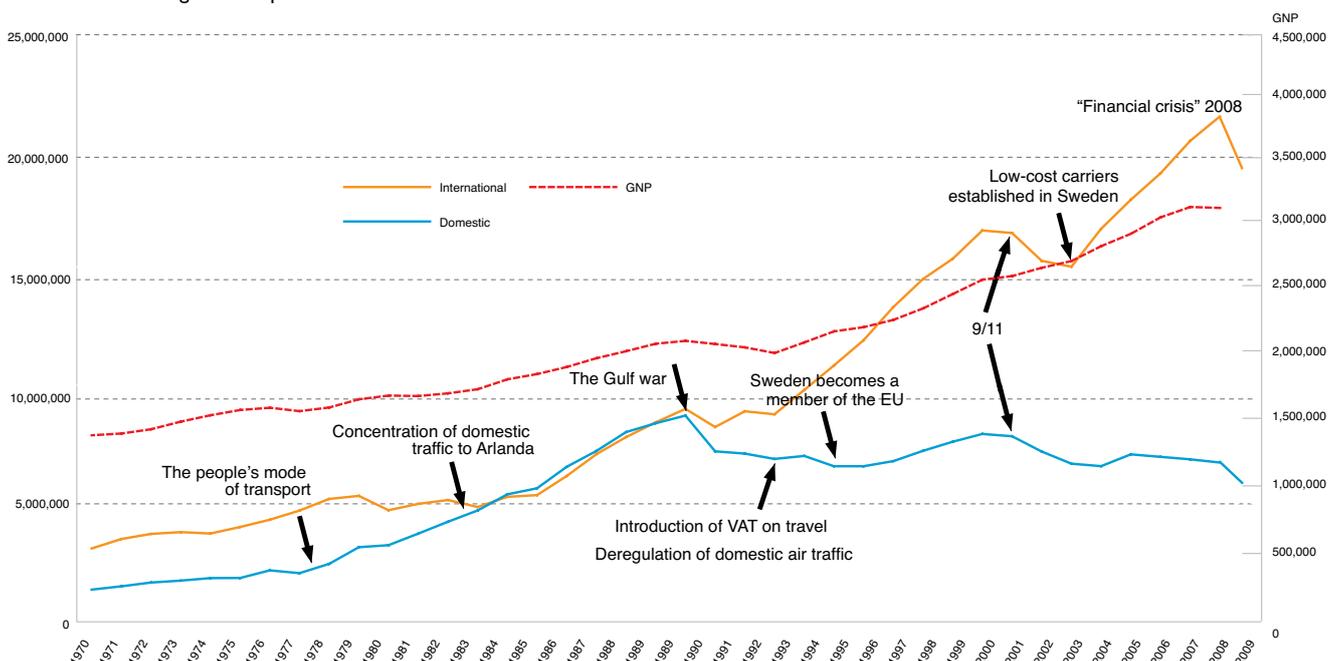


TABLE 1 Passenger development 2008–2009 at airports in northern Sweden with more than 100,000 passengers annually

	2008	2009	% change
Kiruna	207,431	186,060	-10.3
Luleå	995,300	953,556	-4.2
Umeå	811,363	815,362	-0.9
Åre-Östersund	383,504	330,961	-13.7
Örnsköldsvik	144,975	91,945	-36.6
Sundsvall	303,636	248,902	-18.0

Source: Swedish Transport Agency (Transportstyrelsen)

The smaller airports displayed a decline in 2009 (see Table 2), and at some there was a sharp drop in traffic. The exception was Kramfors – a situation explained by the fact that this airport had no traffic at all during part of 2008 because of an airline bankruptcy, whereas there was uninterrupted traffic for the whole of 2009.

In 2009 Arvidsjaur suffered a setback regarding their incoming international charters in connection with winter car testing, which normally constitutes a large share of their traffic.

TABLE 2 Passenger development 2008–2009 at airports in northern Sweden with less than 100,000 passengers annually

	2008	2009	% change
Gällivare	38,942	36,836	-5.4
Pajala	2,749	2,672	-2.8
Arvidsjaur	57,381	42,664	-25.6
Hemavan	17,666	12,052	-31.8
Storuman	10,577	9,346	-11.6
Vilhelmina	16,039	13,306	-17.0
Lycksele	25,564	21,776	-14.8
Kramfors	14,787	19,038	+28.7
Sveg	5,332	5,306	-0.5

Source: Swedish Transport Agency (Transportstyrelsen)

CENTRAL SWEDEN

All smaller airports (less than 100,000 passengers annually) in central Sweden except Mora saw a decrease in the number of passengers during 2009. There has been a steady decline for a long time at those airports relatively close to Stockholm, such as Karlstad, Borlänge and Jönköping, while at Örebro, Norrköping and Linköping there has been virtually no traffic to and from Stockholm over the past few years.

TABLE 3 Passenger development 2008–2009 at airports in central Sweden with less than 100,000 passengers annually

	2008	2009	% change
Mora	8,390	9,325	11.1
Borlänge	36,620	33,888	-7.5
Örebro	69,950	62,514	-10.6
Linköping	82,523	78,424	-5
Torsby	3,377	3,061	-9.4
Hagfors	2,744	2,564	-6.6
Trollhättan	55,049	36,638	-33.4
Karlstad	118,762	84,880	-28.5
Linköping	82,523	78,424	-5

Source: Swedish Transport Agency (Transportstyrelsen)

Disregarding the airports in and around Stockholm, there are only two airports in central Sweden with more than 100,000 passengers annually – Norrköping and Visby. They also suffered a decrease – see Table 4.

TABLE 4 Passenger development 2008–2009 at airports in central Sweden with more than 100,000 passengers annually

	2008	2009	% change
Norrköping	113,246	100,177	-11.5
Visby	324,347	304,403	-6.1

Source: Swedish Transport Agency (Transportstyrelsen)

There is a noticeable trend in terms of increasing international traffic, both scheduled and non-scheduled, in central Sweden. Karlstad, Örebro, Norrköping and Linköping have connections to Copenhagen Airport, Linköping also has a connection to Amsterdam and Norrköping also has a connection to Helsinki. Visby has summer connections to destinations in northern Europe. Norrköping used to have a connection to Munich (by Cimber Sterling), but it was cancelled.

In 2009 the airports in the vicinity of Stockholm saw a combined decrease of about 8 per cent compared with 2008. Bromma and Skavsta, however, were two of the very few airports in Sweden to see an increase. They have in fact experienced increases every year since 2000. Västerås and Arlanda suffered decreases. See Table 5.

TABLE 5 Passenger development 2008–2009 at airports in the vicinity of Stockholm with more than 100,000 passengers annually

	2008	2009	% change
Stockholm-Arlanda	18,107,181	16,047,759	-11.4
Stockholm-Bromma	1,852,771	1,968,139	+6.2
Stockholm-Skavsta	2,479,646	2,524,633	+1.8
Stockholm-Västerås	186,612	174,496	-6.5

Source: Swedish Transport Agency (Transportstyrelsen)

SOUTHERN SWEDEN

Passenger numbers decreased at all airports in southern Sweden in 2009 – at many of them by more than 10 per cent. Among those with more than 100,000 passengers annually, Växjö lost more than 17 per cent of its passengers. Malmö Airport was greatly affected by the FlyMe and Sterling bankruptcies and the pull-out by Ryanair. Among those with less than 100,000 passengers, Kristianstad lost almost 30 per cent.

During the 2000s the biggest increase in southern Sweden has been displayed by Göteborg City Airport. This trend was broken during 2009, when it suffered a decline of more than 13 per cent – see Table 6.

TABLE 6 Passenger development 2008–2009 at airports in southern Sweden with more than 100,000 passengers annually

	2008	2009	% change
Göteborg-Landvetter	4,300,027	3,683,567	-14.3
Malmö Airport	1,747,483	1,525,609	-12.7
Göteborg City Airport	842,120	728,890	-13.4
Kalmar	177,734	157,138	-11.6
Ronneby	206,932	191,168	-7.6
Växjö	179,799	148,442	-17.4
Ängelholm-Helsingborg	391,777	364,356	-7.0

Source: Swedish Transport Agency (Transportstyrelsen)

Of the smaller airports, Halmstad and Jönköping have suffered the biggest losses, whereas the loss at Oskarshamn is negligible.

TABLE 6 Passenger development 2008–2009 at airports in southern Sweden with less than 100,000 passengers annually

	2008	2009	% change
Jönköping	76,611	62,918	-17.9
Kristianstad	58,654	41,205	-29.7
Oskarshamn	13,338	13,295	-0.3
Halmstad	113,501	92,697	-18.3

Source: Swedish Transport Agency (Transportstyrelsen)

Most of the regional airports in southern Sweden are dominated by connections to Stockholm, which have on the whole decreased since the 1990s. At certain destinations Sverigeflyg has formed air-travel organisations together with local trade and industry to operate traffic to Stockholm-Bromma. Such organisations are most frequent in southern Sweden, with Smålandsflyg, Kalmarflyg, Blekingeflyg, Kullaflyg and Flyglinjen starting operations in January this year.

Charter traffic will probably remain an important feature at the regional airports.

The Öresund bridge has caused cessation of air traffic to Copenhagen Airport from Växjö, Kalmar, Ronneby and Jönköping, and the proximity of these airports to Malmö, Copenhagen, Göteborg-Landvetter and Göteborg City Airport has made it difficult for them to attract international airlines. However, there has been an increase in charter traffic at these regional airports.

Air freight is expected to increase in the long term at Göteborg-Landvetter and Malmö Airport.



TRENDS

There are some identifiable trends when it comes to the network of Swedish airports. The first trend is the percentage decline in domestic traffic, with only 7 out of 41 airports displaying a positive development in domestic traffic between 2000 and 2009. The biggest increases have been seen at Hemavan and Stockholm-Bromma, whereas the majority, and in particular Västerås and Linköping, have seen a decline.

Four airports lost their domestic traffic during the 2000s: Hultsfred, Hudiksvall, Skövde and Söderhamn.

The table below shows domestic passenger figures for Swedish airports.

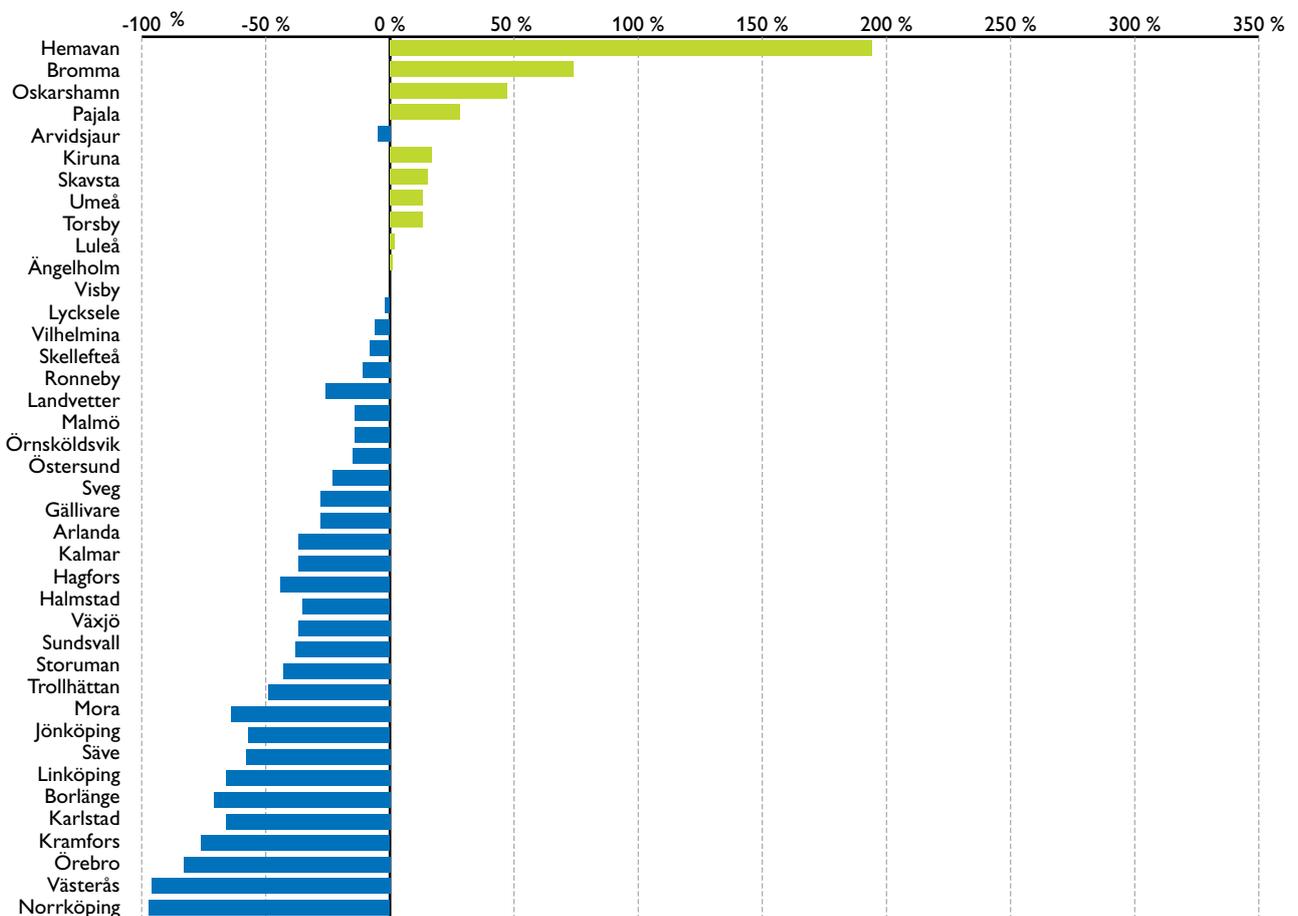
Between 2000 and 2008 Stockholm-Bromma expanded at the expense of Stockholm-Arlanda.

Another trend was the reduction in east-west connections within Sweden – from 21 in 2000 to 14 in 2008.

Yet another trend has been the increase in international traffic, especially at Stockholm-Skavsta, Göteborg City Airport and Stockholm-Arlanda, which is attributed to the expansion of low-cost carriers in Europe. Charter traffic has expanded at regional airports, as has scheduled international traffic at Norrköping, Linköping and Växjö.

A final and important trend is the decreasing government involvement – having run 18 airports in 2000, the government now only runs 14. This number is decreasing even further as more and more airports are gradually being sold to local authorities or private entrepreneurs.

FIGURE 2 Passenger development (domestic) per airport 2000–2009



Source: Swedish Transport Agency (Transportstyrelsen)

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MORE OPERATORS IN A SMALLER MARKET

The domestic aviation sector has seen dramatic changes in the past decade. At first, demand for air transport declined sharply causing problems with structure and profitability. The number of air operators has increased, with new groupings in the form of air-travel organisers, and more low-cost carriers (LCCs) have entered the domestic market, bringing increased competition for certain destinations. The new forms of company have diversified the market and the number of operators has increased, despite the decline in domestic aviation.

At the beginning of the century the government asked the aviation authority for a market survey, which included a suggestion for actions to improve competition within the domestic market. A lot has happened since then, and is described in the 2009 report "Inrikesflygets förändringar – trender och behov" [Domestic flights – trends and requirements] (available in Swedish only).

MARKET DEVELOPMENT

During the period 2001–2008 domestic air traffic suffered a decrease of 1.2 million passengers, and only 11 out of 41 airports saw positive traffic development. Up to and including October 2009 the number of passengers decreased by 770,000 compared with the same period the year before. Only six airports displayed positive development – amongst them Stockholm-Bromma. Stockholm's other airport, Arlanda, on the other hand, lost 21 per cent of its domestic passengers during the period January–October 2009.

In its forecast for 2010 the Swedish Transport Agency (Transportstyrelsen) predicts that domestic air traffic will see a 10 per cent decrease followed by a small increase – but not to the 2008 level.

A major change in the Swedish domestic market is the fact that there are now more operators than before deregulation (see Figure 1). The category displaying the biggest increase is air-travel organisers with a clear regional and local profile, who have increased both in number and in terms of market shares on the routes they operate. Malmö Aviation, using



Bromma as a hub, has also increased its market share during the latter part of the decade and is now number two in terms of passengers flown. The greatest increase in the number of passengers, however, is displayed by the LCCs – from 17,000 in 2000 to 956,000 in 2008. These airlines, however, tend not to stay in the domestic market for long. During the period 2001–2008 alone four LCCs came and went.

SAS's market share decreased from 72 per cent in 2000 to 47 per cent in 2008. SAS is still the biggest airline in terms of passenger numbers – 3.1 million – but it has lost market shares to LCCs as well as to air-travel organisers. Unlike SAS, Malmö Aviation has demonstrated that it is better able to handle competition, and its growth has resulted in the transfer of domestic passengers from Arlanda to Bromma. The latter

FIGURE 1 Operators on the domestic market 2009



airport had never before seen such an increase in passengers as it experienced in the first half of 2009. The growth of air-travel organisers also contributed to this increase.

THE AIRLINES AND DOMESTIC AVIATION

In the spring of 2009 interviews were held with the majority of the airlines' managing directors concerning their thoughts on the market conditions for Swedish domestic aviation.

Many of the smaller operators are of the opinion that SAS's cuts in its domestic operations over the past decade have created opportunities for the regional operators to enter the market, though everybody agrees that competition is stiff and profitability is generally poor. One problem is that aviation as a whole has experienced difficulties adjusting its costs during the recession – a situation caused by long-term agreements on staffing and aircraft. The managers further agree that the volatile currency market is not conducive to business, because income is measured in Swedish kronor but expenditure in US dollars. Flying is a costly business, and many of the managers point out that EU regulations are tending to increase costs for the airlines.

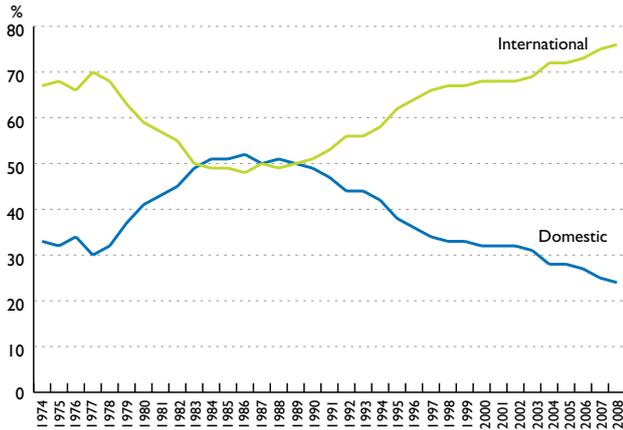
It is predicted that the number of domestic destinations will decrease as a result of increased competition from road

and rail. There is strong competition on all domestic routes, not only between airlines but also from surface transport. Thanks to a well developed motorway infrastructure, the greatest competition will probably come from cars, especially in central Sweden. Since 2000 aviation has also faced competition from Swedish State Railways (SJ) as a result of SJ's well developed service and loyalty programmes.

The majority of those interviewed are expecting continued traffic reductions, but think that aviation will continue to be competitive on the longer routes from Stockholm to northern and southern Sweden.

The financial situation for the operators looks challenging. Underpricing on the part of a number of LCCs has made it difficult for other carriers to recover their actual costs – 2008 was also a year when operating costs escalated. Capital costs, on the other hand, decreased because of the reduced demand for aircraft. There are now a number of charges in addition to the usual departure charges, passenger charges, navigation charges etc., e.g. environmental charges, and the security charges have escalated. Airport costs have thus increased sharply, without the airlines being given any opportunity to influence them, and this has led to criticism.

FIGURE 2 Distribution of domestic and international passengers at Swedish airports expressed as percentages



Source: Swedish Transport Agency (Transportstyrelsen)

DOMESTIC AVIATION'S FINANCES

Only a handful of all airports that had domestic traffic during the summer of 2009 were profitable. A clear tendency over the past 15 to 20 years has been a decline in the share of domestic passengers at Swedish airports, whilst since 1990 there has been a steady increase in the share of international passengers.

During the period 2000–2008 there were 14 reasonable-sized active domestic operators. SAS's turnover for its domestic operations during the period is estimated at about 29 billion (29,000,000,000) Swedish kronor. Of the other 13 operators, there were 8 remaining in June 2009. During the period 2000–2007 their combined turnover was 38 billion kronor, representing a loss of 1.5 billion. Golden Air was the only operator showing a profit for the entire period. The accounts for 2000–2008 indicate a degree of stabilisation, with a handful of operators showing an improvement despite the hard times.



DOMESTIC AVIATION AND THE ENVIRONMENT

The public's attitude to aviation has gradually grown more negative. To a large extent this has probably been caused by the media's description of aviation in the debate on the environment. Carbon dioxide is the main harmful emission from the burning of aviation fuel, and there are also nitrogen oxides that contribute to global warming and affect the ozone layer. Nitrogen and sulphur oxides may also contribute to overfertilisation and acidification. Knowledge regarding condensation trails' effect on climate is still limited.

Greenhouse-gas emissions from domestic transport constitute about 32 per cent of total greenhouse-gas emissions in Sweden. Domestic aviation's share is about 2 per cent, but emissions per passenger kilometre are high. During the period 1990–2007 carbon dioxide emissions from domestic aviation decreased by 11 per cent, whilst emissions from international aviation rose by 64 per cent.

The current emphasis is on aviation's effect on climate, whereas noise used to be the main concern. Traffic noise is a serious environmental and health-related problem, the extent and effects of which are being surveyed and investigated by a large number of authorities and organisations. Technological developments are leading to quieter aircraft, but this improvement is being offset by an increase in traffic.

There has been increased public demand for a reduction in aviation's emissions, resulting in a European Commission proposal on how to reduce nitrogen-oxide emissions. There is increasing interest in biofuels, and tests have shown promising results. Various projects to improve airspace management and thus reduce fuel consumption are in progress. Over the past few years transport organisations and other organisations have started offering their customers the opportunity to pay carbon offsets for their travel, though very few of them have taken advantage of this offer.

Several different approaches to reducing or compensating for aviation's effect on the climate are currently being evaluated. Aviation will be included in the EU's greenhouse gas emissions trading scheme in 2012. At Arlanda Airport activities are currently being monitored with reference to an emissions ceiling. Certain countries have also introduced an "air traffic tax". The Swedish government has instituted a carbon dioxide emissions reporting system for employees of a number of authorities when travelling on official business.

DEVELOPMENT TRENDS IN DOMESTIC AVIATION

The following are some of the prominent development trends that are likely to characterise domestic aviation up until 2020:

- **Shrinking market:** For distances less than 500 km aviation will probably lose market shares to cars, buses and trains, because of the expansion of motorway and railway networks.
- **More fast-changing offerings:** The domestic aviation market will in future not be dominated by one or just a few stable and well established operators. Instead, more (new) operators are expected to establish themselves in the market, offering new routes, departure times and ticket prices.
- **More airport operators:** It is expected that more government-owned airports will be handed over to private entrepreneurs.
- **More stringent environmental control:** The political will to get consumers to switch to more environmentally friendly forms of transport will increase. The general debate on environmental matters will affect consumer habits.
- **Reduced government financial support for non government airports:** In the spring of 2010 the government phased out its ownership of another six airports. As from 2012 financial support for non-government airports will be subject to more open regional prioritisation, whereby airports with no procured traffic will compete for limited funds with other urgent regional needs.

FACTS

- The survey on travel habits, RES0506, shows that air transport is used in 15 per cent of all domestic journeys of more than 300 kilometres; this corresponds to 20 per cent in passenger kilometers produced. For travel between the Stockholm area and northern Sweden, air is the dominant transport mode.
- Domestic ticket prices have decreased by 7.3 per cent in real terms over the first decade of this century.

SUMMARY

The questions "Do we need domestic aviation?" and "Does Sweden want domestic aviation?" are best answered by air transport users.

The aviation sector faces several challenges. Fewer and fewer travellers are choosing air transport – the past decade alone has seen a decrease of 1.2 million passengers. New security checks introduced after 9/11 have led to reduced competitive-

ness as a result of the increase in total travel time. Finally, environmental considerations have influenced attitudes to flying.

The future will see reduced government involvement and increasing competition from road and rail. The forecast for this year also shows a continued decline in domestic passenger numbers. A weak recovery is not expected until next year at the earliest.



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SWEDISH DOMESTIC AIR TRAFFIC

Domestic air traffic has still not completely recovered from the crises of the early 1990s and 2000s. During the present recession annual passenger numbers have been 11 per cent less than in 2008, and it is expected that it will take at least a decade before the numbers even get close to what they used to be.

Between 1974 and 1990 the number of domestic passengers in Sweden quadrupled, from 1.8 to 8.7 million per year (see Figure 6). The average annual increase was more than 10 per cent. The lowest number during the period 1990-2008 – 6.6 million – was seen in 1996. In 2009 it fell well below this (6 million). The latest peak, 7.9 million, was seen in 2000, since when numbers have fallen by about 3 per cent per year. Between 1990 and 2009 there was a decrease of 2.7 million passengers.

During the 1970s about 70 per cent of all passengers were international, dropping to about 50 per cent in the 1980s, then increasing again from the 1990s onwards to about 75 per cent (see Figure 2, page 14).

The total number of passengers to and from Swedish airports increased fairly constantly between 1985 and 2008 (see also separate article on page 8), then decreased in 2009 by about 9 per cent, equivalent to 2.6 million passengers.

The crisis in 2009, which seemed to have bottomed out but was replaced by volcanic ash clouding the European skies, saw a substantial global reduction in the demand for air travel. Going back to the very beginning of domestic air traffic, there has been only one (minor) drop in the number of domestic passengers in Sweden (caused by the second oil crisis in 1979). Apart from this there has been virtually un-interrupted growth, with the exception of the two years 1991 (the financial crisis and the associated real-estate crisis) and 2001 (recession in the aftermath of 9/11). It may therefore be of interest to take a closer look at these courses of events as a background to the forecasts presented later.

THE CRISIS OF THE EARLY 1990s

Domestic air travel was already starting to decrease in November 1990, when compared with November 1989. The trend continued in December and accelerated in January 1991, when a total of 7.2 million passengers were carried, representing a decrease of 1.5 million or 17 per cent compared with 1990.

The main reason was the global crisis caused by the Iraqi invasion of Kuwait in August 1990 and the subsequent UN intervention in January 1991. These two events mainly affected international flights, but they also spilled over into the domestic sector through connecting flights.

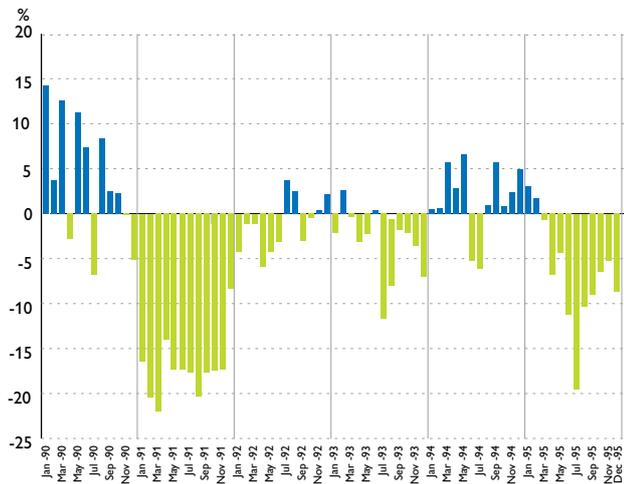
GNP fell by more than 1 per cent in 1991, and continued to do so for another two years – an unprecedented develop-

Ankomster		Arrivals	
Tid	Destination	Flyg	
Time	Destination	Flight	
1140	Umeå	DY3704	38
1225	Åre Östersund	SK061	31
1230	Luleå	SK007	39
1240	Kiruna	DY3768	36
1345	Kiruna	SK1049	37
1415	Göteborg	SK158	41

ment, causing the crisis to be long-term. Domestic traffic has still not quite recovered to previous levels, and it was not until 1998 that the figures had returned to the 1991 level, i.e. still 1.5 million fewer passengers than in 1990. There were both ups and downs during the period.

The following graph shows monthly percentage changes in domestic traffic during the six-year period 1990–1995 inclusive.

FIGURE 1 Monthly changes in domestic passenger numbers 1990–1995



Source: LfV passenger statistics

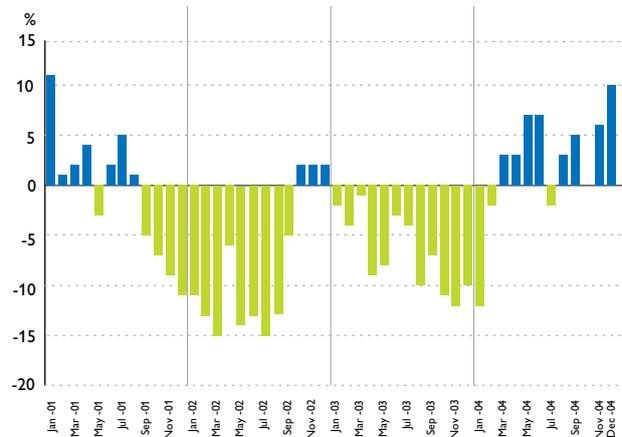
There was a slight recovery as from January 1994, though this was short-lived, and traffic decreased again in 1995, remaining fairly stable at this lower level during 1996. With the exception of a few months the decline during this crisis continued for more than five years. Not until 1997 was there a stable period of growth, lasting until 2000, when almost 8 million domestic passengers were carried. The period 1994–2000 saw very high average annual growth in GNP of 3.5 per cent.

THE CRISIS OF THE EARLY 2000s

The 2000–2001 crisis was somewhat shorter. It was followed by three years of decreasing volumes. A nadir was reached

in 2003, with a figure of 6.7 million, i.e. 1.2 million less than in 2000. The trigger for this crisis was the 9/11 terror attack, but there was also an underlying global recessive trend, which surfaced just after. In 2001 Sweden's GNP dropped sharply to 1.1 per cent, though the Swedish economy actually grew during the recession. Despite this the course of events was rather protracted. With the exception of a few months "just above the red line" during the winter of 2002, traffic declined every month from September 2001 to February 2004 inclusive, i.e. for 30 months. Despite the increases in 2004 and 2005 the domestic market has not managed to recover to the pre crisis level (7.9 million passengers in 2000). The graph below shows the relative monthly changes for the five-year period 2001 to 2004 inclusive.

FIGURE 2 Monthly change in domestic passenger numbers 2001–2004

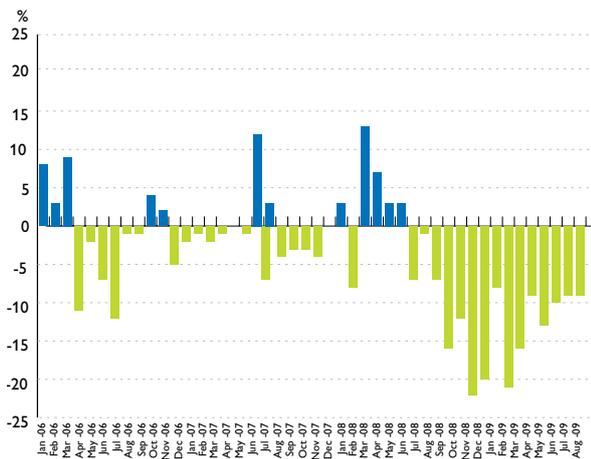


Source: LfV passenger statistics

DEVELOPMENT 2006–2009

During the four years 2006–2009 domestic traffic dropped by an average of 4 per cent per year, the biggest decrease (11 per cent) being between 2008 and 2009. The signs of this latter decrease were already evident from the declining growth figures for the early summer months of 2008, as compared with the same months during 2007. The downward trend continued during 2009 (see Figure 3).

FIGURE 3 Monthly change in domestic passenger numbers 2006–2009

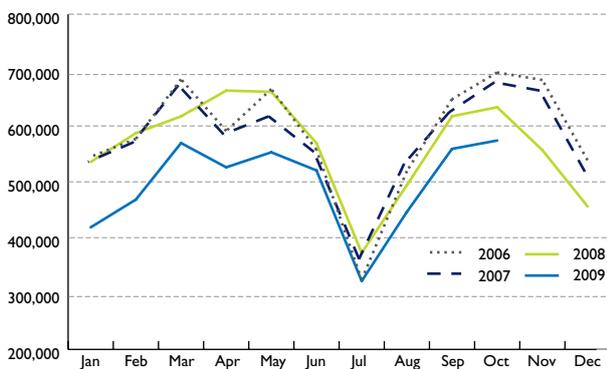


Source: Swedish Transport Agency passenger statistics

Looking at the number of domestic passengers for the same period, the graph below shows the monthly distribution. The drop toward the end of 2008 stands out, and 2009 was a weak year.

Note that the difference between March and April is due to Easter 2008 being in March, whereas in the other years it was in April.

FIGURE 4 Monthly number of domestic passengers 2006–2009



Source: Swedish Transport Agency passenger statistics

SUMMARY

The reason for the two earlier crises is economic development. Subsequent to the first crisis, development of GNP was extremely poor – negative growth for three years running. This made the 1990s aviation crisis more profound than that of the 2000s. What the two crises had in common was their long duration – after the first one it was six years until the next stabilised period of growth, and after the second one it was three years.

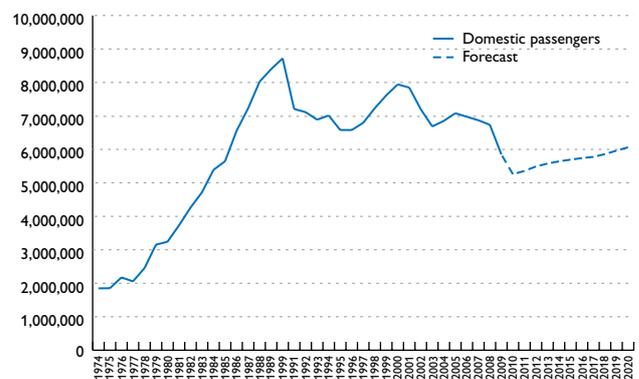
After neither of the two crises was it possible to recover the volumes initially lost. After the 1990s crisis the volumes were at best (2000) 91 per cent of those in 1990, and after the 2000s crisis they were at best (in 2005) 89 per cent of those in 2000. Assuming that the pattern will repeat itself, domestic passenger volumes over the ten years from 2005 will at some point recover to a level of about 6.4 million.

Based on experiences from the two previous crises it can reasonably be assumed that it will be some years before we see a stable period of growth. Lessons learned from the 1991 and 2001 crises indicate that it will take between three and six years to achieve this. It can also be assumed that we will not be able to return to the figure of 6.8 million.

FORECAST UNTIL 2013 AND OUTLOOK UNTIL 2020 – DOMESTIC PASSENGERS

GNP development is used as an explanatory variable when trying to create a model for air traffic development. These models, combined with the reasoning above, provide a forecast for the years up to and including 2013 and an outlook until 2020 (see Figure 5). As can be seen, the volumes are estimated at about 6 million passengers per year.

FIGURE 5 Number of domestic passengers 1974–2008 with an outlook until 2020



Source: SOS Luftfart, Swedish Transport Agency calculations

The decline in 2009 was 11 per cent, and in 2010 and 2011 it is estimated it will be about 1 per cent. Average growth of 0.3 per cent is expected until 2013, continuing until 2020. The end result would then be just above 6 million domestic passengers.

TABLE 1 Forecast until 2020 – domestic passengers

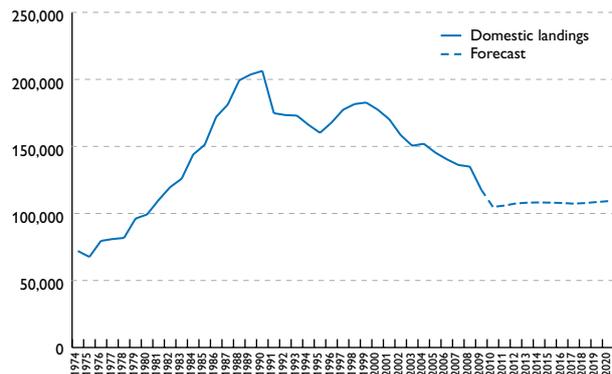
Year	No. of pax (thousands)	% annual change
2008	6,734	
2009	5,849	-13.1
2010	5,258	-10.1
2011	5,356	1.9
2012	5,489	2.5
2013	5,576	1.6
2014	5,642	1.2
2015	5,694	0.9
2016	5,741	0.8
2017	5,775	0.6
2018	5,860	1.5
2019	5,963	1.8
2020	6,062	1.7
2008–2020	-672	-10.0
Annual average	-56	-0.9

Source: Swedish Transport Agency (Transportstyrelsen)

FORECAST UNTIL 2013 AND OUTLOOK UNTIL 2020 – DOMESTIC LANDINGS

The diagram shows the number of domestic landings at Swedish airports since 1974, with a forecast until 2013 and an outlook until 2020. The graph looks the same look as for the passenger volumes, and the highest number of landings was for 1990 (206,000-plus). After the decline during the crisis years, with a slight upturn in 1996, the number had dropped to about 183,000 in 1999, equivalent to 89 per cent of the figure for 1990. After this the number dropped by an average of 3.6 per cent per year, with the exception of 2004, when a slight increase (1 per cent) was seen.

FIGURE 6 Domestic landings at Swedish airports 1994–2020



Source: SOS Luftfart, Swedish Transport Agency calculations

The forecast for the next few years shows a change of ± 2.5 per cent, after which only minor changes are expected. The average growth until 2013 is expected to be zero, and for the years from then until 2020 a slight average decrease of 0.4 per cent is expected. The number of landings for 2013 is estimated at about 128,000, and that for 2020 at about 122,000.

TABLE 2 Forecast until 2020 – domestic landings

Year	No. of domestic landings	% annual change
2008	134,900	
2009	117,600	-12.9
2010	104,900	-10.8
2011	105,900	1.0
2012	107,500	1.5
2013	108,100	0.6
2014	108,200	0.1
2015	108,100	-0.1
2016	107,800	-0.2
2017	107,300	-0.4
2018	107,700	0.4
2019	108,500	0.7
2020	109,200	0.6
2008–2020	-25,800	-19.1
Annual average	-2,146	-1.7

Source: Swedish Transport Agency (Transportstyrelsen)

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GEOGRAPHIC ACCESSIBILITY – A COMPARISON BETWEEN 2008 AND 2009

Using the timetables for selected Swedish airports in the Official Airline Guide (OAG) we have assessed how much time can be spent at a given destination during a day trip on a selected date. For example, someone taking the first flight from Luleå in northern Sweden to Frankfurt and returning on the last flight home can spend nine hours in Frankfurt. Doing it the other way round, from Frankfurt to Luleå and back, allows four hours in Luleå. Looking at it from the Luleå perspective, the former is termed Luleå’s “reachability” (for want of a better word) to Frankfurt, and the latter is Luleå’s accessibility from Frankfurt.

The time that can be spent at the destination has been defined as the period between landing and departure on the last flight that enables the passenger to reach his “home base” before 24:00 hrs the same day. Periods of less than four hours have not been considered, because it is not normally meaningful to make a day trip if you have less than four hours at your disposal to carry out your business.

We have calculated the visit duration for those airports in Sweden with scheduled traffic, and the average of these visit durations is a measure of an airport’s reachability and accessibility.

REACHABILITY AND ACCESSIBILITY – DOMESTIC

The possibility of getting to and from the various airports in one day varies greatly. Airports with many direct connections and frequent departures naturally have an advantage. Figure 1 shows average visit durations on a selected day in 2009 for Swedish airports with scheduled traffic.

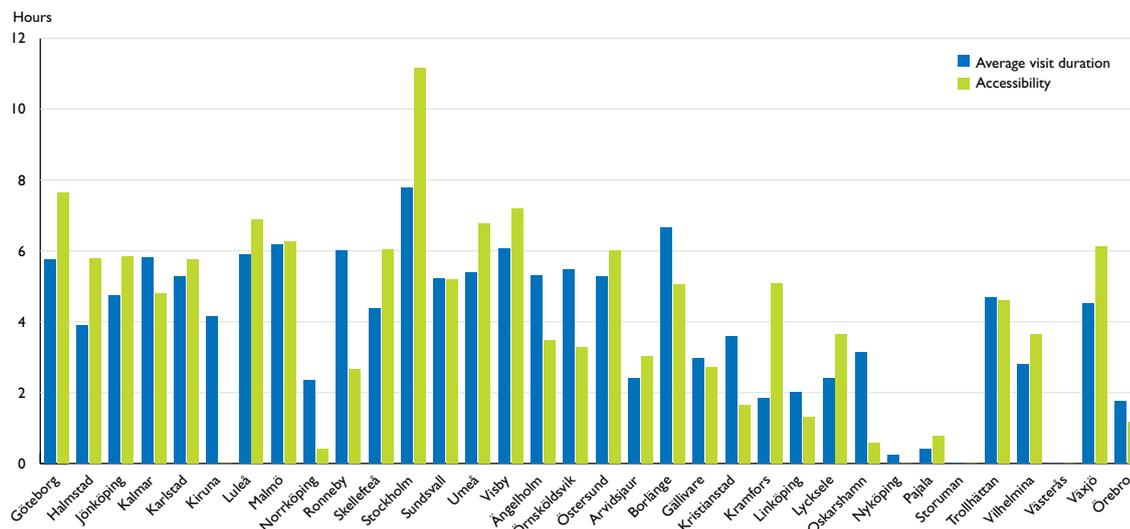
Stockholm, being the major hub in the Swedish air transport system, naturally had the best reachability and accessibility by virtue of its direct connections to and from most of the other airports in Sweden. Other airports generally have only one direct connection, namely to and from Stockholm. The factor most important to the mutual relationship between these airports is timetabling, though distance is also important.

The poorest reachability (disregarding Nyköping and Västerås, because they have no domestic connections) is displayed by Hemavan in northern Sweden. Poor accessibility is displayed by Kiruna, Hemavan, Nyköping and Västerås, which could not be reached from any other airport in Sweden for a day trip.

The average visit duration for the whole group decreased by 14 per cent from 3.5 hours in 2008 to 3 hours in 2009. This applies to both reachability and accessibility.

Table 1 shows the changes in reachability and accessibility for the various airports/regions between 2008 and 2009. It also shows changes in the number of domestic destinations that can be reached, or that the airport can be reached from.

FIGURE 1 Reachability and accessibility – domestic. Average visit duration, 2008



Source: OAGMAX

TABLE 1 Change in reachability and accessibility, domestic

	REACHABILITY				ACCESSIBILITY			
	Average visit duration 2009, hrs	Change, minutes	No. of dest. 2009	Change, No. of destinations	Average visit duration 2009, hrs	Change, minutes	No. of dest. 2009	Change, No. of destinations
Gothenburg	5.53	11	28	2	7.16	-2	32	1
Halmstad	3.53	-13	20	-2	2.68	-164	13	-18
Jönköping	4.92	3	25	-1	1.87	-226	8	-24
Kalmar	5.84	2	28	1	4.39	14	23	5
Karlstad	5.45	6	27	-1	2.32	-194	11	-21
Kiruna	0.34	-196	2	-15	0.00	0	0	0
Luleå	4.89	-35	23	-3	5.26	-71	25	-5
Malmö	4.34	-82	22	-5	5.95	3	31	1
Norrköping	1.82	-14	11	-3	0.39	2	3	1
Ronneby	4.95	-36	23	-3	3.50	46	18	6
Skellefteå	4.42	16	22	0	3.58	-128	18	-11
Stockholm	7.39	-8	33	1	10.76	13	35	2
Sundsvall	4.92	24	24	5	4.00	-63	19	-4
Umeå	4.03	-60	22	-3	5.26	-69	22	-10
Visby	5.95	21	28	1	6.21	-39	28	-4
Ängelholm	4.45	-30	23	-1	4.74	92	28	12
Örnsköldsvik	4.79	-44	22	-5	3.55	14	20	5
Östersund	4.42	-30	23	-2	5.05	-43	23	-9
Arvidsjaur	1.16	-57	8	-7	2.63	-16	20	-2
Borlänge	6.13	-25	27	-2	4.47	-14	30	-1
Gällivare	1.45	-68	10	-8	2.63	16	20	2
Hagfors	3.63	-16	21	-2	1.26	0	6	0
Hemavan	0.00	0	0	0	0.00	0	0	0
Kristianstad	1.24	-133	8	-13	0.55	-52	3	-5
Kramfors	1.58	-2	11	-1	4.24	-33	23	-3
Linköping	0.97	-46	6	-5	0.63	-30	4	-3
Lycksele	1.16	-57	8	-7	3.16	-19	20	-2
Mora	3.11	8	18	1	3.68	0	20	0
Oskarshamn	2.11	-38	13	-2	0.21	-17	1	-2
Nyköping	0.16	-3	1	0	0.00	0	0	0
Pajala	0.39	2	2	0	0.79	8	6	1
Storuman	1.11	66	8	8	0.00	0	0	0
Sveg	0.00	0	0	0	3.16	0	20	0
Torsby	3.63	-16	21	-2	1.11	-9	6	0
Trollhättan	1.95	-128	10	-11	2.08	-131	12	-16
Vilhelmina	1.16	-76	8	-9	3.63	0	23	0
Västerås	0.00	0	0	0	0.00	0	0	0
Växjö	3.37	-54	19	-5	5.05	-39	31	1
Örebro	0.61	-55	3	-5	0.89	-8	6	-1

Source: OAGMAX



Of these 39 airports, 26 experienced reduced reachability and 10 saw an improvement, whilst the situation for 3 of them remained unchanged. The greatest improvement was to be seen at Storuman. The biggest decreases were to be seen at Kiruna, Kristianstad and Trollhättan.

Accessibility increased at 9 destinations and decreased at 21. At 9 destinations the situation remained unchanged. The greatest positive change was displayed by Ängelholm, whilst Jönköping displayed the biggest negative development.

REACHABILITY AND ACCESSIBILITY – EUROPE

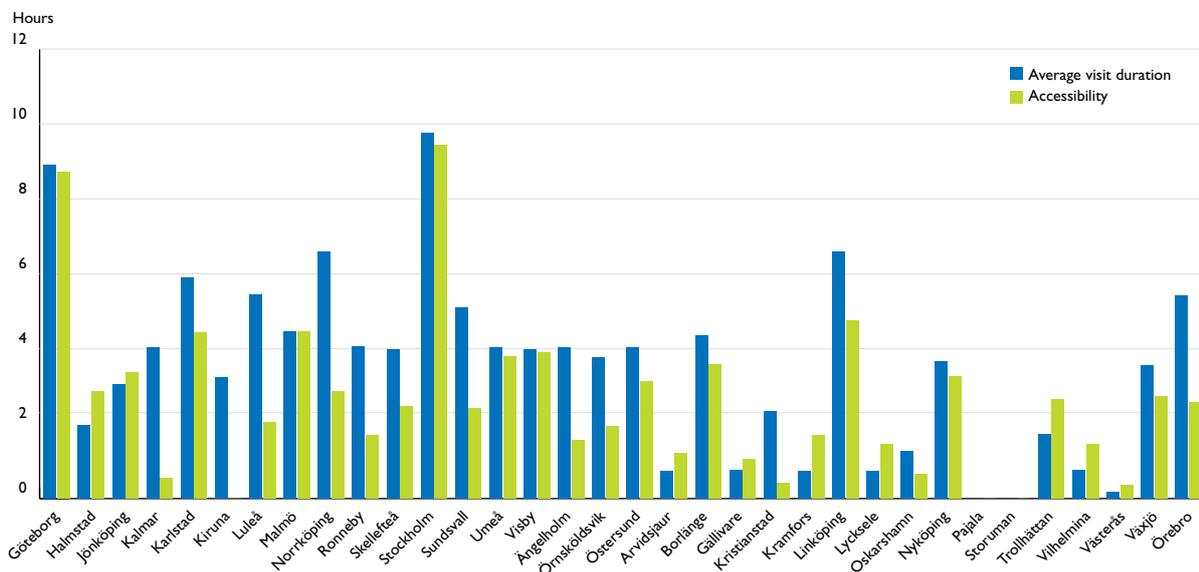
Looking at the international scene, the visit durations for the 33 European cities most frequently flown to from the Swedish airports have been calculated (see Figure 2). The average times have been calculated in the same way as in Figure 1.

As a rule reachability is better than accessibility, i.e. you can spend longer at European destinations than you can spend in Sweden when travelling there from those destinations. In 2009 Stockholm and Gothenburg scored highest for both parameters, because they offered a relatively large number of direct connections to European cities. Other airports with good reachability had good connections to Copenhagen Airport, the main Scandinavian hub. The poorest reachability was displayed by airports in northern Sweden (except those near the coast), together with Trollhättan and Västerås. The accessibility calculations revealed that day trips to Kiruna, Hemavan, Pajala, Storuman or Västerås were impossible.

Average reachability for the whole group decreased to 3 hours in 2009 -5 per cent less than in 2008. Average accessibility was 2 hours in 2009, i.e. 16 per cent less than in 2008.

Table 2 shows average calculated visit durations for 2009 together with the change (in minutes) from 2008 and the number of destinations which can be reached.

FIGURE 2 Reachability and accessibility – Europe. Reachability. Average visit duration – 2009



Source: OAGMAX

TABLE 1 Change in reachability and accessibility, Europe

	REACHABILITY				ACCESSIBILITY			
	Average visit duration 2009, hrs	Change, minutes	No. of dest. 2009	Change, No. of destinations	Average visit duration 2009, hrs	Change, minutes	No. of dest. 2009	Change, No. of destinations
Gothenburg	9.33	25	33	0	8.36	-22	32	-1
Halmstad	2.42	27	13	2	1.36	-89	7	-9
Jönköping	2.64	-25	14	-2	1.06	-138	5	-13
Kalmar	4.00	-2	21	1	2.21	100	13	11
Karlstad	5.94	2	26	0	4.18	-15	22	0
Kiruna	3.45	13	18	0	0.00	0	0	0
Luleå	5.03	-25	22	-3	2.88	51	17	8
Malmö	1.76	-162	10	-11	2.94	-91	16	-6
Norrköping	6.39	-11	27	-2	1.36	-89	9	-9
Ronneby	3.91	-9	20	0	1.67	-2	8	1
Skellefteå	5.27	78	23	3	1.82	-38	9	-4
Stockholm	9.58	-11	33	0	9.39	-4	32	0
Sundsvall	5.27	11	23	-1	2.06	-22	9	-2
Umeå	3.58	-27	19	-1	2.27	-91	11	-9
Visby	3.64	-20	19	-1	3.18	-44	18	-1
Ängelholm	3.73	-18	20	0	2.79	75	18	9
Örnsköldsvik	4.97	73	22	3	1.61	-20	8	0
Östersund	3.58	-27	19	-1	1.67	-87	8	-11
Arvidsjaur	0.58	-9	3	-1	0.91	-18	6	-2
Borlänge	4.12	-15	21	0	3.85	16	21	1
Gällivare	0.61	-9	3	-1	0.91	-9	6	-1
Hagfors	1.09	-4	6	0	0.73	-15	3	-1
Hemavan	0.00	0	0	0	0.00	0	0	0
Kristianstad	1.03	-78	6	-7	0.85	26	4	2
Kramfors	0.61	-7	3	-1	1.70	0	8	0
Linköping	6.82	15	29	0	2.73	-122	15	-13
Lycksele	0.58	-9	3	-1	1.09	-22	6	-2
Mora	1.06	-4	6	0	1.48	-13	7	-1
Oskarshamn	1.06	-13	6	-1	1.52	53	7	4
Nyköping	4.91	75	22	4	2.12	-69	10	-7
Pajala	0.00	0	0	0	0.00	0	0	0
Storuman	0.30	18	2	2	0.00	0	0	0
Sveg	1.06	-4	6	0	1.27	-11	7	-1
Torsby	1.09	-4	6	0	0.64	-20	3	-1
Trollhättan	0.00	-104	0	-10	0.36	-136	2	-14
Vilhelmina	0.61	-9	3	-1	1.27	-11	7	-1
Västerås	0.00	-11	0	-1	0.00	-22	0	-1
Växjö	1.85	-102	10	-8	3.27	33	18	1
Örebro	5.48	4	24	-1	2.33	-15	15	-2

Source: OAGMAX

Of these airports, 11 displayed increased *reachability* in 2009. The greatest improvement was to be seen at Skellefteå, Nyköping and Örnsköldsvik. Substantial decreases were to be seen at Malmö, Trollhättan and Växjö.

Accessibility increased at 7 airports, in particular Kalmar and Ängelholm. Jönköping, Trollhättan and Linköping displayed the biggest decreases.

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TICKET PRICE DEVELOPMENT

Ticket prices for domestic flights increased during 2009, whilst prices for international flights decreased.

Statistics Sweden carries out monthly checks on international ticket price developments regarding both scheduled and charter traffic. The Swedish Transport Agency (Transportstyrelsen) does the same for the domestic sector by collecting average prices from the airlines every month.

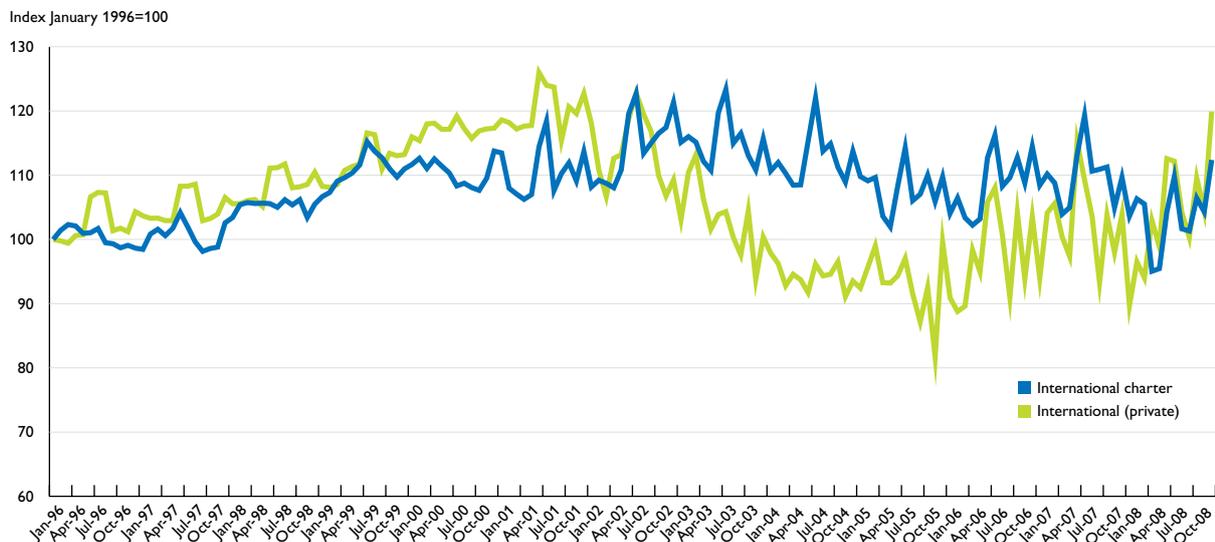
Figure 1 shows price changes during 2009 for international traffic (scheduled and charter).

Ticket prices increased in both areas. The largest increase – over 10 per cent in real terms for 2009 – was in the charter sector. Scheduled ticket prices were up by about 5.5 per cent, which was perhaps a bit surprising in view of the reduced demand for international flights. However, the airlines have chosen another strategy: to reduce capacity and thus keep prices up. During 2009 the number of available seats was reduced by 11 per cent, whilst there were nearly 9 per cent fewer passengers than in 2008.

As mentioned, domestic ticket prices decreased during 2009. Figure 2 shows price changes for domestic flights during 2009.



FIGURE 1 Ticket price development for international travel 1996–2008



Source: Statistics Sweden

FIGURE 2 Price change for domestic flights 2009 – percentage monthly change compared with 2008



Source: Swedish Transport Agency (Transportstyrelsen)

Following rather substantial increases during the first quarter, ticket prices dropped every month for the remainder of the year. The total decrease was just over 3 per cent in real terms. This development is chiefly attributable to increasing competition in the domestic market over the past few years, despite the shrinking market. Prices drop if there are fewer passengers but more operators.

The major domestic operators in Sweden are SAS, Malmö Aviation, Norwegian, Skyways and Sverigeflyg AB (air travel organisers). The latter is based at Stockholm-Bromma, and has increased its number of contracted operators and market shares over the past few years. During 2009 Sverigeflyg's cooperation with Malmö Aviation has expanded, adding routes to Bromma from Malmö, Gothenburg and Umeå.



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FREIGHT CARRYING IN SWEDEN

Mobility – for people as well as goods – has always been a crucial part of social development, and the modern Swedish transport system creates the prerequisites for this.

THE DIFFERENT MODES OF TRANSPORT MEET DIFFERENT TRANSPORT NEEDS

The transport system is a complex network in which there is competition for the buyers, but with different operators also complementing each other in long transport chains. The nature of the goods being carried greatly varies – some are fragile and valuable and others the opposite. Some are heavy and bulky, others small and light. The four modes of transport – rail, road, air and sea – all have their strengths and weaknesses, which determine which goods are carried with which type of operator. Selection depends on the types of goods and whether they are international or domestic.

RAIL FREIGHT

Rail has the advantage of low energy consumption per tonne kilometre carried. The disadvantage is that rail infrastructure is expensive, as are the wagons. Rail is therefore most suitable for long-haul. Another disadvantage is the lack of flexibility as a result of the limited infrastructure for train operation. Rail is also sensitive to disturbances such as inclement weather, accidents and technical problems. In addition, the increasing demand for rail transport of passengers as well as goods has resulted in lack of “rail space” in certain parts of the network, especially around the major cities, creating delays.

ROAD TRANSPORT

Road transport has greater flexibility in that door-to-door transport is normally possible without costly goods transfers. It is relatively insensitive to weather and closed roads. The main disadvantage is its effect on the climate and crowding of the roads, which affects road safety.

AIR FREIGHT

Air freight is still a relatively small-volume mode, but the monetary value of the goods is much higher. Air transport is used for speed and/or high value loads. Other advantages are long range, flexibility, low risk of theft and damage and a



high level of reliability. Disadvantages are costs and a relatively big effect on the climate per tonne transported.

SEA FREIGHT

Sea freight is air freight’s main competitor. Ships are nowadays faster and more efficient and can carry huge volumes/weights over long distances, with less environmental impact than other modes of transport per unit of goods transported. Sea freight is therefore in many cases an attractive alternative to air, although lead times are comparatively long.

DOMESTIC FREIGHT

During the past twenty years road and sea have each had 40 per cent of the domestic transport work, with rail carrying 20 per cent. Domestic air freight is virtually negligible in relation to the total transport work carried out.

Using transport work as a measure, lorries are doing the bulk of it, and loads mostly consist of earth, rock, stone and sand. Mixed cargo, round timber and provisions are the three major products measured in tonne kilometres.

The vast majority of goods transported by road are carried for distances of under 300 kilometres.



Domestic rail freight is dominated by iron ore, which has increased markedly over the past decade and constitutes about half of the transport work by weight. Like air and sea freight, rail freight is subject to transfer to other modes of transport before reaching the consumer – something that is facilitated by so called combi terminals. There are currently 16 large combi terminals at 14 locations in Sweden, and nine of the ten biggest harbours have rail connections.

Domestic sea freight is dominated by oil products, and other common goods are iron ore, limestone and building materials. Sea freight was the predominant domestic mode of transport until the early 2000s, when bigger volumes were reported for road.

INTERNATIONAL FREIGHT

Looking at the geography, it is obvious that sea freight plays a major part in the Swedish transport system. Most of the goods exported and imported are carried on ships. Crude oil, round timber and petroleum based products are the predominant products transported by sea. The major Swedish harbour is Gothenburg, which handles about a quarter of the goods. The majority of all goods exported or imported

pass through Swedish harbours, from where they are transferred to road or rail.

Air freight is mainly international. The goods carried are machine components (e.g. spare parts), electronics, medicines, newspapers and fashion clothes. About 95 per cent of goods exported and imported pass through the airports at Stockholm, Gothenburg and Malmö.

Despite the above, road transport still plays a crucial role and, considering value, road transport is still the most important mode of international transport, carrying more than 50 per cent of all international goods in terms of value. The goods are often transported to an airport outside Sweden for onward transport by air, or vice versa.

TRENDS

Most forecasters agree that in view of the continued globalisation of production and consumption the need for transportation will increase, despite the present downturn. Increased efficiency is paramount, particularly as regards effect on climate, which is the big challenge for all transport systems.

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AIR FREIGHT NUMBERS

After the recession in the early 1990s Swedish air freight experienced strong recovery for several years, but this trend ended with the Asia crisis. Growth has varied over the past ten years.

SWEDISH AIR FREIGHT

Figure 1 shows the phenomenal growth during the 1990s as a result of increased international freight. However, the domestic share has gradually decreased since the 1980s. Towards the end of the 1990s the graph levels off after the Asia crisis, and it has fluctuated since then, depending on domestic economic developments and the economic situation in Sweden's major import and export countries.

EFFECTS OF THE RECESSION

There is a close relationship between transportation demands and the economic situation. Figure 2 shows international and domestic Swedish air freight development together with international passenger development during the period 2006–2009. It illustrates the volatility of air freight versus international passengers at Swedish airports.

International air freight saw a downturn as early as in 2007, i.e. in the early stages of the recession. This was a result of the decrease in exports to the USA, which has continued in terms of value. Domestic air freight decreased about six months later. The development reached its lowest level during the second quarter of 2009 and recovered towards the end of 2009.

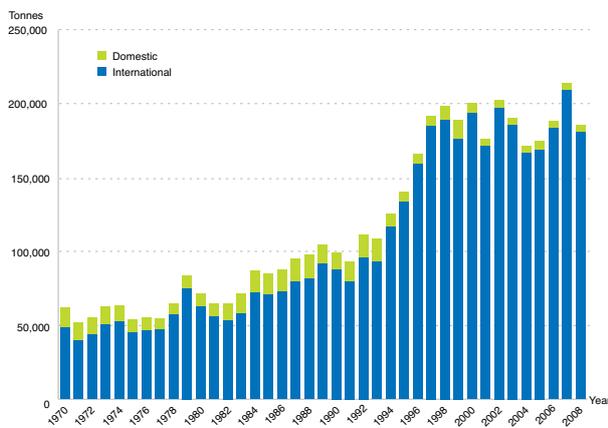
GLOBAL DEVELOPMENTS

North America is the major area when it comes to air freight, and the US domestic market is the biggest in the world today. It is a mature market, and the growth here is expected to be much lower than in the growth markets of Asia over the next 20 years – especially China. Chinese companies have invested heavily in other countries, notably in Africa, resulting in the establishment of a number of intercontinental air freight routes.

Flights from the Middle East can reach both Europe and Africa without any intermediate stops. This factor and the huge investments in infrastructure, e.g. at Dubai Airport, have resulted in strong growth of international freight and passenger numbers. Dubai is also a major transfer hub.

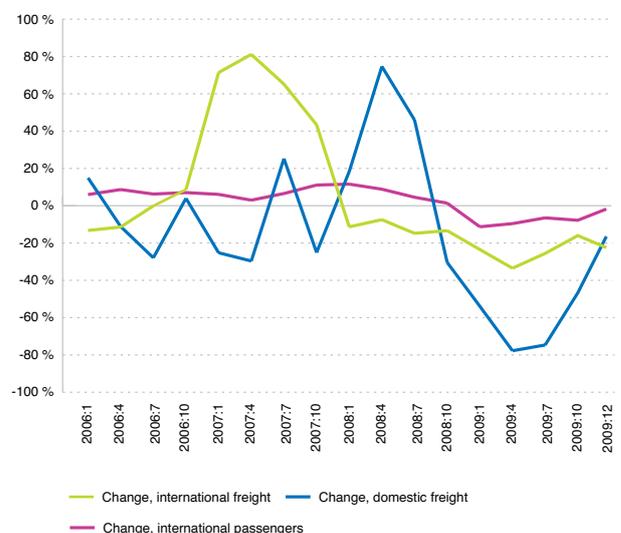
Although Middle Eastern operators were also affected by the downturn at the end of 2008, this downturn was much

FIGURE 1 Swedish air freight 1970–2008



Source: Swedish Transport Agency (Transportstyrelsen)

FIGURE 2 Development of international and domestic air freight and passenger numbers – annual change 2006–2009

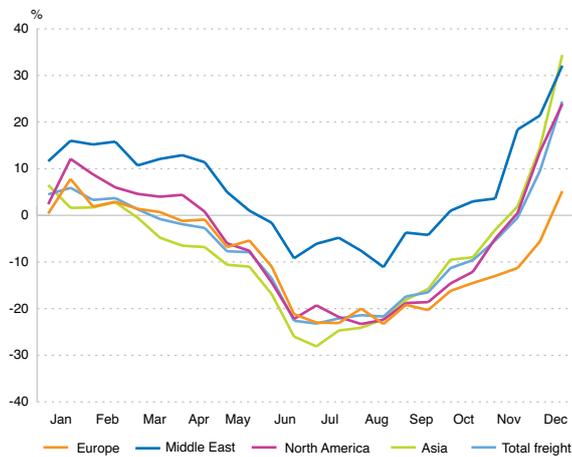


Source: Swedish Transport Agency (Transportstyrelsen)

shorter and less dramatic than in the rest of the world, and things were already picking up by mid-2009.

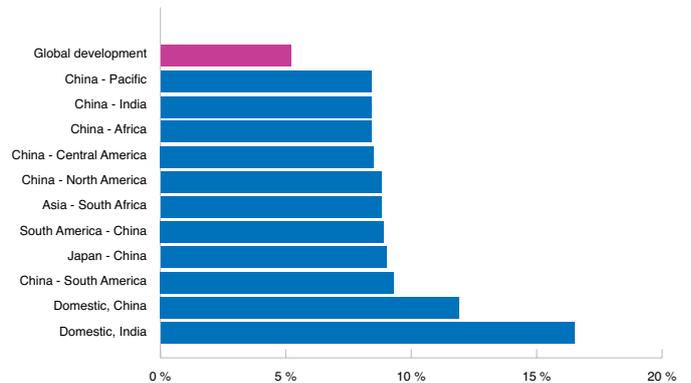
The strongest overall growth in air freight over the next 20 years or so is expected to be in Asia – especially China (see Figure 4). The strongest domestic growth, however, is expected in India, where there are plans to increase the number of adequate airports to 500, primarily by upgrading smaller airports.

FIGURE 3 Global air freight – total and selected regions, 2009



Source: IATA

FIGURE 4 Estimated average annual growth 2009–2028 for the ten areas of strongest growth



Source: Airbus



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Based on an interview with West Air's MD Gustaf Thureborn.

AN AIR-FREIGHT PERSPECTIVE – WEST AIR

Swedish air-freight operator West Air consists of two units, West Air Sweden and West Air Luxembourg, who have a total of about 250 employees. Company headquarters are in Gothenburg. Operations started in 1995, when there were between 15 and 20 competitors. Four or five now remain within the segment – air freight with a capacity of up to 8 tonnes.

West Air's aircraft are leased from a company in the West Air group, European Turboprop Management AB (ETM). The maintenance bases, except for engine maintenance, are Malmö, Coventry, and the Isle of Man. The fleet consists of about 50 aeroplanes. Virtually all of them are turboprops, because they are more economical on the shorter routes (< 900 km) normally operated by West Air. The main competitors are Farnair (Basle), Swiftair (Madrid), Air Contractors (Dublin) and MiniLiner (Bergamo). West Air's customer Amapola is also to a certain extent a competitor. All of these companies operate similar aircraft, i.e. aeroplanes with a capacity of up to 8 tonnes.

According to Mr Thureborn the reason for establishing West Air Luxembourg was to get closer to the larger European transport nodes and better serve the big customers: FedEx, DHL, UPS and TNT.

THE MARKET FOR MAIL CONTRACTS

Air mail used to be handled by the national carriers, i.e. Braathens in Norway and SAS in Sweden. Some countries are still using this system, e.g. Finland, where air mail is flown by Finnair.

One of West Air's biggest customers is the Norwegian postal service Posten Norge. The extreme winter climate in many parts of Norway, for which the pilots require special training, makes mail freight a special case, in that the mail simply must arrive. The tendency is for the national mail organisation to develop and procure its own air freight system, using dedicated cargo aircraft. Air mail used to be transported in the cargo hold of passenger aircraft, which meant it

was sometimes left behind, because the passengers and their baggage were prioritised.

The Swedish postal service Posten AB, decided in 1995 that all mail hitherto transported by rail and sorted on board the trains would now be sorted locally and thereafter transferred to Stockholm-Arlanda Airport for onward flight to the destinations. A more efficient transport system with more aeroplanes was required, so West Air acquired several Hawker Siddeley HS-748s and converted them into cargo-only aircraft tailored to the needs of the Swedish postal service.

In the late 1990s security regulations changed. West Air introduced new procedures together with Posten AB, and the security process consequently now only takes about 30 minutes. West Air's agreement with Posten AB was extended, and for quite some time West Air was the biggest air-mail operator in Sweden. As from the early 2000s Posten AB has used Amapola AB as an agent, thus reducing West Air's share.

THE MARKET FOR PARCEL FREIGHT

West Air has several of the major express companies as customers. FedEx, DHL and UPS control the entire transport chain, from sender to receiver. They manage the vehicles that transport the goods to the airport, the aircraft flying it and the vehicles taking the goods to the customer. These express companies sometimes ask other companies to manage transportation for them, and they are also called integrators, because they integrate the work of forwarding agent into that of carrier.

AIR FREIGHT IN THE FUTURE

Mr Thureborn estimates that air freight has a turnover of about 500 million euros in Europe and about 40 million euros in Sweden. Most cargo is currently transported by road and rail to a hub close to a major city, and is then flown out to smaller cities/airports. This also applies to a large proportion of passenger flights. For example, feeder aircraft from Stockholm-Arlanda can reach about 40 destinations within 1–3 hours.

He furthermore points out that air cargo is a more volatile field than mail (see Figure 1). When contracting for mail and parcels, quality is all-important. It is capacity in relation to price that determines who wins a contract.

FIGURE 1 Annual change freight/mail (tonnes)



Source: Swedish Transport Agency (Transportstyrelsen)

The air freight market has been affected by the economic downturn, and West Air, like many other companies, has had to downsize its operations. Mr Thureborn's forecast is that there may be a small upturn in 2010, with an estimated turnover of about 100 million euros. The customer rules, and cost-effectiveness is the name of the game. Cargo aircraft will become bigger. Boeing estimates a doubling of the number of cargoliners by 2027, with an increase in high-capacity aircraft (> 80 tonnes and 40–80 tonnes).

West Air is striving to adopt the latest technology, and is working together with Cranfield University in England to create extra space in its aircraft by using cargo pods – a concept derived from “water bombers” that serves to increase cargo capacity without increasing costs or fuel consumption.

A merger with Atlantic Airlines Ltd is planned for 2010, and the name of the operation will be West Atlantic. The companies have signed a Declaration of Intent, and since 2009 they have been acting as one company.



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REVISED STRATEGY FOR SAS CARGO

The last two years have been very challenging for airlines, with the global financial crisis causing a decline in yields and demand for air travel. Although there were signs of overcapacity and unsatisfactory yields in the industry, tougher market conditions should not have come as a total surprise, but probably only a very few people could have predicted the magnitude of problems that lay ahead.

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The commercial aviation situation is well documented, but is generally seen as a problem for passenger carriers. Cargo operators, however, have also been hard hit, and are often forgotten. This is not so difficult to understand, as this sector of commercial aviation in Scandinavia is relatively small, though it is an important part of the transport system and its problems should not be neglected.

In February 2008 SAS launched “Core SAS”, a new strategy concentrating on its passenger transit business, as well as the subsidiary ‘SAS cargo’. The main change as a consequence of the new strategy was the decision to abandon use of dedicated cargo aircraft. Although SAS did not have this type of aircraft they had “block-space agreements” with other cargo operators to use them.

SAS cargo are focusing on a so-called belly capacity concept involving (as the name suggests) transportation of cargo in the belly (lower fuselage) holds of passenger aircraft. Many airlines all over the world have been using this concept for a long time. It will primarily affect SAS’s intercontinental operations, as this is the sector in which cargo aircraft were previously used.

The reduced demand for air freight has put considerable pressure on operators’ ability to fill their aircraft, and they have consequently been forced to lower their prices, putting pressure on the yield. The new strategy is thus seen as a natural adaptation to the current market situation. Considering SAS’s vast intercontinental passenger traffic, the situation is regarded to be conducive to the new strategy (although this remains to be seen), but dependent on SAS retaining this intercontinental route network.

As SAS did not have any cargo aircraft of its own, the decision to cancel agreements with cargo operators and use excess cargo capacity in its own passenger aircraft was an obvious one. The new strategy is a logical step given SAS’s present circumstances, although there are signs of an upturn in the aviation business. With this in mind, satisfying customers’ needs is of the utmost importance, thus reducing capacity is risky.

What lies ahead for SAS cargo will no doubt become evident.



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LIVE ANIMALS IN THE CARGO

Norrköping has become the hub for equestrian air transport in Scandinavia. Horses arrive and within a couple of hours are offloaded, checked by a vet, fed and watered. The new owners pick the horses up from Norrköping and transport them to their new home somewhere in Scandinavia.

Animals are shipped all over the world, and whilst regulations governing transportation of live animals are basically the same worldwide, rules differ from one country to another and one airline to another.

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It is a dark, misty November evening when the Icelandair Boeing 757 cargo aircraft with its cargo of 77 frisky Icelandic ponies lands at Norrköping Airport. The aircraft taxis in to the parking spot just between the terminal building and the hangar that has been converted into a large stable. The ground crew quickly erect a portable fence around the aircraft as an extra precaution against any of the horses escaping during the transfer from aircraft to stable. A handler leads each of the horses from the aircraft into the converted hangar, where fresh hay and water await them. Unloading of the horses is completed within an hour, and this is followed by an examination of each horse by veterinary surgeon Carina Söderlund, before they are handed over to their new owners. All that remains is for the crates to be washed, sanitised and then loaded back onto the aircraft.

RACEHORSES FROM THE USA

Not only do horses from Iceland regularly arrive in Norrköping but also racehorses from the United States.

The following Saturday Air Transport International LLC's DC-8 arrived like a ghost from the past. One noticeable difference was the absence of thick black smoke from the four engines. Besides the smoke, there used to be a deafening noise associated with the old engines that could literally make the earth shake, but noise restrictions necessitated installation of hush kits or replacement of the Pratt & Whitney engines with CFM56es. Air Transport International is based in Little Rock, Arkansas, USA, and their fleet of aircraft mainly consists of all cargo DC-8 aircraft.

Norrköping Airport has been designated an approved Border Inspection Post (BIP), and has consequently become the equine import and export centre for Scandinavia. A total of 900 horses passed through Norrköping Airport in 2008, but in 2009 the number of horses fell to about half that because of the economic downturn. It is too early to predict the number of horses for 2010.

DIFFERENT RULES FOR DIFFERENT CIRCUMSTANCES

West Air has several of the major express companies as customers. FedEx, DHL and UPS control the entire transport chain, from sender to receiver. They manage the vehicles that transport the goods to the airport, the aircraft flying it and the vehicles taking the goods to the customer. These express companies sometimes ask other companies to manage transportation for them, and they are also called integrators, because they integrate the work of forwarding agent into that of carrier.

AIR FREIGHT IN THE FUTURE

Animals are regularly transported all over the world. Whilst the "Live Animal Regulations" stem from The International Air Transport Association (IATA) and are based on EU regulations (91/628/EEC) and the regulations of the US Fish and Wildlife Service (50 CFR Part 14 Subsection J), each airline and country also has its own set of rules. Some of the Middle East airlines, for instance, will not accept dogs that are susceptible to heatstroke, e.g. snub-nosed dogs such as Pekinese. Just as heat is a problem in the Middle East, cold is a problem in other parts of the world when transporting animals. Though cargo holds for live animals are heated, if the temperature outside is -50°C the loading time may put animals at risk. IATA prescribes that animals must not be subjected to temperatures above 29.5°C or below -7°C for over 45 minutes. Exemptions from the low-temperature rule may be granted if the animal has been accustomed to low temperatures and this is verified by a veterinary certificate. A dogsled team would be a good example of such an exemption.

THE STRESS OF LONG-HAUL FLIGHTS

Long flights create a special problem with regard to watering animals, and requirements vary from one type of animal to another. With cats and dogs water must be available at re-

gular intervals during flights of over 12 hours. Flights from South Asia to North America often take nearly 20 hours. Soi Dog Rescue, a charitable organisation that castrates street dogs in Bangkok and then often finds adoptive homes for them in North America, prefers to send dogs via Amsterdam's Schiphol Airport. After an approx. 11-hour flight from Bangkok the dog or cat is transferred to a pet hotel within the airport. There, the pet is checked by a vet, and after being fed, watered and exercised it will be ready for the remaining 8- to 9 hour flight to Canada or the USA. The rest stop in the middle makes the journey much easier for the pet. Animals are not normally allowed into European countries without quarantining, but since the pet hotel is on the airport perimeter the quarantine rule does not apply, the only requirement being that the pet must not leave the airport area.

ANIMALS IN THE CABIN – A HOTLY DEBATED TOPIC

Some airlines are allowing smaller pets into the cabin area provided they fit into a small crate. Last year Air Canada decided to allow small animals into the cabin – a decision that led to a fierce and still ongoing debate in Canada between pet owners and asthma sufferers. The airlines have realised how important pets are and how much people are willing to pay for care of their beloved pets. 14 July 2009 was the date of the inaugural flight of the all-pet airline Pet Airways. The airline started as a result of the trauma the owner's dogs suffered while travelling in the cargo hold. It is based in Florida and uses the 19-seat Beach 1900C aircraft. Some of the seats have been removed to make room for kennels, and the aircraft is pressurised and has temperature control for maximum comfort. There is also an attendant at hand, and the

cost of shipping is similar to what other airlines charge to carry animals in the cargo hold.

REGULATIONS PROTECT ANIMALS' WELLBEING

IATA's *Live Animals Regulations* describe in detail how animals should be transported in order to reduce the risk of their being injured during transportation. Animal welfare forms the basis of regulations on dimensions of crates and temperature restrictions. It is recommended that animals not be given sedation, as this has been shown to decrease their stress tolerance. Flying is very stressful for an animal, and it is important to try to decrease the level of stress.

The majority of animals transported on board aircraft are dogs and cats (38%), followed by fish (14%) and farm animals (10%). Some kinds of live transportation are even more specialised. Special requirements regarding transportation of birds, monkeys, snakes and other animals are listed in the chapter General Container Requirements for Reptiles and Amphibians. This chapter contains all the requisite information on transporting crocodiles on board aircraft without causing the animals any suffering. There is a great need for zoological transportation to and from zoos all over the world.

MILAGRO – THE MIRACLE DOG

There are some heartbreaking stories concerning transportation of animals, but sometimes there are amazing outcomes. Take the little brown dog Milagro (Spanish for 'miracle'), which was found sitting in his crate amidst all the debris from a crashed airliner. American Airlines 757 Flight 965 crashed into a mountain in Cali, Columbia on 20 December 1995, killing all 151 passengers and 8 crew. Only four people, all sitting together in one row, and the little brown dog Milagro survived.



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NB: This article covers flight safety considerations only – not security.

TOOLS FOR AERODROME AUDITS AND INSPECTIONS

The scheme used by the Swedish Transport Agency is based on requiring the organisations that are subject to audits, i.e. certificate holders, to demonstrate that they have a plan that shows how they intend to operate their aerodromes. The Agency has different tools at its disposal to find out how the aerodromes are doing in relation to the regulations – issue/non issue of certificates, implementation of audits and inspections, dissemination of information and dialogues with aerodrome managements.

REGULATIONS

Is it possible for us as an authority to regulate or be directly prescriptive in our regulations as to how the safety culture at an aerodrome should be created? The answer is no, simply because an aerodrome's organisation consists of people with values, ideas and views that in their own ways define and constitute an organisation's norms and values.

The task for us is to ensure that the organisations meet an agreed set of requirements and norms, in part by checking that their internal instructions are adhered to and that the monitoring and corrective functions are efficient.

The basis of an organisation that focuses on safety is senior management's commitment to quality. The safety considerations in our regulations set the standard regarding management of an aerodrome.

OPERATIONS CERTIFICATE

During the process of applying for a certificate for an aerodrome, assessments will be conducted regarding the ability of the organisation to meet all the requirements. A certificate can be open-ended but can still be issued with limitations, revoked or denied renewal if the organisation does not meet the requirements.

AUDIT PROGRAMME

When an aerodrome organisation has been granted its initial certificate it will become subject to the system-focused audit

programme. In order to determine which aerodrome to inspect and when, the concept of risk based inspection is used. Factors in this context include aerodrome size, traffic volume, complexity and assessed risk inclination. Another important factor is evaluation of the safety culture.

SEMINARS

There are regular seminars with aerodrome managements at which revised regulations are communicated, incidents and investigations are highlighted and fruitful discussions take place with a view to promoting safety culture.

DISSEMINATION OF INFORMATION

Communication can be a complicated issue. It may be simple to convey words, but have the listeners grasped the message? We use several channels for communication, such as attending courses, providing information in connection with the issue of a certificate, and during audits and inspections. Another source is our website. We are constantly striving to develop the flow of information.

Our review process before issuing new regulations is well established and gives all concerned the opportunity to have their say in a consultative process. We are currently in the process of making the regulations more flexible and user friendly. This will promote a good safety culture.





DIALOGUE WITH MANAGEMENT

In the mid-1970s the first 'real' regulations were issued in respect of establishing and running an aerodrome. At that time it was sufficient to say that 'an aerodrome manager shall be appointed'. There were no other requirements apart from what the facilities should be like. At the time competence was just an undefined 'opinion'.

Today things are different. Skilled and experienced management is a prerequisite for a good safety culture, and this is reflected in our current and future regulations. In particular, the accountable manager and the safety coordinator are singled out, and before approval they are subjected to a dialogue during which responsibilities and obligations are clarified.

REPORTING SYSTEM

All certificate holders within the aviation system have to submit safety reports on incidents and accidents to the Agency. A factor crucial to success in this regard is a non-punitive environment ('just culture'). This applies to every person – unless, of course, there is criminal intent or gross negligence

behind the incident/accident. If the reporting system at an aerodrome works well, we can easily see how the organisation works and the results from the aerodrome's supervision and follow-up activities.

THE HUMAN FACTOR

A system is almost always subject to what is called the human factor, and the competence of the people delivering a service or a product is crucial. Competence in this context is not only education and training but also the attitudes, notions and experiences that are present and developed when carrying out the daily activities. Everything is based upon everybody sticking to the rules and taking an active part in flight safety work.

The behaviour of our inspectors is crucial to how others view us, and it affects the aerodrome operators' attitudes to the regulations and to flight safety work in general. Each and every individual, regardless of their position in the aerodrome organisation, deserves respect and a correct, open and polite treatment for us to gain their confidence in our common goal: to create a safe and secure environment for air traffic.

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THE GOVERNMENT SUBSIDY SYSTEM – THEN AND NOW

EARLIER SUPPORT SYSTEMS

Regional airports in Sweden receive Government subsidies in the form of investment support (deeply rooted) and operating support (added in the 1980s). The operating support in its various forms has diversified over the years, but initially it was only seen as a temporary arrangement.

A long-term Government policy and declaration of intention in respect of the regional airports has been lacking.

In 1984 the Government set up a committee to establish a national transport plan that was to include an overhaul of the total Government transport policy, and to define the Government's responsibility for airport infrastructure and accessibility by air.



WORKING GROUP FORMED

The Swedish civil aviation administration (LFV) and regional airports agreed on a joint initiative of setting up a working group to clarify the division of responsibility between the Government and the local authorities in respect of airport infrastructure.

The working group delivered its proposal to the government in March 1997, stating their opinion that it was necessary for Government to accept far-reaching responsibility for supplying airport services to all non-Government owned Swedish airports. The object of this new support policy proposal was to guarantee air services throughout the country and concentrate on airports with year-round scheduled or seasonal traffic, together with other essential air services such as cargo operations.

There were 27 airports in total, comprising local authority or privately owned ones that would qualify under this definition. The proposal was to grant support that would cover 75 per cent of the total operating deficit. The rest would be the responsibility of the airports themselves – something which would put pressure on the owners to make their operations efficient.

RIKSDAG APPROVAL

A year later (after having reviewed the report) the Government handed over its proposal to the Riksdag (Swedish Parliament). They essentially concurred with the working group's report and were of the opinion that air traffic infrastructure should be seen as a united system, in that the existence of one airport implies that there is another one. Furthermore, in accordance with general transport policy principles, the Government was responsible for this system of interregional and international connections. Many regions offered poor alternative modes of transport, and aviation is of crucial importance for accessibility and regional development – ferrying people as well as freight. The support system was to be managed by LFV.

The Riksdag took a positive view of the proposal and in June 1998 imposed certain guidelines for regional airports (in line with the proposal). Several years after the system's inception – in 2006 – it was redefined, and the following amendments were introduced:

- An operating subsidy can only be granted if no alternative interregional public transport is available.
- A maximum of 2,000,000 Swedish kronor from the annual subsidy may be used for R & D purposes by the re-



ceiving airports (the greater part of the R & D monies is to be spent on improvements to the environment).

- The subsidy must not exceed 100 per cent of the actual financial deficit at the airport in question.

PERIPHERAL AIRPORTS GET PREFERENTIAL TREATMENT

The Government also looked into each airport's vicinity to Stockholm, as this was of crucial importance from an inter-regional standpoint. If other modes of public transport were available that facilitated passenger travel to central Stockholm within a two-hour period, this was considered a reasonable limit for not granting a subsidy. As a result of this decision four airports were excluded from the support system.

The support system is primarily aimed at the peripheral airports, especially those served by air traffic procured by the Government for reasons of regional transport policy. These airports get preferential treatment.

The total amount of earmarked operating support will decrease in the long term. The "excess" monies that consequently become available from the reduced operating subsidies will also be made available to the local authorities for other regional transport systems.

In 2008 management of the system was transferred to the new Swedish Transport Agency (Transportstyrelsen). On April 1st 2010 it was again transferred, this time to the new Swedish Transport Administration (Trafikverket).

The future government-owned airport system will consist of ten airports. This means that four airports will be transferred to regional/municipal ownership: Örnköldsvik, Sundsvall, Karlstad and Ängelholm/Helsingborg. These airports will be covered by the subsidy system. The latter airports are currently run by Swedavia (Swedish Airports), following the split of LfV into two branches on 1 April 2010. The other branch is still called LfV and handles air navigation services, but it may be taken over by local authorities, county councils or the industry. The policies and guidelines for Government operating support will continue to be valid for airports with transferred ownerships.

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THE NEED FOR VALUE ASSESSMENTS

This is an abridged version of an article in "Flygtendens", the quarterly magazine published by the Swedish Transport Agency.

To safeguard all interests when a built-up area is planned in close proximity to an airport of national interest, a value assessment is carried out. The aim is to show the possible consequences of development of the surrounding municipality/region if such an airport's development is restricted. A value assessment will also supplement an airport's environmental impact assessment. A good example is the upcoming review of the environmental permit for Stockholm-Arlanda airport, for which the value assessment is crucial to the discussions.

The Swedish Transport Agency is responsible for supplying data for the application of planning regulations. This basically means they manage the task of defining "aviation in the national interest" and serve as a body to which concerns relating to building development are referred for consideration.



The data is used in the local political process. Areas of national interest and how they are affected by obstacles and noise, for example, must be subjected to a value assessment. The environmental court could use a value assessment to judge the reasonableness of the environmental requirements. The law specifies that this assessment consider the usefulness of protective and other precautionary measures versus costs for the same.

The value assessment includes a description of the population and economy in the surrounding area, together with passenger statistics on the airport in question. A compilation of these data form the basis for a traffic forecast, and in this respect the analysis of international traffic over the past few decades is of particular interest. Domestic traffic has experienced a lot of competition from rail and road. Further local analyses will be required to show how different modes of transport interact.

The section in the value assessment concerning the airport's development will result in a description of the land required in order to meet the transport policy goals. Aviation is seen as one part of an all embracing transport system, therefore intermodality is a main ingredient of the value assessment.

VALUE ASSESSMENT AND ENVIRONMENTAL SCRUTINY

The process of scrutinising environmental effects on an airport includes a report (from the airport in question) stating all relevant conditions in connection with a decision on a permit by the environmental court. These courts examine airport activities in relation to the environmental code, which warrants consideration. One of the basic issues is the so called principle of caution, according to which the best technology possible (from an environmental standpoint) should be used in order to prevent damage or inconvenience to people's health or the environment.

The environmental courts have to consider when it is no longer realistic to uphold the principle of caution. The positives and negatives have to be weighed up against each another. How much would environmental restrictions cost in terms of lost value, for example?

The aviation industry is naturally of the opinion that an airport is of fundamental importance to the wealth of the region. This is sometimes so obvious that a description of the airport's importance becomes both naive and exaggerated. The value assessment must therefore be objective, comprehensive, and easily understood by all concerned.

CONCLUSION

For regional and local planning processes the value assessments submitted by the aviation industry must be reliable, and must also quantify the effects of capacity restrictions imposed.

What happens when society requests more air transport than the market is allowed to produce?

There are many threats to air traffic development in Sweden: building development, wind turbines and emission controls are just a few examples. To safeguard aviation's interests and its contribution to a sustained societal development there must be a dialogue on the importance of aviation.

We may not have found the final form of dialogue, but we are well on our way.



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LASER – A GLOBAL THREAT

Laser attacks on commercial airlines are a growing global problem that arrived on Swedish soil a few years ago. A marked increase in the number of laser attacks on aircraft last year forced the authorities to take action in the fight against dangerous and illegal use of powerful laser pointers. This resulted in the formation of the Laser Group, which promotes cooperation between Swedish civil-aviation, environmental, nuclear and law enforcement authorities.

SOUTHWEST AIRLINES OVER LAS VEGAS

Southwest Airlines' Boeing 737 rolls down the runway in Las Vegas and takes off for San Antonio. After climbing on a westerly course the first officer banks the 737 to the right. Below is the nightly display of dazzling lasers from the famous Vegas strip. Suddenly three of the laser beams strike the cockpit of the Southwest aircraft and hit the eyes of the first officer, who is temporarily blinded. The captain takes control of the aircraft. For about five minutes the first officer is unable to see anything, and when his sight finally starts to return he is unable to focus on any of the instruments and is unsure which side is up and which is down. This 1995 incident was the first serious encounter involving laser beams striking an aircraft.

The laser phenomenon did not arrive in Sweden until 2006, when one such incident was reported. The years 2007 and 2008 saw a handful of laser-beam reports, then in the middle of 2009 the number of laser incidents dramatically increased to 93, as media interest grew. There has been a slight decrease in laser incidents since the beginning of 2010, raising hopes this trend will continue to decrease.

The larger airports remain the target for most of the laser attacks, and in all but a couple of cases it is the more dangerous green laser that has been used. 80 per cent of the attacks have been on aircraft during the landing phase, and almost all of the rest of them have involved aircraft that had just taken off. In a few rare cases, aircraft flying at higher altitude have been targeted.

FORMATION OF THE LASER GROUP

Four authorities in Sweden got together in 2009 to form the so called Laser Group, the main purpose of which is to

share information during regular meetings between the Swedish Transport Agency, the Swedish Police, the Swedish Radiation Protection Institute and the Occupational Safety and Health Institute. One of the first items on the agenda was to introduce a new regulation necessitating a permit for use of a laser pointer of over 5 mW in a public place. Introduction of further restrictions on laser pointers is now being discussed. One such restriction would be to classify the stronger laser pointers as weapons, though any attempt to fit lasers into an existing weapon classification may prove difficult, and would require the creation of an entire new category of weapon. However, classification of laser pointers over certain strengths as weapons would most certainly improve the police's chances of controlling the growing laser problem.

There is a tendency towards leniency in Sweden, thus whilst the perpetrators are often caught this crime seldom results in a penalty. However, the recent charging of a person who targeted an aircraft with a laser pointer and seriously attempted to sabotage it, which could bring a four-year jail term, may change the way Sweden deals with the perpetrators.

TRAINING FOR LASER ATTACKS

The Swedish Transport Agency is working with Swedish air carriers on advising crews being targeted with lasers on how to react in order to minimise the effect and avoid any damage. The danger of a laser attack on an aircraft is the blinding effect on the pilot, which can last for several minutes.

The three most common effects on a pilot during a laser attack are as follows:

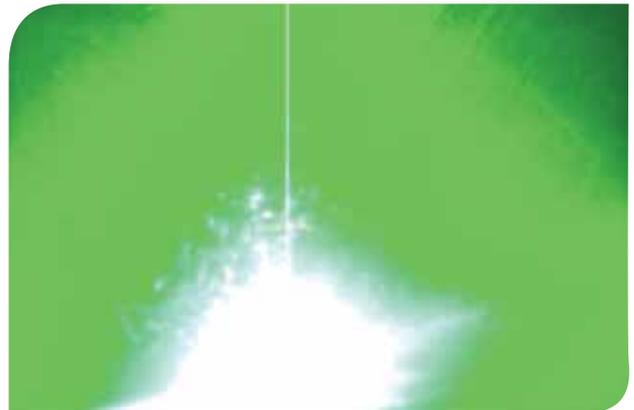
1. Glare – Obstruction of an object in a person's field of vision as a result of a bright light source located near the same line of sight.
2. Flash blindness – A visual interference effect that persists after the source of the illumination has been removed.
3. Afterimage – A transient image left in the visual field after exposure to a bright light.¹

The fact that the majority of laser incidents in Sweden are during the critical landing phase poses a major safety risk for the aircraft. With the pilot's eyes being accustomed to darkness, a sudden flash of very bright light will probably cause temporary blindness, and afterimages that would make it difficult to focus on the aircraft instruments. Visual refe-

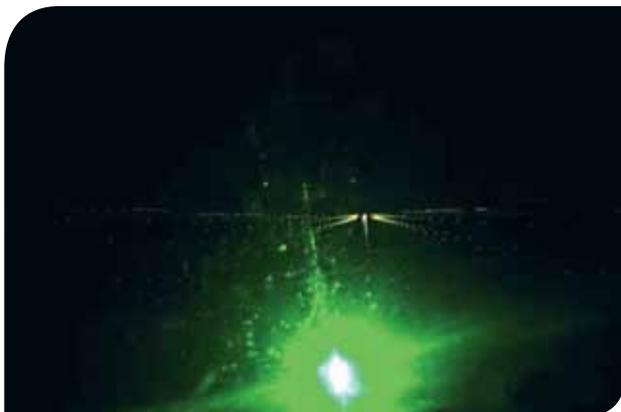
FIGURE 1 Example view from aircraft cockpit (in FAA 737 flight simulator) during laser illumination flash.



1. View of final approach to runway at 100 feet AGL, no laser illumination.



4. Simulates the effect of a 5 mW green laser pointer as seen from 330 feet away, or a 300 mW laser from 2,400 feet away.



2. Simulates the effect of a 5 mW green laser pointer as seen from 3,000 feet away, or a 300 mW laser from 16,000 feet away.



3. Simulates the effect of a 5 mW green laser pointer as seen from 1,000 feet away, or a 300 mW laser from 6,700 feet away.

CHECKLIST

If a pilot is targeted by laser while flying, the following actions are recommended if safety permits:

- Turn the head away from the light
- Try to block the light by the hand or an object
- Inform other crewmembers of the light
- In a multi crew aircraft: Hand over control to other pilot
- Fly on instruments
- Connect the autopilot
- Manoeuvre the aircraft/helicopter so the light does not reach inside the cockpit and advise Air Traffic Control
- Assess the sight by reading an approach plate
- Avoid scratching the eyes
- Report the light source to Air Traffic Control and possible effect on sight.

After landing seek medical check-up, preferable by an eye specialist.

For more information: International Civil Aviation Organization (ICAO) Manual on Laser Emitters and Flight Safety (Doc 9815 AN/447), First Edition – 2003.

rences to the runway may be lost, forcing the pilot to execute a missed approach. In addition, if the pilot has lost his vision it is not difficult to imagine how a dangerous situation can develop.

During the rare laser attacks when the aircraft is flying level at a higher altitude, turning up the cockpit lighting would adapt the eye to the light conditions, thus lessening the impact of the laser.

It must become almost second nature for a pilot to react during a laser attack, and some airlines now make this part of their regular simulator training.

Foreign air carriers were the first to introduce pilot response to laser in their routine simulator training. The Swedish Transport Agency recognises the importance of such training, and has been instrumental in advising the Swedish air carriers on how to prepare their pilots for a laser attack.

PROTECTIVE GEAR

Sweden was not alone in experiencing a marked increase in the number of laser incidents last year, which subsequently led to increased research into protection against lasers. Whilst green lasers are more common than red lasers, it is felt that protective glasses must provide protection against both red and green lasers. However, the lenses in eyewear currently available on the market for protection against both green and red lasers have proved to be too dark for a low-light environment. Improvements are expected later this year, with the production of a much lighter lens. It is anticipated that donning of protective eyeglasses will become part of any pre-descent checklist.

The European Aviation Safety Agency (EASA) has issued notice of a proposed amendment (NPA No 2009-12) regarding colour coding acceptable as a visual alert indication for flight crew. The Swedish Transport Agency replied that EASA should also consider a list of colours that are less readable when wearing protective eyewear and that should thus not be used for cockpit warnings and cautions.

Whilst the cost remains relatively high, the growing need for protective eyewear not only for pilots but also for the security section should lead to a price decrease.

PLANE AND LASER SPOTTERS

Time is of the essence in the event of a laser attack if there is to be any hope of arresting the perpetrator. Initially things often moved too slowly, and by the time the law enforcement arrived the attacker was long gone. Now that airport

staff and the police have been advised of the importance of speed the response time has improved. The International Civil Aviation Organization (ICAO) carried out a study around Montreal's Dorval airport. It found hordes of plane spotters around the airport, and realised that the extra pairs of eyes could be used to locate the source of a laser attack. Stockholm-Arlanda is the first Swedish airport to have started a programme involving local plane spotters, who will be equipped with a special badge and will wear a recognisable jacket. It is hoped that with the help of plane spotters the response time will improve and localisation of attacks will be more specific, in which case other targeted airports will doubtless follow in Arlanda's footsteps.

The increase in laser attacks is a global problem that requires cooperation not only between various agencies and authorities but also between countries. Stricter classification of laser pointers will probably lead to decreased import of such items. The Swedish Transport Agency views laser attacks on aircraft as a serious threat. As part of the Swedish Laser Group it considers this its top priority, and will continue working towards elimination of illegal use of laser beams.



¹ Nakagawara VB, Montgomery RW. The effects of laser illumination on pilots' operational and visual performance during final approach. DOT/FAA/AM-04/9. June 2004.

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VOLCANIC ASH FROM ICELAND CRIPPLES EUROPEAN AIR TRAFFIC

The eruption of the volcano Eyjafjallajökull dealt a staggering blow to all aviation-related undertakings. The recovery from the decline in 2009 was quickly wiped out, and there is normally no insurance that covers loss of income caused by disasters of this kind.

At the time of the eruption few could have imagined the enormous effect it would have on the aviation trade. It also served to reveal our societies' vulnerability to natural disasters. Over the past ten years the world has seen many upheavals, such as 9/11, the Iraq invasion, the SARS epidemic, bird flu, swine flu, the financial crisis, and now a volcano eruption that grounded most of Europe's aircraft fleet for a considerable period. At the time of writing this volcano is still active and emitting ash, and one can only hope that it will not trigger an eruption from the nearby Katla volcano, which is considerably bigger and would cause even greater harm.

Eyjafjallajökull's first eruption was on 21 March 2010, and there was a further, considerably stronger eruption on 14 April. The ash cloud spread eastwards, and Norway banned all flights, followed the day after by many other European states, including Sweden. About 30 countries were affected. This initial ban lasted for a week, and was followed by sporadic bans as the eruptions continued intermittently.

The transport ministers of the EU countries met to discuss how to alleviate the situation, and decided to divide airspace into three zones: Zone 1 – total ban on flying; Zone 2 – traces of ash may be present but some flights possible under certain conditions (e.g. engine inspection after each flight); Zone 3 – no restrictions.

Another matter discussed at the meeting was compensation: should those affected by the ban be compensated, and if so was it possible to do this without violating any EU subsidy principles? At the time of writing the matter has not been resolved.

THE COST TO THE AVIATION SECTOR AND SOCIETY

The number of people directly employed in the aviation sector is not that high in relation to its turnover, but the number of people involved in peripheral activities is high,



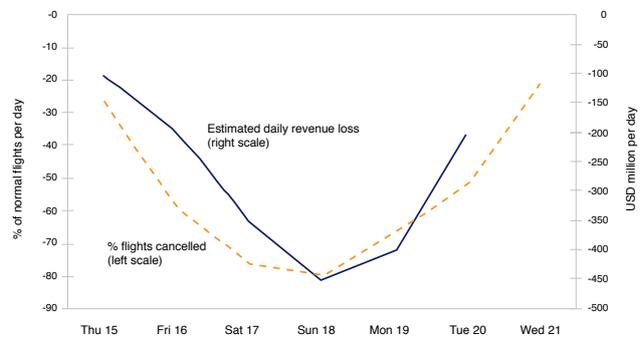
e.g. about 16,000 people work at and around Stockholm-Arlanda Airport.

IATA (The International Air Transport Association) is of the opinion that this crisis was worse for aviation as a whole than the 9/11 crisis, when US airspace was closed for three days. Figure 2 shows the daily revenue losses and the percentage of cancelled flights during the period 15–22 April. The peak loss of revenue was estimated at 400 million USD per day, and the total loss for the period was 1.7 billion (1,700,000,000) USD.¹ IATA estimates the total deficit for 2010 at 2.8 billion (2,800,000,000) USD, and their June forecast should be out by the time this magazine goes to print.

The European Commission estimated that 1.2 million scheduled passengers a day were affected during the period, and a total of 10 million passengers (including all categories) were either stranded or could not fly to their desired destination.² The loss of income for airlines was greatest on the North American market, whereas the largest loss of passengers was seen in domestic traffic in Great Britain, Germany and France.

Table 1 shows the number of flights executed in Europe between 14 and 22 April compared with the corresponding number of the week before. As can be seen, the number of cancelled flights was highest on 17 and 18 April, and on April 22 the number of flights was over 30 per cent that of the preceding day.

FIGURE 1 Daily revenue losses (solid line) and percentage of cancelled flights (dotted line)



Source: IATA.



The map shows ash distribution over Europe on 17 April 2010

TABLE 1 Number of flights between 14 and 22 April compared with the corresponding number the week before.

Date	Number of flights executed	Number of flights executed the week before	Change in %
Wed April 14 2010	28,087	27,912	+0.6 %
Thu April 15 2010	20,842	28,578	-27.1 %
Fri April 16 2010	11,659	28,597	-59.2 %
Sat April 17 2010	5,335	22,653	-76.4 %
Sun April 18 2010	5,204	24,965	-79.8 %
Mon April 19 2010	9,330	28,126	-66.8 %
Tue April 20 2010	13,101	27,508	-52.0 %
Wed April 21 2010	21,916	28,087	-22.0 %
Thu April 22 2010	27,284	20,842	+30.9 %

Source: Eurocontrol 23 April 2010.

However, the biggest effect on the national economies is expected to surface through the airlines' customers, because of cancelled deliveries of parts and other things necessary for continued production. As an example, during the ban the car manufacturers BMW and Nissan closed down a total of five factories because of a lack of sensors from suppliers in Ireland. In Norway fisheries were affected because it was impossible to transport fresh salmon by air, and in Kenya the rose growers lost about 4 million USD every day. The vital role of air transport suddenly became apparent to the public.

WHAT LIES AHEAD FOR THE AIRLINES?

An airline's recovery depends on its access to liquidity and its own capital. The biggest problems are probably faced by regional and niche operators, who differ widely in these respects.

OTHER OPERATORS AFFECTED

Travel organisers were hard hit. The biggest operator, TUI Travel, lost about 22.6 million euros during the ban in April. Swedish organiser Fritidsresor estimates the cost of bringing its passengers home at 40 million Swedish kronor. Not only travel organisers but also travel bureaux such as Ticket, Resia and American Express were severely affected.

Because the capital base in this industry is very low, some operators risk having to close down. The high cost of bringing travellers back home and declining sales put a severe strain on finances, and there are signs that new travellers are hesitating to book holiday trips.

Airports were of course also very much affected, and the estimated total loss (fees and sales of goods and services) for the government-owned airports is estimated at 100 million Swedish kronor.

Certain vital forms of transport, e.g. ambulance flights and flights carrying spares for essential services, can to a certain extent be replaced by surface transport, though in cases such as transportation of organs for transplant, speed is often crucial and air transport is the only way for long distances.

During the ban Swedish State Railways (SJ) and bus companies were able to assist stranded passengers, especially in central and southern Sweden. In the north things were more difficult, and the consequences were dire. It is also hard to replace international air traffic with buses and even harder to substitute trains, because they are not coordinated internationally.

¹ IATA 21 April 2010.

² European Commission, 27 April 2010, SEC (2010) 533.

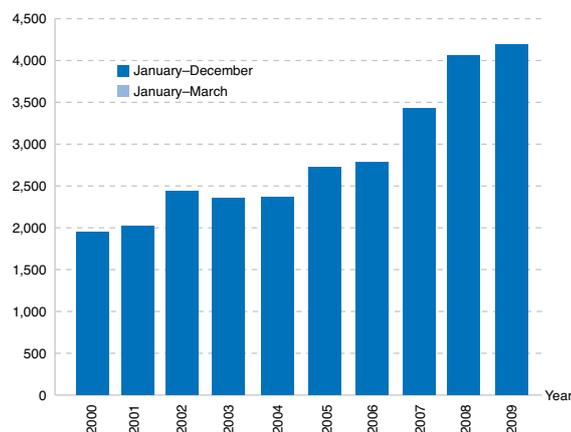
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(The following is an amalgamation of three different articles)

OCCURRENCE REPORTING IN SWEDEN

An important part of the flight safety work is the occurrence reporting system, whereby incidents, serious incidents and accidents are reported to the Swedish Transport Agency (Transportstyrelsen). The system is based on drawing conclusions from these reports in order to prevent reoccurrences. Reporting has been mandatory in Sweden since 2007, and the number of reports has increased (see Figure 1). There were 4,194 reports in 2009.

FIGURE 1 Number of reports 2000–2009



The reports are analysed by specialists with operational experience in the fields covered by the reports. Following assessment of the need for possible action concerning an event, the information is coded in accordance with an international system and stored in a database (ECCAIRS) common to the EU states. The information is deidentified and used for statistical purposes to obtain valuable information as part of the safety work.

Feedback on an individual report is normally only provided when the Agency takes some kind of action. Overall feedback is provided in the form of statistics published on the web and now here. The Agency is continuously striving to improve its feedback in order to promote reporting.

The reports emanate from all branches of aviation – aerodromes, air traffic control, pilots, airlines and flying clubs – something which provides a good overview of all types of occurrences and will be used for internal as well as external flight-safety work.

Figure 2 shows the distribution of occurrence categories during the third quarter (Q3) of 2009. It should be noted that most of the “Technical – ANS” reports are triggered by the new computer-based system E2K, and the fact that the ANS branch is the most frequent reporter. The number of bird strikes was lower than in the previous quarter.

Figure 3 shows the statistics for Q4. The number of airspace intrusions has decreased but the number of laser beam pointings has increased. It is noteworthy that the number of laser pointing reports has increased every quarter.

FIGURE 2 Occurrence reports per event category – Q3.

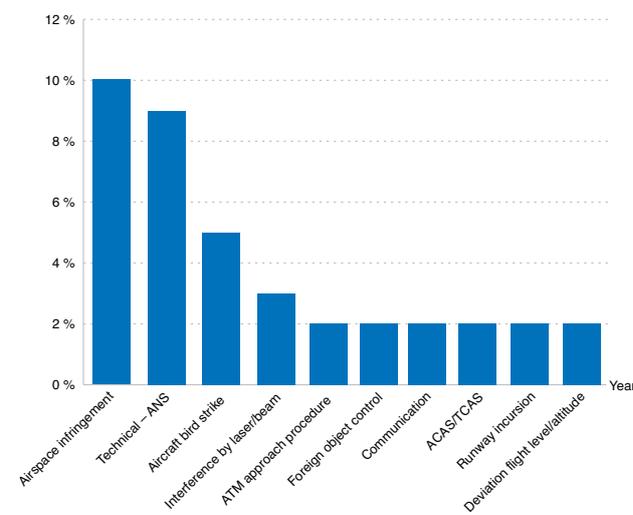
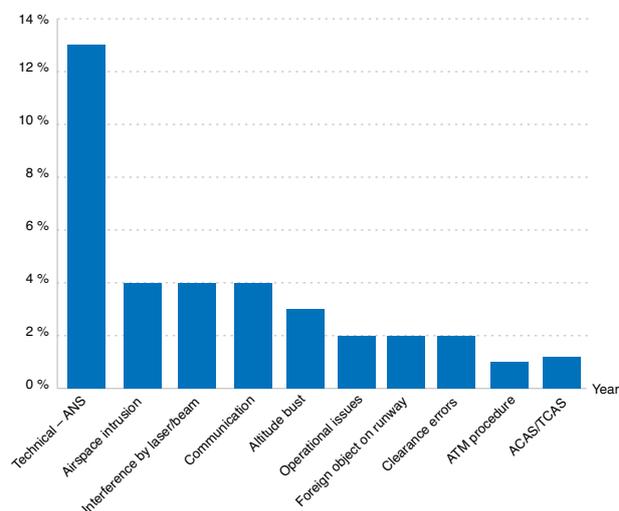


FIGURE 3 Occurrence reports per category – Q4



HIGHLIGHTS FROM VARIOUS AREAS

AERODROMES

Bird strike is one of the most common occurrences in Sweden. The vast majority of bird strikes take place at and around our aerodromes, especially in the early morning hours. This could to a large extent be explained by the fact that most flights depart and arrive during the periods when the birds move from their night-time nests to their daytime locations to gather food. The number of bird-strike reports is increasing. Part of the problem is that more and more bird species are adjusting to the urban environment and that modern aircraft make less noise, thus making it more difficult for the birds to notice aircraft.

COMMERCIAL AVIATION

For multi-pilot operations good crew cooperation is essential, and the rules concerning Crew Resource Management (CRM) are comprehensive, demonstrating how important this subject is.

CRM is about the crew utilising all available resources, and demonstrating good non-technical skills, such as decision-making, stress management and leadership in all flight-related areas. The Agency takes an active part in promoting good CRM, for example by arranging annual CRM seminars in cooperation with Lund University and the Swedish Network for Human Factors (HFN). A project to establish definite procedures and requirements for the acceptance of CRM instructors is also in progress.

UNIFORM AUDIT AND INSPECTION METHODOLOGY

Last summer the Agency started a project to improve its audit and inspection methodology in the field of aviation, the aim being to have the methodology in place by 2011. The new programme will focus on the operators' ability to follow rules, identify shortcomings and take remedial action, thus improving flight safety. It is also aimed at further developing the safety culture within the Agency and the operators' organisations.

The agency makes rules, evaluates and grants certificates, and supervises civil aviation, with an emphasis on safety and security. It carries out about 600 audits and inspections of about 1,000 operators, such as airlines, training organisations, air navigation service providers and aerodromes. The overall purpose of the programme is to ensure safe and accessible air transport and to promote safety. It should also follow the rule of law and be efficient and cost-conscious.

AIRWORTHINESS

Two helicopter accidents occurred during 2009 because of engine failure. One helicopter crashed, whereas the other managed to autorotate to a safe landing. The failures were in both cases traced to an adapter in the compressor breaking down because of fatigue. While this has happened before, the adapters have now been modified by the manufacturer. The US Federal Aviation Administration issued an Airworthiness Directive in 2004 regarding replacement of the old type of adapter (FAA Airworthiness Directive 2004-26-09), and the manufacturer has issued a Service Bulletin (RR CEB-A-1392) to the same effect. The European Aviation Safety Agency, EASA, has issued a Service Information Bulletin on the adapter: <http://ad.easa.europa.eu/ad/2010-01>.

AIR NAVIGATION SERVICES

The number of communication misunderstandings between pilots and air traffic controllers has increased. One of the problems is the vast amount of information in the ATC clearances, causing many pilots/controllers to lose pieces of information when it is all transmitted in one go. It is therefore recommended that the information be split into two transmissions – a solution that is quite possible within the present regulations.

ACCIDENTS AND SERIOUS INCIDENTS DURING 2009

An accident is an occurrence to which one or more of the following is applicable:

- A person is fatally or seriously injured;
- The aircraft sustains damage or structural failure that adversely affects the structural strength, performance or flight characteristics of the aircraft;
- The aircraft is missing or is completely inaccessible.

What separates an accident from a serious incident is the outcome of the event.

There were 24 accidents during Q3 involving aircraft on the Swedish register: five involving general aviation aeroplanes; five sailplanes (one of which was fatal); five paramotors; eight microlights; one accident involving a helicopter performing aerial work. During the same quarter in 2008 there were 22 accidents.

During the fourth quarter 2009 there were three accidents: one involving a private helicopter and two involving aircraft performing aerial work (one aeroplane and one helicopter). During the same quarter in 2008 there were six accidents.

Total number of accidents for 2009:

- During aerial work: 2 aeroplanes, 4 helicopters
- General aviation aircraft: 14 accidents (one of which fatal)
- Microlights: 12
- Sailplanes: 5 (one of which fatal)
- Parasails: 13

During the second half of 2009 there were 30 serious incidents.

AVIATION DEPARTMENT – FACTS

PERSONNEL

Average number of employees	224
<i>of which</i>	
Inspectors/examiners	94
Administrative	10
Legal/experts	34
Registration	20
Analysts	5
Management	20
Controllers/Quality	3
IT	3

AUDIT/INSPECTION VOLUME 2009

Activity	Audits/inspections	Remarks
Flight operations	385	659
Flight operations (foreign AOC holders)	113	132
Aerodrome	39	259
Air Navigation Services	19	125
Security	134	634
Aircraft	1,550	-
Airworthiness organisations	94	639
Total (excluding foreign AOC holders)	2,221	2,316
Total (including foreign AOC holders)	2,334	2,448
Audits/inspections delegated to professional/industrial organisations		1,081

VALID PERMITS PER TYPE

Type of permit	Number
Operating license	97
Flight operational approval	100
Training permit	89
Maintenance workshop	134
Airworthiness	2,066
Security	167
Aerodrome	96
ANS permit	79
Personnel license	14,631
Registered aircraft	3,178
Total	20,637

NUMBER OF CASES PER TYPE 2009

	Number
Personnel licenses	12,602
Registry checks	6,327
Aircraft	238
Total	19,167

VALID PERSONNEL LICENSES PER CATEGORY¹

Category	2005	2006	2007	2008	2009
CPL (A) and ATPL (A)	3,817	3,545	3,555	3,542	3,495
CPL (H) and ATPL (H)	392	397	411	365	374
Air Traffic Controllers	740	725	724	727	754
Aircraft technicians/mechanics	1,974	1,814	1,549	1,502	1,517
PPL (A)	4,906	4,361	4,305	4,180	4,091
PPL (H)	172	164	189	186	188
Glider licenses	2,057	1,865	1,768	1,661	1,578
Microflight licenses	644	674	729	691	716
Total	14,722	13,545	13,230	12,854	12,713

¹ Student permits and some other minor categories not included.

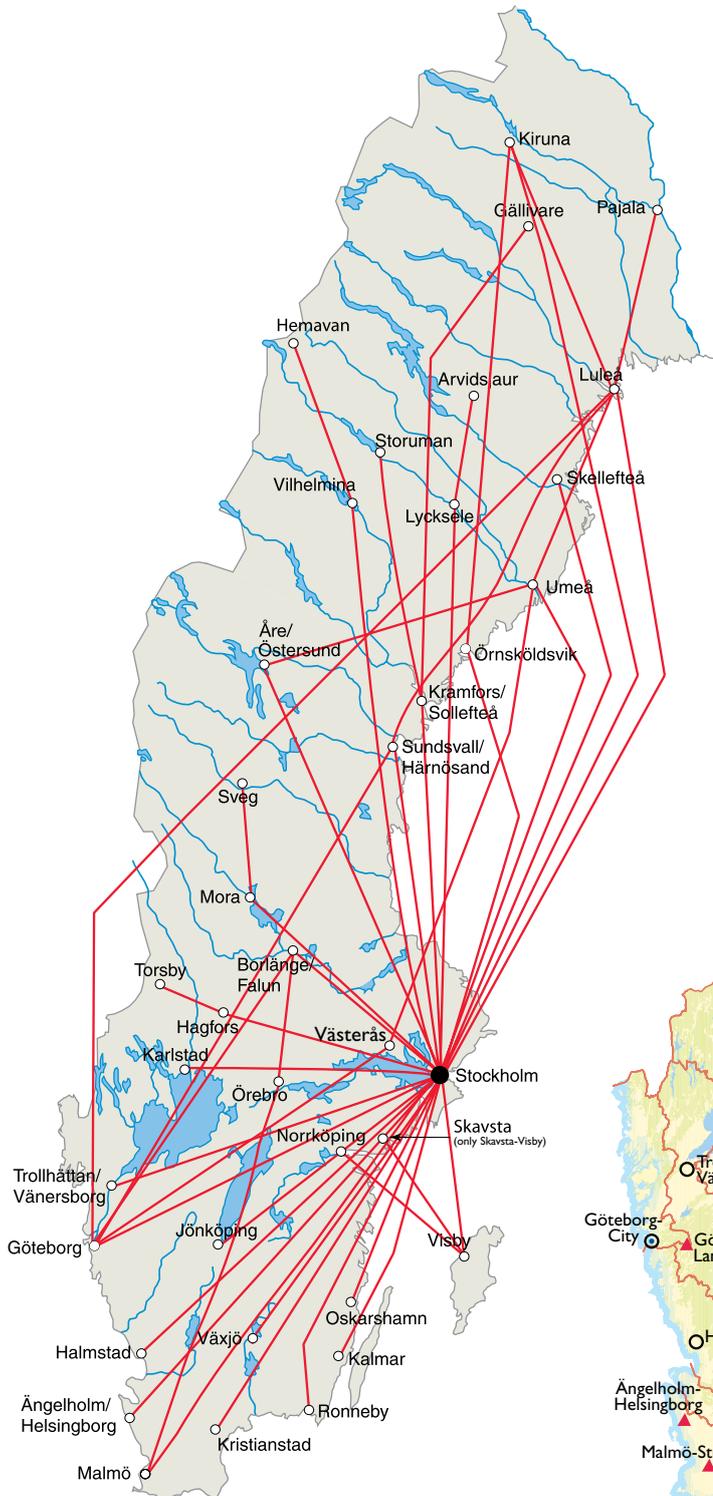
TURNOVER AND FINANCING

Revenue (thousands SEK)	
Direct fees	143,324 ¹
Authority charges	123,624 ²
Eurocontrol	156,142
Interest	15
Total	423,105
Costs (thousands SEK)	
Personnel	181,655
Membership fees	126,124
Other	116,358
Total	424,137
Result	-1,032

¹ Including STK (Scandinavian Surveillance Office) 4.8 million SEK, Defence forces 1.8 million SEK and GAS (security charge adjustment) 4 million SEK

² Including the deduction to the SHK of 14.1 million SEK

**DOMESTIC NETWORK,
2009–2010**



SWEDISH AIRPORTS



- Airport ownership:**
- ▲ Swedavia (ex LfV)
 - Local authority
 - Private enterprise
 - ◐ Mixed local authority/private enterprise

STATISTICS





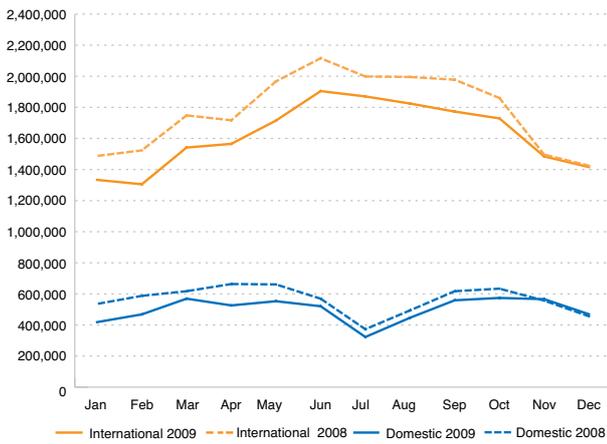
Håkan Brobeck, hakan.brobeck@transportstyrelsen.se

TRAFFIC DEVELOPMENT 2009

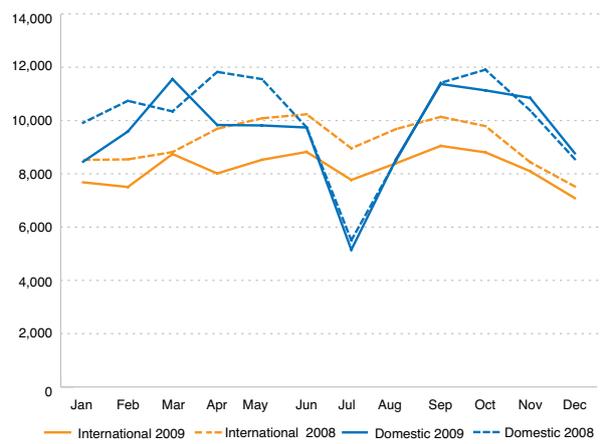
Number of arriving and departing passengers at Swedish airports with scheduled and non-scheduled traffic during 2008 and 2009

Airport	2008	2009	Change	Change, %
Arvidsjaur	57,381	42,664	-14,717	-25.6%
Borlänge	36,620	33,888	-2,732	-7.5%
Gällivare	38,942	36,836	-2,106	-5.4%
Göteborg-City	842,120	728,890	-113,230	-13.4%
Göteborg-Landvetter	4 300,113	3,683,799	-616,314	-14.3%
Hagfors	2,744	2,564	-180	-6.6%
Halmstad	113,501	92,697	-20,804	-18.3%
Hemavan	17,666	12,052	-5,614	-31.8%
Jönköping	76,611	62,918	-13,693	-17.9%
Kalmar	177,734	157,138	-20,596	-11.6%
Karlstad	118,762	84,880	-33,882	-28.5%
Kiruna	207,431	186,060	-21,371	-10.3%
Kramfors-Sollefteå	14,787	19,038	4,251	28.7%
Kristianstad	58,654	41,205	-17,449	-29.7%
Linköping-Saab	82,523	78,424	-4,099	-5.0%
Luleå-Kallax	995,300	953,556	-41,744	-4.2%
Lycksele	25,564	21,776	-3,788	-14.8%
Malmö Airport	1,747,483	1,525,609	-221,874	-12.7%
Mora-Siljan	8,390	9,325	935	11.1%
Norrköping-Kungsängen	113,246	100,177	-13,069	-11.5%
Oskarshamn	13,338	13,295	-43	-0.3%
Pajala	2,749	2,672	-77	-2.8%
Ronneby	206,932	191,168	-15,764	-7.6%
Skellefteå	241,848	205,551	-36,297	-15.0%
Stockholm-Arlanda	18,106,877	16,047,442	-2,059,435	-11.4%
Stockholm-Bromma	1,852,715	1,968,139	115,424	6.2%
Stockholm-Skavsta	2,479,646	2,524,633	44,987	1.8%
Stockholm-Västerås	186,612	174,496	-12,116	-6.5%
Storuman	10,577	9,346	-1,231	-11.6%
Sundsvall-Härnösand	303,636	248,902	-54,734	-18.0%
Sveg	5,332	5,306	-26	-0.5%
Torsby	3,377	3,061	-316	-9.4%
Trollhättan-Vänersborg	55,049	36,638	-18,411	-33.4%
Umeå	823,159	815,362	-7,797	-0.9%
Vilhelmina	16,039	13,306	-2,733	-17.0%
Visby	324,347	304,403	-19,944	-6.1%
Växjö-Kronoberg	179,799	148,442	-31,357	-17.4%
Åre-Östersund	383,504	330,961	-52,543	-13.7%
Ängelholm	391,780	364,356	-27,424	-7.0%
Örebro	69,950	62,514	-7,436	-10.6%
Örnsköldsvik	144,975	91,945	-53,030	-36.6%

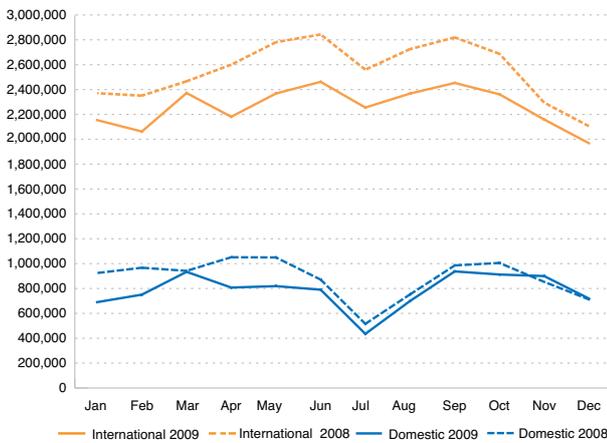
Number of scheduled and non-scheduled passengers at Swedish airports in 2008 and 2009



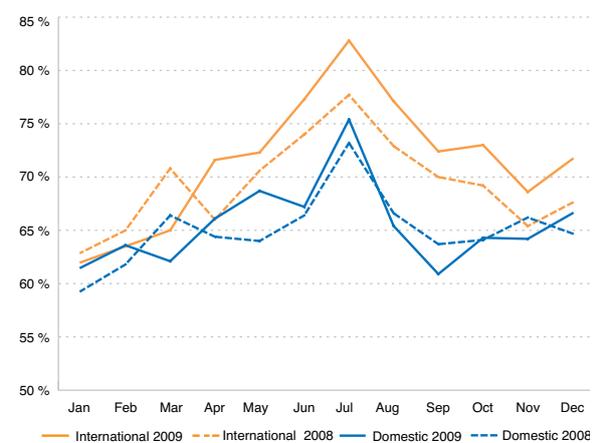
Number of scheduled and non-scheduled landings (only passenger flights) at Swedish airports in 2008 and 2009



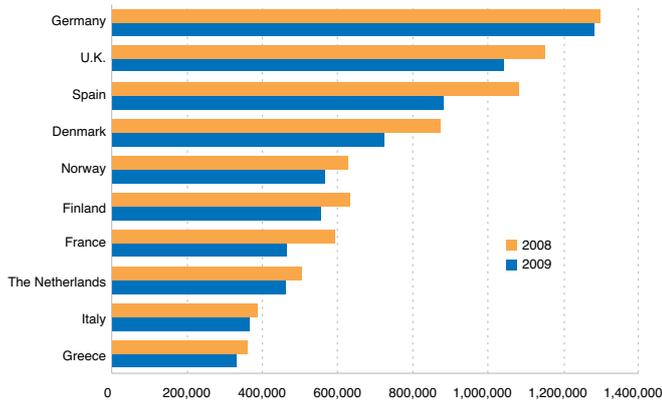
Number of available seats in scheduled and non-scheduled traffic at Swedish airports in 2008 and 2009



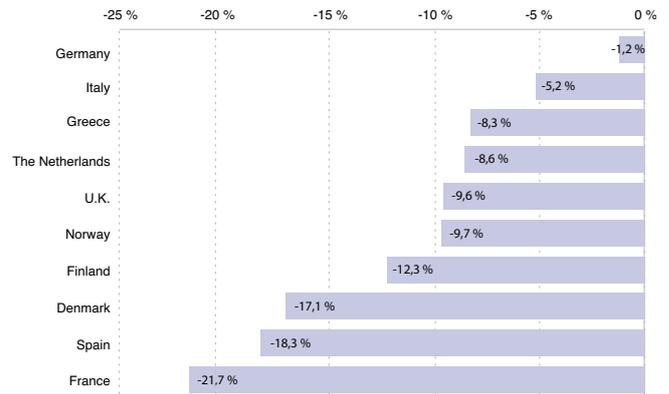
Development of passenger load factor in scheduled and non-scheduled traffic in 2008 and 2009



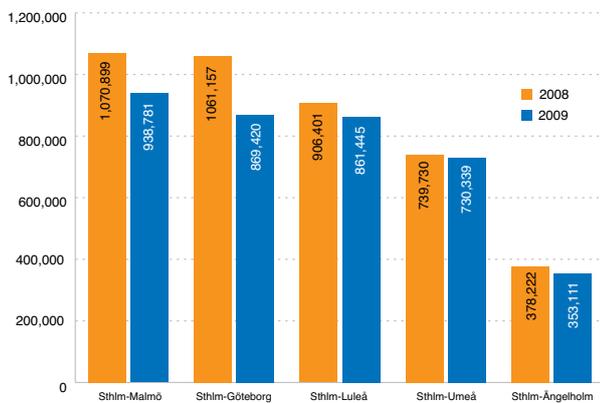
Number of arriving passengers, top ten countries (first destination) in 2008 and 2009



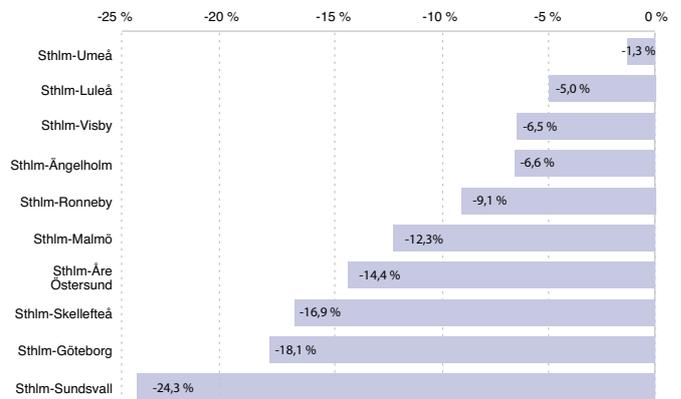
Relative change in the number of passengers travelling to/from the top ten countries during 2009



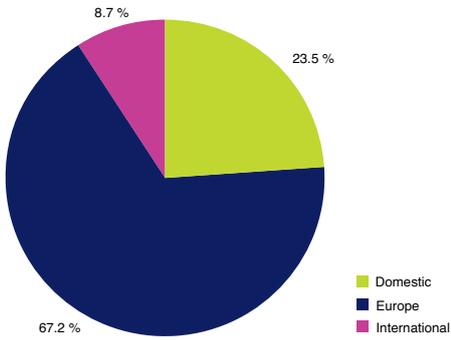
Number of passengers on the five major domestic routes in 2008 and 2009



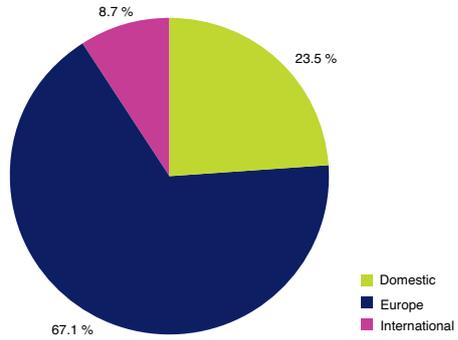
Relative change in the number of passengers at the ten major domestic city-pairs during 2009



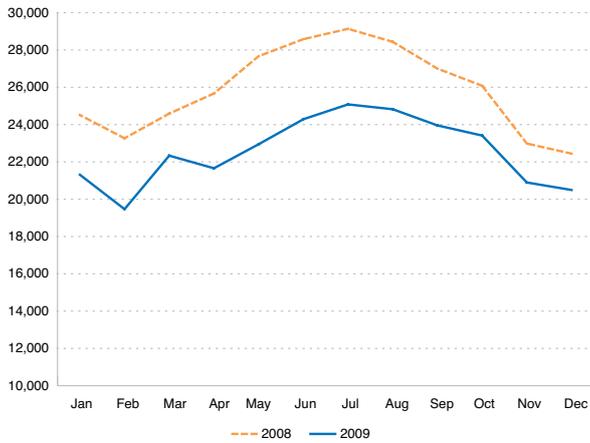
Passengers divided by region during 2008 (first destination)



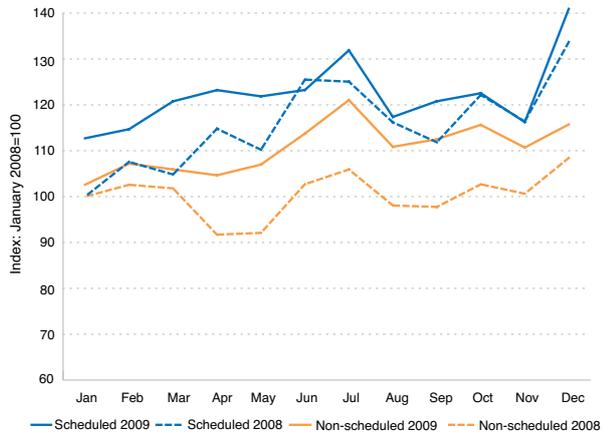
Passengers divided by region during 2009 (first destination)



Number of overflights in controlled airspace in 2008 and 2009



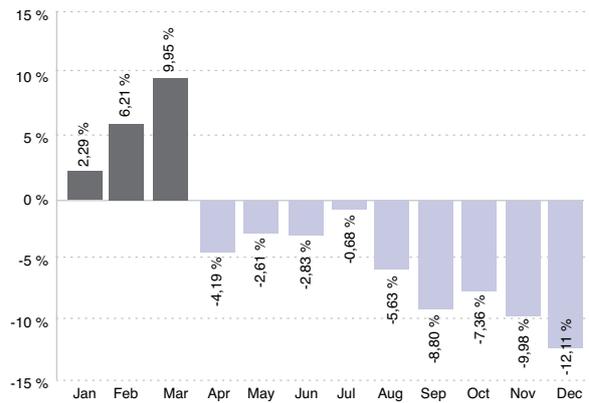
Passenger price index for international flights in 2008 and 2009 according to Statistics Sweden, fixed price level



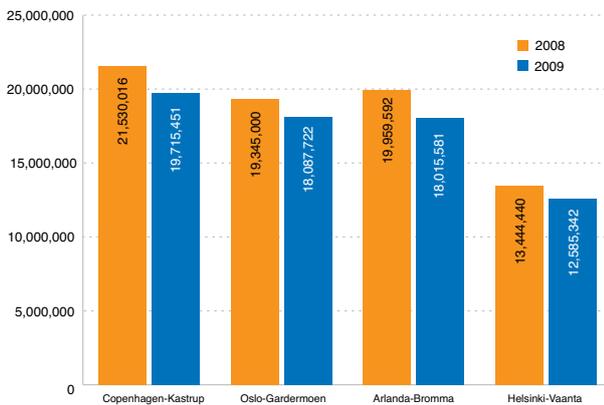
The actual development of ticket prices for domestic passenger traffic, in 2008 and 2009 fixed price level



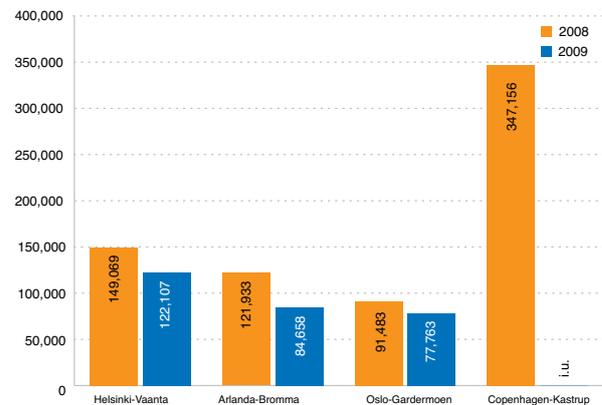
Actual ticket price changes for domestic traffic per month in 2009 (compared with the same month previous year), fixed price level



Number of passengers at the major airports in the Nordic countries during 2008 and 2009



Freight/mail loaded and unloaded at the major airports in the Nordic countries during 2008 and 2009, tonnes.





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