



Competitive Airlines

Towards a more vigorous competition policy in relation to the air travel market



Competitive Airlines

**Towards a more vigorous competition policy
in relation to the air travel market**

Report from the Nordic competition authorities

Contents

PREFACE	4
EXECUTIVE SUMMARY	5
Aviation is a network industry	5
Merger and alliance control	6
Slot allocation procedures	7
Predatory behaviour	7
Frequent flyer programmes	8
Tariff consultations	9
State aid, public procurement, taxation, and subsidies	9
Travel agent agreements, corporate discount schemes, and computer reservation systems	9
Competition between airports	10
Ground handling services	10
Concerted action is needed	11
1 INTRODUCTION	12
1.1 Theoretical perspective	12
1.2 Barriers to airline competition	13
1.3 Deregulation in the USA	13
1.4 The European experience and outlook	15
1.5 Outline	16
2 MARKET DESCRIPTION	18
2.1 Air travel demand in the Nordic countries	18
2.2 The supply side: carriers operating in the Nordic countries	22
3 LEGAL FRAMEWORK	27
3.1 Community Law/EEA Law	27
3.2 Exemptions for the airline industry	29
3.3 Bilateral agreements	30
3.4 National competition legislation	31
3.5 Aviation legislation and institutional conditions	37
4 TOPICS IN AVIATION ECONOMICS	41
4.1 Aviation network economics	41
4.2 Price discrimination and economic welfare	49
4.3 The cost structure of the airline industry	52
4.4 Comparative airline productivity	60

5	TAXES, SUBSIDIES, AND PUBLIC CHARGES	67
5.1	Taxes and charges in Nordic aviation	67
5.2	External costs of aviation	74
5.3	State aid	75
6	BUSINESS CONDITIONS AND STRATEGIES	77
6.1	Frequent flyer programmes	77
6.2	Corporate discount schemes	85
6.3	Travel agent agreements	88
6.4	Corporate cards and related discounts	91
6.5	Computerised reservation systems	92
6.6	Interlining	96
6.7	Airport capacity	101
7	SUMMARY AND CONCLUSIONS	109
7.1	Network economics and competition	109
7.2	Airline mergers and alliances	111
7.3	Community and EEA Law	111
7.4	Contestability and predation	112
7.5	Scarcity of slots	113
7.6	Interlining and tariff consultations	114
7.7	Frequent flyer programmes	114
7.8	Corporate discount schemes	116
7.9	Computerised reservation systems	116
7.10	Corporate cards and electronic ticketing	116
7.11	Travel agent agreements	117
7.12	Taxes, subsidies, and public procurement.....	117
7.13	Ground handling	117
7.14	The Nordic aviation market	118
	LITERATURE	119

Preface

During their joint meeting in Skagen (Denmark) on 6-7 September 2001, the competition authorities of the Nordic countries established a task force to examine the degree of competition in Nordic aviation and to suggest measures to enhance it. Their report is hereby submitted. The analyses, conclusions and recommendations contained herein are unanimous.

The Nordic Task Force on Airline Competition has consisted of the following persons:

Lasse Fridstrøm (chairman), Norwegian Competition Authority,
Frode Hjelde, Norwegian Competition Authority,
Helle Lange, Danish Competition Authority,
Erik Murray, Swedish Competition Authority,
Antti Norkela, Finnish Competition Authority,
Torben Thorø Pedersen, Danish Competition Authority,
Niels Rytter, Danish Competition Authority,
Catherine Sandvig, Norwegian Competition Authority,
Marianne Skoven, Danish Competition Authority, and
Line Solhaug, Norwegian Competition Authority.

The Nordic competition authorities are grateful for the assistance extended to the Task Force in the form of discussions with the Antitrust Division of the US Department of Justice (on 2 January 2002), with the General Directorate for Competition of the European Commission (on 1 February 2002), with the Scandinavian Airlines System (SAS) (on 21 January 2002), and with the German Competition Authority (Bundeskartellamt) (on 15 March 2002).

The authors are also indebted to a number of researchers, consultants, colleagues, and advisors, for their written contributions, constructive criticism, and suggestions. They are especially grateful to Professor Siri Pettersen Strandenes, Professor Frode Steen, and Professor Lars Sjørgard of the Norwegian School of Economics and Business Administration, and to Dr. Peeran van Reeve of the Erasmus University.

Copenhagen/Helsinki/Oslo/Stockholm

18 June 2002

EXECUTIVE SUMMARY

1. The Nordic Task Force on Airline Competition has examined the aviation markets in Denmark, Finland, Norway, and Sweden, with a view to suggesting measures to enhance competition.
 2. The Task Force has focused on numerous barriers to airline competition in the Northern European region, as well as in a wider pan-European or global perspective.
 3. The Task Force believes that the European aviation industry may be facing a period of strong consolidation over the next few years. Such consolidation may in some circumstances have positive effects on economic efficiency. But in combination with the anti-competitive effects of the hub-and-spoke mode of operation, of the frequent flyer programmes, and of other restrictions on competition, the horizontal and vertical concentration in the aviation industry represents a formidable challenge to European competition authorities at the national and Community level. A vigorous competition policy will be required in order to enhance – or even preserve – the present degree of competition in the air travel markets.
 4. First of all, the competition authorities should strengthen their efforts to enhance competition through
 - Adequate control of airline mergers and alliances
 - Efficient interventions against predatory pricing and other abusive behaviour
 - Efficient restrictions on frequent flyer programmes
 - Prohibition on airline price cooperation through tariff consultations
 - Open and non-discriminatory business conditions in travel agent agreements
 - Interventions against anti-competitive effects of corporate discount schemes
 - Control of the configuration and use of ticketing and computer reservation systems
 5. Second, public regulations in all relevant areas should be developed in order to limit their anti-competitive effects:
 - More efficient and non-discriminatory slot allocation procedures
 - Enhanced competition between airports
 - Enhanced access to ground handling and other infrastructure services
 - Competition neutral tax rules in aviation and related activities
 6. Third, governments should promote competition through initiatives such as:
 - Reduced state aid and subsidies to airlines
 - Public procurement tendering that facilitates competition
 7. Since many of these measures fall outside the scope of competence of national or Community competition authorities, concerted action will be needed between various government and Community agencies.
- ### Aviation is a network industry
8. The aviation industry is characterised by large *network externalities*, in the sense that the costs and revenues involved in carrying passengers on different, interconnected routes are interdependent. There are, in other words, large *economies of scale, scope and density* present.
 9. A particularly efficient way of organising an aviation network is the *hub-and-spoke* mode of operation. Rather than operating a large number of point-to-point, non-stop routes, the airline company channels all or most passengers through a «hub» airport, from which all connections extend like the spokes of a wheel. In this way the number of different non-stop routes needed to serve all possible pairs of destinations is drastically reduced, allowing for quite remarkable cost savings.
 10. Judging by the experience earned through 23 years of deregulated aviation markets in the United States, the airline industry – when left without regulation – will tend to consolidate into a few, large air carrier con-

cerns with continent-wide hub-and-spoke networks.

11. While obviously economically efficient to the individual carrier firm, the hub-and-spoke system of operation may have strong anti-competitive effects. The economies of scope and density characteristic of these networks are such as to grant the (one and only) hub airline very considerable market power at and around its hub. Since different airlines choose to operate hubs at different airports, the hub-and-spoke system as operated among a set of large individual carriers is liable to practically divide the market between the airlines. Although the networks of different carriers overlap, very few origin-destination pairs, if any, will exhibit more than two carriers operating non-stop flights.
12. In Europe, the hub-and-spoke mode of operation has an even longer history than in the US, having grown out of the past regulatory framework and of the prevailing geographic and political conditions, rather than as an autonomous market process. Each nation has had its own «flag carrier», with a privileged position in and around its domestic market and frequently a large government ownership share. More often than not, flag carriers have been benefiting from considerable amounts of subsidies or direct financial support from the state.
13. The flag carrier typically organises its network around a hub located near the national capital or main business centre. At its hub airport, the flag carrier tends to have considerable direct and indirect influence on slot allocation practices, on ground handling services, and on other essential facilities. Backed by its own government, the flag carrier usually also tends to obtain privileged positions in whatever bilateral aviation agreements are signed with other countries. Each flag carrier therefore enjoys considerable market power at and around its domestic hub. Thus, although there are almost as many flag carriers as there are European nations, the competition between them is severely restricted, as they

have been able to divide the market between them to a very considerable extent. In many (short-haul) markets, the most effective competitor to the European flag carrier is not another airline company, but a surface mode of travel, represented by a railway company, a bus service, or the private car.

Merger and alliance control

14. More extensive networks are more attractive to customers and offer larger economies of scope to the carrier. Airline carriers therefore form alliances in order to exploit each other's networks and to strengthen the competitive positions of all alliance partners. Establishing an alliance with an «adjacent» carrier may also be an efficient way for competitors to divide the market between them.
15. Bilateral aviation treaties often assure the affected national flag carriers more or less exclusive traffic rights between the two countries. These rights might be forfeited if the flag carrier is merged with a foreign airline – whence the widespread practice of forming alliances rather than full-fledged mergers between European airlines. In an opinion delivered by the Advocate General to the European Court of Justice on 31 January 2002, it is proposed that individual member states no longer be allowed to entertain such individual aviation treaties with non-EU countries. To the extent that this view is upheld by the Court, it may be foreseen that the associated change in the regulatory regime will spark a development towards massive consolidation within European aviation.
16. Faced with this scenario, it is essential that European competition and aviation authorities consider carefully all measures susceptible of opening the air travel markets and enhancing competition. While in terms of competition and efficient resource allocation, full-fledged mergers may well be preferable to looser alliances, it is paramount to the protection of consumers and other air travel customers that the resulting

number of European aviation concerns or alliances not become too low. The consolidation process must therefore be followed carefully by the relevant competition authorities. Alliances should be treated with the same rigour as traditional mergers.

Slot allocation procedures

17. The airport capacity constraints and the slot allocation regimes and practices currently in effect in Europe constitute major barriers to entry and hence to competition and economic efficiency.
18. Incumbent airlines throughout European airports benefit from so-called «grandfather rights», by which they are entitled to the renewal of all slots for which the degree of utilisation during the previous period exceeds 80 per cent. In congested airports, this regime makes it quite difficult for potential new entrants to obtain a sufficient amount of attractive slots. To add to the problem, incumbent airlines may have an incentive to «babysit» some of their slots, i. e. to make use of them for the sole purpose of not having to relinquish them to a competitor. While commercially expedient, such practices are obviously not compatible with an economically efficient resource utilisation.
19. There is thus a pressing need for an improved and less discriminatory slot allocation procedure in all congested airports, which would facilitate market entry for smaller airlines and other non-incumbent carriers. Unfortunately, the remedy is less easily found than the diagnosis.
20. At present, the legal ownership to slots and the rights attached to such ownership are matters of ambiguity. A prerequisite for arriving at a more efficient slot allocation is to determine unequivocally who owns the slots – the airline, the airport, or the government. The Task Force appreciates the initiative of the European Commission to clarify these questions.
21. Creating an open market for slots may seem like an obvious solution to the economic efficiency problem. There may, however, be cases where open trading would not ensure equitable access to the aviation market for all carriers. Dominant airlines may be able to derive profit from holding a slot that would otherwise become available to a competitor. They may therefore be willing to bid up the price of certain slots to a level that will deter potential new entrants.
22. One way to ease such a situation might be to use so-called *blind bidding* in periodic auctions. Here, the bidders' identities are kept secret, so as to conceal whether the bids are made by new entrants or incumbent airlines. In such a case, a strategy of buying up slots for less valuable uses in order to preclude entry would become rather more expensive, and hence less common.
23. The traditional economic solution to congestion problems is marginal cost (peak load) pricing. Another way to bring market forces to bear on the slot allocation system could therefore be to apply this principle and allow airport charges to vary over the day (between peak and off-peak).
24. As a minimum requirement for efficient and non-discriminatory airport slot allocation, whatever formal or informal connection might exist between the slot coordinator institute and the local flag carrier company should be severed. Slot coordinators need to be unquestionably neutral with respect to all of their incumbent or potential client airlines.

Predatory behaviour

25. Prior to and shortly after the US deregulation, it was generally thought that aviation markets would in general be highly contestable, as it would be easy for any carrier to relocate aircraft and personnel so as to service a new route. In practice, it has turned out that the barriers to entry are much more important than previously believed. Incumbent airlines can lower

their fares and/or increase their capacity practically overnight, so as to raise the cost and/or reduce the revenue of rival new entrants. Any potential new entrant would, of course, be aware of this, and hesitate to challenge the incumbent carrier even if the latter may be making a considerable profit in the current (monopolised) situation.

26. To increase contestability it might be desirable to constrain the incumbent carriers' ability to abuse their dominant position by dumping their fares and/or boosting their capacity in response to rival new entrants. National and Community competition authorities should keep a keen eye on predatory pricing practices and prepare contingency plans to act against them at short notice. The recent intervention by Germany's Bundeskartellamt, requiring Lufthansa to keep a € 35 fare differential with respect to Germania on the Berlin-Frankfurt route, is an example, the benefits and possible drawbacks of which would be interesting to follow.
27. The Council Regulation (EEC) No. 2409/92 deals with fares and rates for air services. To the Task Force, it appears clear that this regulation ought not restrain the competence of national competition authorities in relation to interventions against predatory pricing. To the extent that this view is seen as contentious, we suggest that the issue be examined further at the European Community level.
28. Similar arguments apply to Council Regulation (EEC) No. 2408/92 on access for Community air carriers to intra-Community air routes. Given the special characteristics of the aviation market, interventions against excess capacity might be appropriate in order to ensure competition, in the event of a dominant carrier's predatory behaviour.

Frequent flyer programmes

29. Almost all major airlines offer their travellers a carefully designed frequent flyer programme (FFP). As intended, the FFPs

are without doubt very efficient means to enhance customer loyalty or fidelity. They constitute another well thought-out strategy by which the carriers are able to practically divide the market between them and thus lessen the competition in each market segment. As such, they are clearly at variance with the spirit of competition law in most countries.

30. Most FFPs have the following characteristics in common:
 - «Discounts» are granted not in the form of money, but in the form of free services, not necessarily of the same type as purchased. The frequent flyer points are no ordinary rebate.
 - To obtain free flights to more or less distant destinations, the customer needs to surpass certain thresholds in terms of travel purchases. The customer thus has an incentive to concentrate his purchases to one or a few providers. The closer the customer gets to a threshold, the stronger is his incentive to buy another flight from that particular airline or alliance.
 - The «discount» is given to the traveller, who – in the case of business travel – tends to differ from the purchaser. This gives rise to a pronounced principal-agent problem, by which the decision maker (agent) is faced with a quite different set of incentives from those of his superior (principal). This may lead to a distorted (inefficient) resource allocation.
 - Although in principle taxable in many countries, the private use of frequent flyer points earned by an employee is in practice rarely taxed, for lack of information on the part of the government. This tax loophole is likely to aggravate the inefficiency due to the principal-agent problem.
 - Alliance airlines join their FFPs to offer attractive, extended networks to bonus point travellers. Smaller airlines or alliances have a distinct competitive disadvantage. The FFPs are thus liable to strengthen any dominant position and to reinforce the anti-competitive effects of hub-and-spoke networks. They therefore act as important barriers to entry.

31. Hence, all European competition authorities should consider critically the anti-competitive effects of FFPs on domestic routes.

Tariff consultations

32. Commission Regulation (EEC) No. 1617/93, Art. 4, grants the airlines within the European Union a block exemption for consultation on passenger tariffs with the aim of facilitating interlining. Airlines tend to argue that the IATA tariff consultations, in which airlines agree on a common set of fares for fully flexible tickets, form an inextricable part of the interlining system. The Task Force, however, believes that a system of *posted prices* for wholesale (inter-airline) purposes might be sufficient to maintain the interlining system without the price collaboration. Such a system would mean less transparency of fares between airlines and hence probably more intense competition, without jeopardising the efficiency gains connected with interlining.

State aid, public procurement, taxation, and subsidies

33. Some airline carriers have continued to receive substantial amounts of direct or indirect aid from the national government. Such transfers may destroy the level playing field between airlines and should be minimised.

34. In many countries, the public administration is itself a major airline client. The Task Force recommends that governments use their negotiating power to enhance competition, by adhering to the following principles in public procurement agreements:

- Public purchases should, if possible, be tendered in small portions, e. g. route by route, so that small size companies may bid.
- Preference clauses, if present, should admit that, notwithstanding the public procurement deal, the government is always free to make use of a cheaper and/or higher quality service that may be offered by someone else.

- Fixed fares (over a certain time lapse) are preferable to percentage discounts off the nominal fare. This is so because percentage discount agreements tend to bid up the fare for all those clients who do not have a comparable agreement.

35. Tax rules applicable to the aviation industry and its related activities should be neutral with respect to, *inter alia*, in-house production in a vertical chain compared to outsourcing (confer para. 49 below).

Travel agent agreements, corporate discount schemes, and computer reservation systems

36. *Travel agent agreements* sometimes provide incentives for an agent to concentrate his sales to one or a few larger airlines. Such contracts may be anti-competitive and in disagreement with the principles laid down by the EU Commission in the Virgin/BA case on 14 July 1999. There is reason to question whether all carrier-agent agreements and practices have yet been brought in accordance with these principles. Competition authorities should direct attention to this problem and exert a more vigorous control.

37. *Corporate discount schemes* are agreements by which large airline customers have been able to negotiate lower (net) fares on all of or on certain parts of an airline's network. From a competition angle, these deals have ambiguous effects.

38. On the one hand, they reflect a certain transfer of market power from the seller to the buyer. As such, they can be viewed as sound examples of enhanced competition.

39. However, many of these deals take forms that engender important lock-in effects, as when the rebate is somehow progressive, i. e. the percentage discount given depends on the total volume of sales through a certain period of time on a certain air travel network. Such agreements provide an incentive for the buyer to concentrate his demand to one or a few carriers. Larger

carriers will obtain an inherent advantage compared to smaller ones. Such corporate discount schemes have, in other words, clear anti-competitive effects.

40. Corporate discounts may conceivably have the effect of raising the price for all those companies that do not benefit from them. Interestingly, there are even indications that corporate discount schemes may lead to higher nominal fares in a duopoly situation than in a comparable monopoly setting. This is so because the duopoly will put pressure on the percentage discount. To compensate for this, airlines may want to increase their nominal fares. A monopoly airline, on the other hand, has a much stronger negotiating position and need not agree to large discounts in order to keep its largest corporate clients.
41. The *computer reservation systems* are essential facilities in the marketing of air travel services. EU Council Regulation 2299/89 stipulates a code of conduct for these systems, meant to ensure fair and non-discriminatory service. Informal information nevertheless suggests that, in many travel agencies, these systems are operated in ways that do leave something to be desired in terms of neutrality and non-discrimination. A closer control with the way these systems are used and operated may seem appropriate. It is, e.g., essential that all airline carriers enjoy equal opportunities for presentation and sale to a client, and that no airline carrier be able to access all the information stored in an independent travel agent's data base and use it for their own marketing purposes.
42. Electronic ticketing (*e-ticketing*) is becoming more widespread. In these cases, reservations are usually done over the Internet, and no hard-copy ticket is issued. To the extent that e-ticketing is not based on open standards, but requires the traveller to hold an electronic card specific to a particular carrier or alliance, such a ticketing system may be liable to restrict competition between airlines. This is particularly so if e-ticketing is integrated with the airline's

frequent flyer programme, by making use, e. g., of the FFP membership card.

43. Further investigations into the business practices surrounding computer reservation systems, travel agent agreements, and ticketing systems at a European level would be appropriate. Further analyses would also be required in order to assess more accurately the anti-competitive effect of corporate discount schemes and the possible remedies for it.

Competition between airports

44. While most of the larger European airports are slot constrained, there are a number of secondary airports with ample slot capacity. By offering inexpensive services, less busy airports might be able to attract substantial volumes of traffic and thereby realise considerable economies of scale and enhanced consumer satisfaction. Low cost airlines have started to exploit this opportunity, challenging the traditional carriers and their hubs by offering point-to-point services between smaller airports.
45. The promise of this development is, however, limited by the relative shortage of commercially independent airports. In many cases, all or most of a country's airports are owned and operated through one (government) agency. To enhance competition, it might be desirable for European governments to pave the ground for behaviourally independent airports. Ideally, two adjacent and hence potentially competing airports should not have the same owner. In this way, a certain amount of market pressure might be brought to bear on the presently inefficient slot allocation procedures.

Ground handling services

46. Ground handling services are essential to all air carriers, although different airlines demand services of differing degree of sophistication. «No frills» airlines, e. g., typically do not require catering services, nor the more advanced baggage handling systems necessary for interlining.

47. Larger carriers typically operate their own ground handling services, sometimes through subsidiary companies. In many cases they offer their services also to competing airlines. From a competition point of view, the problem arises when the *only* provider of ground handling services at a given airport is owned by a dominant hub carrier. In such a case, small rival airlines may be confined to buy these services from their dominant competitor.

48. There is thus a need for independent ground handling services at most airports. In the opinion of the Task Force, a maximally effective competition among service providers *and* among airlines would, in principle, be achieved if (i) all ground handling service providers were legally and financially independent of the airline carriers, and (ii) all such providers were ensured free and unimpeded entry into the market for ground handling services at any airport. While it is difficult in practice to imagine a regulation in which carriers would no longer be allowed to self-handle, the Task Force believes that the Council Directive 96/67/EC does not ensure sufficiently free access to the market for third-party ground handling services at all Community/EEA airports, and should be amended accordingly.

49. To the extent that providers integrated with or controlled by an airline do get to participate in ground handling, it is important that the tax rules not favour such own-account modes of operation compared to outsourcing. If, e. g., independent ground handling providers are subject to output value added tax (VAT), without the airline companies

being able to deduct the corresponding input VAT, then larger carriers having their own catering firm or department will have a distinct cost advantage compared to smaller carriers which need to buy these services in the market, and which, on top of everything, may have to buy them from their dominant competitor.

Concerted action is needed

50. The obstacles to competition in European aviation are such as to require a concerted action by various government and Community agencies, including the competition authorities, the transport authorities, the fiscal authorities, and the legislative bodies. Perhaps the single most important barrier to entry at the European level is the insufficient availability of airport slots and the notoriously inefficient method of allocation for this scarce resource. Thus, aviation authorities are called upon to implement economically more efficient and less discriminatory slot allocation regimes. Also, these authorities should pave the ground for less discriminatory ground handling services. Competition authorities are called upon, *inter alia*, to intervene against loyalty programs and predatory pricing and to ensure an adequate airline alliance and merger control. Fiscal authorities should ensure non-distortionary tax regimes in relation to aviation and their related activities. Legislative changes may in some cases be needed in order to ensure that government bodies have the provisions necessary to pursue an effective competition policy towards the air travel industry.

1. INTRODUCTION

The limited degree of competition in Northern European aviation is a matter of deep concern to the Nordic competition authorities.

Subsequent to the SAS-Braathens merger in December 2001, very few routes within or between Denmark, Finland, Norway, and Sweden have more than one airline company operating.

More generally, the Nordic competition authorities would like to raise the issue of enhancing airline competition in a broader, pan-European or global perspective.

1.1 Theoretical perspective

Monopolies have an incentive to reduce their output so as to be able to charge a price that exceeds the marginal cost of production. They generally also have the market power to do so. This behaviour gives rise to a so-called *dead-weight loss*, meaning that the sum of the consumer and producer surpluses becomes smaller than achievable under free competition.

Although the producer surplus does increase, this gain is usually more than outweighed by a large loss on the part of consumers, some of which have to pay more for the product than the marginal cost, while others are «priced off the market», incurring a welfare loss given by the difference between their willingness-to-pay and the marginal cost of production.

Theoretical considerations thus lead us to expect relatively high prices in monopolistic markets. Informal observation from the Nordic air travel markets happens to appear consistent with such a prediction.

Another important objection against monopolies is that the incentive to cost efficient production is reduced. In the absence of competi-

tors, a firm may survive and earn a profit even if it does not adhere to the most efficient method of production. Competitive pressure will help resolve this problem.

There are, nevertheless, circumstances in which a monopoly may represent a more efficient technology of production than what would follow from open competition. The so-called *natural monopolies* are characterised by their ability to produce a given output more economically than any collection of independent, smaller firms.

Several authors have pointed out that, as a *network industry*, aviation does in fact exhibit several characteristics typical of natural monopolies. Suffice it here to mention the key words *economies of scale*, *economies of scope*, and *economies of density*.¹

To reach a verdict on the overall merits of competition versus monopolistic production, one must balance the deadweight loss and the inefficiency due to missing competitive pressure against the economies of scale, scope and density. In many cases, the outcome of this trade-off will depend on the size of the market. In smaller markets, there is less room for effective competition.

As applied, however, to the great bulk of the European air travel market, the latest theoretical and empirical insights appear to suggest that the efficiency gains connected with competition more than outweighs the advantages of monopolisation. We believe there are substantial potential gains to be reaped from a significantly enhanced competition within European aviation in general, and within the Nordic air travel markets in particular.

¹ A more thorough discussion will be offered in Chapter 4.

1.2 Barriers to airline competition

There are several circumstances that, separately or in combination, serve to reduce the possibility of a more competitive air travel market.

Possible barriers to entry and to effective competition include the hub-and-spoke system of airline operation, the economies of scale, scope and density typical of aviation, the present and future airline mergers, alliances, and code share arrangements, the bilateral aviation treaties between countries, the frequent flyer programs (FFPs), the corporate discount schemes, the computer reservation systems (CRSs), the travel agent agreements, the slot allocation regimes, the IATA (interlining) tariff consultations, the system of taxation and subsidisation, the structure of airport charges, the vertical integration between ground handling and operations in the air, etc. In this report, all of these issues will be dealt with in smaller or greater detail.

1.3 Deregulation in the USA

The American airline industry was deregulated in 1978. By comparison, the single European aviation market has – in principle – been in effect since 1997, and remains far from fully deregulated in practice.

As a backdrop to our discussion of airline competition in Europe, it may therefore seem fruitful to start by an examination of the American experience. Drawing on the lessons learnt during 23 years of a deregulated aviation market, one might be able to foresee certain patterns of development, certain opportunities, or certain obstacles to competition, that are yet to manifest themselves clearly in Europe.

A bit simplified, we think the principal points to be noted relate to

- hub-and-spoke operations,
- contestability,
- consolidation,
- frequent flyer programs (FFPs), and
- slot allocation regimes.

1.3.1 Hub-and-spoke operations

Shortly after the US airlines were granted complete freedom to organise their own operations, the hub-and-spoke network system became the standard mode of operation for all major airlines. Rather than operating a large number of point-to-point, non-stop routes, the airline company channels all or most passengers through a «hub» airport, from which all connections extend like the spokes of a wheel. This way the number of different non-stop routes needed to serve all possible pairs of n destinations is drastically reduced, from $n(n-1)/2$ to $n-1$. This allows for quite remarkable cost savings on account of the economies of scale, scope and density inherent in a network structure. A fuller account of these concepts is given in Chapter 4 below.

Thus, almost all major American airlines operate one or more hubs (the exception being low cost airlines such as Southwest). Different airlines choose different airports for their hubs. The hub airline therefore tends to dominate its hub airport and the area around it. No other airline is able to offer a comparable frequency of service into or out of the hub. Owing to the important network economic effects at play, the hub airline will often be able to cross-subsidise feeder routes into the hub, so as to effectively outdo any smaller rival airline which may want to offer services on just one or a few spokes.

In terms of competition, the hub-and-spoke system of operation therefore amounts to a fairly pronounced division of the market, between the major airlines operating different hubs. In the US, there is hardly any example of a city pair with more than two airlines operating a non-stop connection. The US market for non-stop flights is, in other words, characterised by local monopolies or, at best, duopolies. Since time sensitive business travellers usually require non-stop trips, it is fair to say that the competition in the US market for *business travel* is severely restricted.

There are, however, usually a fairly large number of airlines serving the same city pair by connections via a third (hub) airport. These

connections are, of course, slower than the direct flights. But since leisure travellers tend to be less concerned about travel time losses, the US market for *leisure travel* is generally considered to be fairly competitive.

1.3.2 Contestability

Prior to and shortly after the deregulation, it was generally thought that aviation markets would in general be highly contestable, as it would be easy for any carrier to relocate aircraft and personnel so as to service a new route.

In practice, it has turned out that the barriers to entry are much more important than previously believed. Incumbent airlines can lower their fares and/or increase their capacity practically overnight, so as to raise the cost and/or reduce the revenue of rival new entrants. Any potential new entrant would, of course, be aware of this, and hesitate to challenge the incumbent carrier even if the latter may be making a considerable profit in the current (monopolised) situation.

1.3.3 Consolidation

Following a period of rather fierce competition in the early phases of deregulation, the US airline industry has consolidated into a few large carriers with nationwide networks. As of the end of 2001, there were at present six large, «traditional» carriers operating in the US domestic travel market:

- American Airlines (AA),
- United Airlines (UA),
- Delta Air Lines
- Northwest Airlines (NWA),
- Continental Airlines (CA), and
- U S Airways (USAir).

In addition, there is a rapidly growing low-cost carrier operating, viz.

- Southwest Airlines (SWA).

NWA and CA are, however, about to merge. Altogether, there are thus only six independent, larger carriers operating.

1.3.4 Frequent flyer programmes

Frequent flyer programmes originated in the US in the early 1980s. Being based on non-linear bonus systems applicable to repeated purchases, they act as loyalty or fidelity discounts for the customers, providing these with a certain incentive to stick to one and the same provider (see Section 6.1 below for a more in-depth description). FFPs are now an integral part of any US airline's marketing strategy (except for low-cost carriers). They remain popular also with large parts of the public and with the political establishment.

Thus, although obviously liable to restrict competition, the FFPs have not been the subject of any serious attempt at intervention on the part of the US competition authorities. Since all major carriers operate comparable programmes, and since there are several carriers providing extended, nationwide services, FFPs are generally not seen as the most important obstacle to competition in the US domestic market.

1.3.5 Slot allocation regimes

As in Europe, the slot allocation process is generally governed by history and tradition («grandfather rights»).

In principle, there is a market for (ownership to) slots in the US. However, this market is not very liquid, as the turnover is quite small. Few slots are ever sold. The time restricted *leasing* of slots is much more common.

The reason is not hard to understand. Even if a carrier may take care not to sell its slot to an airline that competes in the same market, it cannot prevent the buyer to resell the slot at a later stage, possibly to a fierce competitor of the original owner.

This suggests that attractive slots will rarely be sold to new entrants. Although the new entrant may not be a menace to the airline offering the slot, it might be a threat to some other, incumbent carrier. This incumbent carrier would therefore normally be willing to bid up the price considerably, in order to use or «babysit»

the slot and avoid the nuisance of enhanced competition. The slot seller will therefore be able to reap a higher benefit by offering to sell to an incumbent airline than to a new entrant. The principal lesson to be learnt is that a straightforward, market based system of slot ownership will not necessarily result in enhanced competition or challenges to incumbent airlines.

1.4 The European experience and outlook

1.4.1 National carriers and hubs

In Europe, the hub-and-spoke mode of operation has an even longer history than in the US, having grown out of the past regulatory framework and of the prevailing geographic and political conditions, rather than as an autonomous market process. Each country has had its own national airline, or «flag carrier», with a privileged position in and around its domestic market and frequently a large government ownership share. More often than not, flag carriers have been benefiting from considerable amounts of subsidies or *direct* financial support from the state.

Even more importantly, they have, up until recently, been benefiting from very considerable amounts of *indirect* government support, in the form of heavily protected domestic and international markets.

The flag carrier typically organises its network around a hub located near the national capital or main business centre. At its hub airport, the flag carrier tends to have considerable direct and indirect influence on slot allocation practices, on ground handling services, and on other essential facilities. Backed by its own government, the flag carrier usually also tends to obtain privileged positions in whatever bilateral aviation agreements are signed with other countries. Each flag carrier therefore enjoys considerable market power at and around its domestic hub.

Thus, although there are almost as many flag carriers as there are European nations, the competition between them is severely restrict-

ed, as they have been able to divide the market between them to a very considerable extent. In many (short-haul) markets, the most effective competitor to the European flag carrier is not another airline company, but a surface mode of travel, represented by a railway company, a bus service, or the private car.

1.4.2 Regulation and deregulation

While in the US deregulation of the aviation market was done so to speak overnight, the European liberalisation process is much more gradual, extending over more than a decade. It is, in fact, still to be completed.

Until 1992, air traffic to and from any single country was generally regulated by bilateral aviation agreements, by which exclusive traffic rights were usually reserved for the flag carriers of the two respective countries.

In 1987, the European Council agreed on a triple package of measures to liberalise air transport. The approach was to be one of step-wise relaxation of controls covering the key areas of tariff approval, market access, capacity, and the application of the competition rules.

The first package, effective January 1993, opened the market for international flights within the Community. Airlines were given greater freedom to provide capacity to match market demands. New, more flexible procedures for the approval of fares meant that member states could no longer block proposals for economic low fares. These measures enabled smaller airlines that had previously concentrated on domestic or regional services to operate on important intra-Community routes and gave them increased freedom to charge the fares they wished and provide capacity to meet market demands.

The second package carried these reforms further by increasing market access and the right of European airlines to carry traffic between two other European countries as part of a flight originating in its home country (so-called Fifth Freedom rights). Governments were no longer able to deny airlines entry if they fulfilled all the technical and safety standards. The second

package also expanded the scope for fare discounting within certain geographic zones.

In the third and final package, which came fully into effect in April 1997, European carriers were granted full traffic rights within the European Economic Area (EEA)² – including cabotage rights – and the ability to set fares. The single European aviation market, comprising a 370 million population, had become reality.

Thus, through the first, second and third packages of liberalisation, most regulations impeding competition in European aviation have been lifted, although some of them still remain. Perhaps the most important of these are the bilateral aviation agreements still in effect between single European countries and nations outside the Community. Some of these have the form of so-called «Open Skies» agreements, by which any carrier belonging to either one of the two countries enjoys unrestricted traffic rights between the countries. Other agreements, however, are much more restrictive, like the «Bermuda II» treaty currently in effect between the US and the UK. According to this agreement, only four carriers – two British and two American – are allowed to fly between London and the US.

Thus, bilateral aviation treaties still ensure European flag carriers a considerable degree of market protection as far as extra-Community air services are concerned. The exclusive traffic rights granted under such treaties might be forfeited if the flag carrier is merged with a foreign airline – whence the widespread practice of forming alliances rather than full-fledged mergers between European airlines. In an opinion delivered by the Advocate General of the European Court of Justice on 31 January 2002, it is proposed that individual member states no longer be allowed to entertain such individual aviation treaties with non-EU countries. To the extent that this view is upheld by the Court, and assuming that such a

decision will be followed by the conclusion of Open Skies agreements between the EU and other countries, it will, in principle, also open the extra-Community aviation market to any European carrier. As such, it could be viewed as the final step toward deregulation of the aviation industry in Europe.

It will, however, not automatically mean enhanced overall competition. When bilateral treaties are replaced by Community level agreements with non-EU countries, a major impediment to mergers involving two or more flag carriers will have been removed. It may be foreseen that such a change in the regulatory regime will spark a development towards massive consolidation within European aviation. While in terms of competition and efficient resource allocation, full-fledged mergers may well be preferable to looser alliances, it is paramount to the protection of consumers and other air travel customers that the resulting number of European aviation concerns or alliances not become too low.

1.5 Outline

The remaining part of this report is outlined as follows.

In Chapter 2, we offer a general description of the aviation markets in the Nordic countries³.

Chapter 3 describes the relevant competition law currently in effect in the respective countries. While, in most cases, competition law is in line with the legal framework of the European Union (EU), there are some exceptions and deviations to be noted.

Chapter 4 focuses on the economics of aviation, with particular emphasis on the concepts of network economics, price discrimination, costs, and productivity.

Chapter 5 is a brief discussion of taxation and airport charging schemes, as they affect the

² The European Economic Area comprises Norway, Iceland, and Liechtenstein in addition to the European Union (EU).

³ Throughout this report, we limit our attention to Denmark, Finland, Norway, and Sweden. It has been beyond the scope of the Task Force's work to explicitly include Iceland, Greenland, and the Faroe islands.

incentives faced by clients and operators in the air travel market and the externalities connected to airline operations.

In Chapter 6, we discuss the various possible barriers to competition inherent in the marketing practices and mode of operation of modern airlines and airports. These barriers include fre-

quent flyer programmes, corporate discount schemes, travel agent agreements, fare cooperation, inefficient slot allocation, etc.

In Chapter 7, we summarise and conclude the discussion, putting forward a set of recommendations to the Nordic and European authorities.

2. MARKET DESCRIPTION

Denmark, Finland, Norway, and Sweden form a relatively homogeneous region in Northern Europe. Their populations count, as of mid-2000, 5.3, 5.2, 4.4, and 8.9 million, respectively. While Denmark covers a relatively small surface and hence has a comparatively dense population, with 124 inhabitants per square kilometre, the opposite is true of Finland, Norway, and Sweden, where the population densities are 15, 14, and 20 inhabitants per square kilometre, respectively.

2.1 Air travel demand in the Nordic countries

Figure 2.1 shows the level and development of domestic air traffic in the four countries over the last few years. In 2000, more than 23 million domestic air trips were made in the Nordic countries, i. e. almost one trip per capita.

One notes that Norway, despite being the smallest country in terms of population, has the largest domestic market, followed by Sweden. The Danish and Finnish domestic air travel markets are comparatively small.

The national propensity to travel by air must be understood in relation to numerous, country-specific characteristics, including geographic extension or size, topography, population spread, surface transport level-of-service, economic factors, etc. Air travel has its comparative advantage on longer distances, and/or in cases where, although the distance is short as the crow flies, alternative travel modes are slow on account of topography or inefficient surface transport networks. This probably explains the relatively high propensity to travel by air in Norway, and the low propensity in Denmark.

Figure 2.2 shows the densest single domestic

routes within each of the four countries. One notes that no less than five domestic routes in Scandinavia exceed one million passengers per year. Three of these routes are Norwegian. Oslo-Trondheim, Oslo-Bergen, and Stockholm-Gothenburg compete neck and neck to be the densest route.

In Figure 2.3, we exhibit some main statistics concerning the size of the international air travel market between the Nordic countries, and between each country and the EEA. Note that intercontinental traffic is not included, nor are those European trips that have one end outside the EEA.

The largest country also has the largest international European traffic, totalling more than 14 million passengers annually to/from the EEA. Of these, 4.6 millions travel to or from the other Nordic countries. In Denmark, there are 4.1 million travellers to or from the Nordic countries, while in Norway and Finland the figures are 2.9 and 1.8 million, respectively.

The total international inter-Nordic traffic amounts to 6.7 million passengers per year⁴. Trips between the Nordic countries and the remaining EEA total almost 28 millions. Adding the 23 million domestic trips mentioned above, we arrive at a total annual air travel frequency of approximately 57 millions, not counting intercontinental trips or European trips outside the EEA. This corresponds to approximately 2.4 trips per capita.

In Figure 2.4, we show how the densest inter-Nordic and extra-Nordic⁵ routes compare to the rest of Europe. Six routes between or into the Nordic countries are among the top 24 international routes in the Europe. Only fourteen international European routes are denser than the Stockholm-Copenhagen route.

Some further statistics are given in Table 2.1.

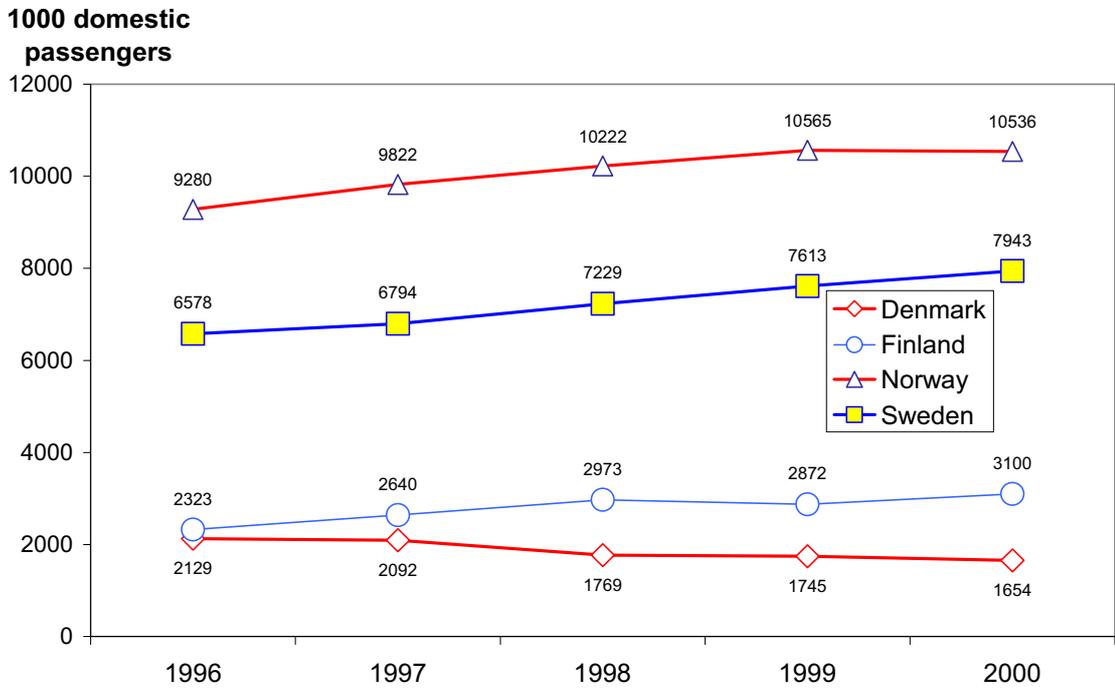


Figure 2.1: Domestic air passengers in Denmark, Finland, Norway, and Sweden 1996-2000

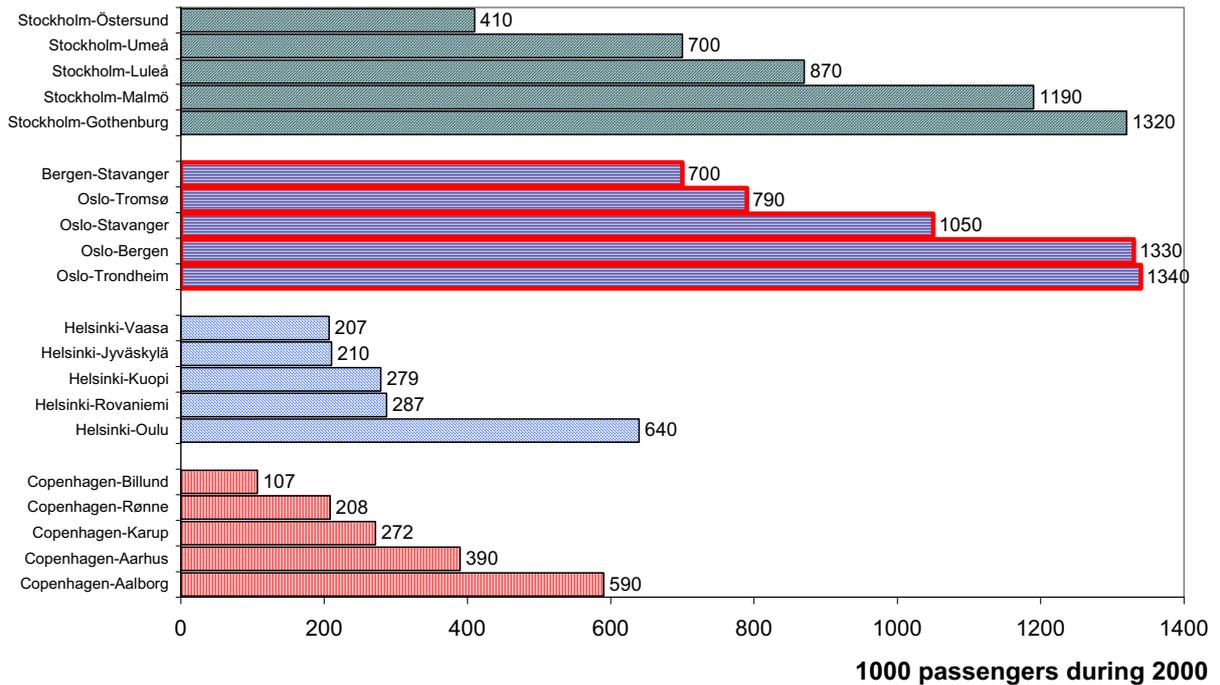


Figure 2.2: The five densest routes in Denmark, Finland, Norway, and Sweden, respectively

4 One half of the sum of the national figures, since each inter-Nordic passenger has been counted twice.

5 Routes between Nordic countries are shown by red bars, while routes into the Nordic region are represented by blue bars. Note that domestic European routes are not taken account of. Some of these exceed three million annual passengers and are hence denser than the London-Dublin route.

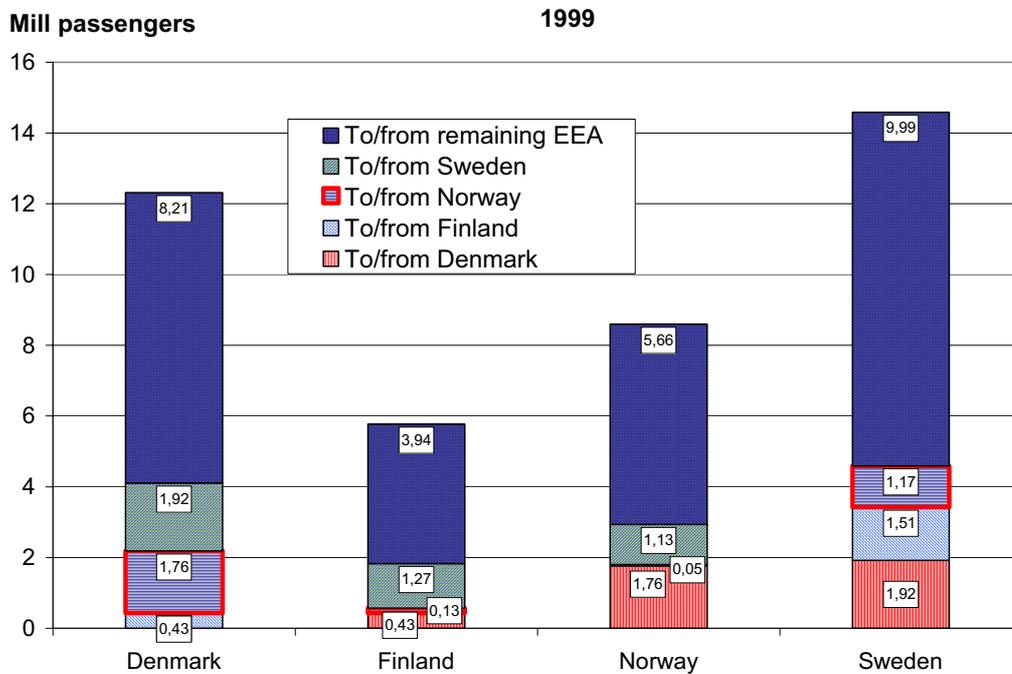


Figure 2.3: International air traffic between each of the Nordic countries and the EEA, by country of destination/origin. 1999. Source: Eurostat: International Transport by Air

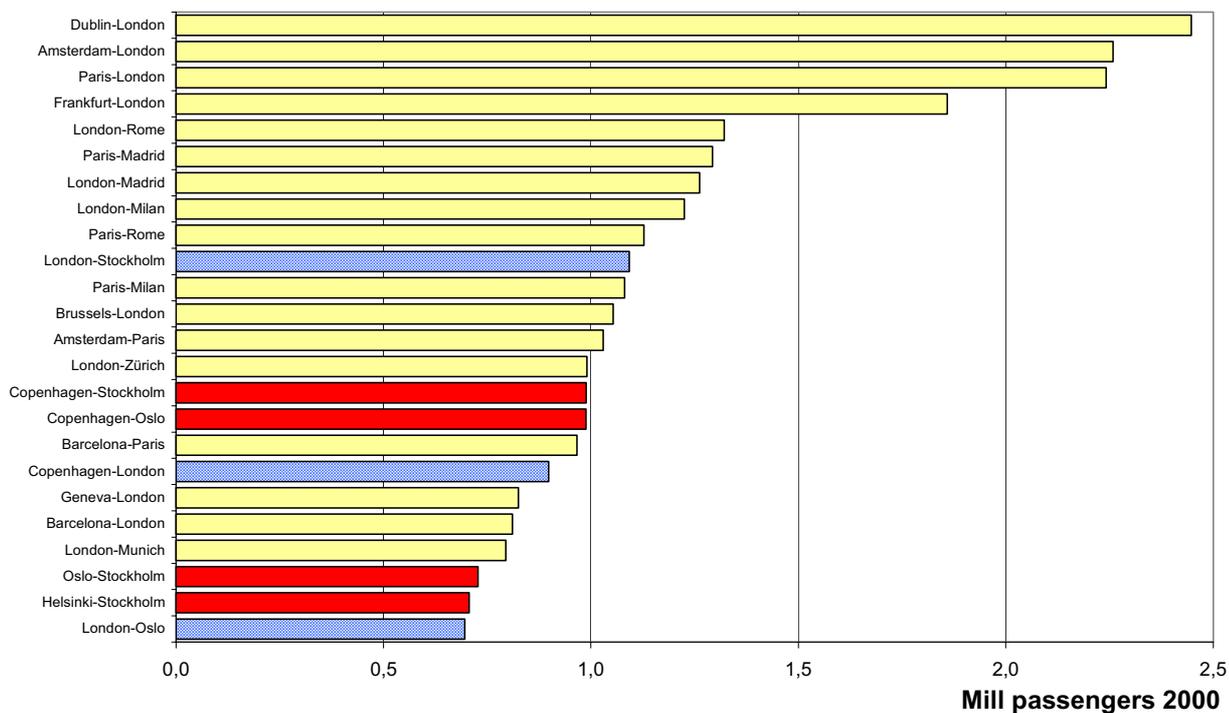


Figure 2.4: Densest 24 international city pairs in European aviation. Year 2000. Source: Association of European Airlines (AEA)

Table 2.1: Summary air traffic statistics for the Nordic countries, as of March 2002.

	Denmark	Finland	Norway	Sweden
Passengers on scheduled domestic routes in 2000	1 654 080	3 099 968	10 536 000	7 943 000
Domestic routes	6	21	112	Appr. 40
Passenger kms in 2000 (millions)	333	1 286	4 312	3 620
Passengers in 2000 (in per cent)				
- scheduled domestic	16.7	44.9	48.6	49.1 ⁶
- scheduled international	70.9	46.0	39.6	50.9 ⁶
- charter flights	12.3	9.1	11.8	
Regulated domestic routes (PSO)	0	0	50	10
Scheduled international routes out of largest domestic airport	Copenhagen:	Helsinki:	Oslo:	Stockholm/ARN
	111	39	34	73
- Nordic routes	26	6	10	16
- other European routes	65	27	23	44
- intercontinental routes	20	6	1	13
-				
Scheduled international routes out of second largest domestic airport	Billund:	Oulu:	Stavanger:	Gothenburg:
	15	1	6	27
- Nordic routes	5	1	2	8
- other European routes	10	0	4	18
- intercontinental routes	0	0	0	1
Scheduled international routes out of third largest domestic airport	Aarhus:	Turku:	Bergen:	Malmö/Sturup:
	4	2	5	4
- Nordic routes	3	2	1	1
- other European routes	1	0	4	3
- intercontinental routes	0	0	0	0

2.1.1 Denmark

In Denmark, the distances between the major cities are short, and the bridge between the islands of Zealand and Funen, which opened in 1997 for trains and in 1998 also for cars, has shortened the time between the provinces by another 1- 1½ hours. This meant that the domestic air traffic has decreased to an even smaller level than before the opening, as three routes have been shut down due to the competition from cars and trains. Today the domestic

air traffic involves six routes to and from Copenhagen. Only 1.7 million people used the plane for domestic travelling in 2000, or 16.7 per cent of all travellers, when international and charter passengers are included as well. The route with most passengers was Copenhagen-Aalborg with just under 600 thousand passengers in 2000 (see Figure 2.2), followed by Copenhagen-Aarhus (400 thousand passengers).

⁶ Including charter flights.

2.1.2 Finland

Finland, on the other hand, is characterised by fairly large distances. Here, however, almost all the major cities are located relatively close to each other in the southern part of the country. There is thus very little air traffic between the three largest cities in Finland. Despite the relatively sparse population none of the 21 major domestic routes are run as public service obligation routes. In total, 3.1 million passengers travelled by air in 2000. This was a third more than in 1996 and 44.9 per cent of the total air traffic, when international and charter traffic is included. Helsinki-Oulu is by far the densest route, carrying 600 thousand passengers in 2000, compared to only 300 thousand passengers on the second largest route, between Helsinki and Rovaniemi.

2.1.3 Norway

In Norway, domestic air travel demand is unusually high, on account of the considerable distances between the major cities and on the relatively low level-of-service offered by alternative modes of transport. The main cities are situated in the southern part of the country and along the western coast, whereas the northern part of the country has a very sparse population. As a consequence of the dependence on air transport in and to/from the more remote areas, the Norwegian government has imposed a public service obligation on approximately 50 of the 112 domestic routes. In 2000, 48.6 per cent of all air passengers travelled on domestic routes, totalling approximately 10.5 million passengers. Oslo-Trondheim and Oslo-Bergen both have more than 1.3 million passengers. The Oslo-Stavanger route comes third, with slightly more than a million.

2.1.4 Sweden

Domestic air traffic in Sweden is also affected by the considerable distances between the main population centres. The main cities are found in the central and southern part of the country,

while the northern part of the country is sparsely populated. Here, the government has imposed a public service obligation on 10 of the approximately 40 domestic routes (beginning in November 2002). The large distances have made the plane an important travel mode. In total, 7.9 million passengers travelled domestically in 2000, the domestic traffic accounting for 49.1 per cent of the total air passenger number in Sweden. The densest route is the one between Stockholm and Gothenburg (1.32 million passengers), while Stockholm-Malmö comes in second (1.19 million).

2.2 The supply side: carriers operating in the Nordic countries

2.2.1 Cooperation, integration, and domestic market performance

Traditionally the national flag carriers have been the biggest suppliers of domestic air travel services of the four countries. In Denmark, Norway, and Sweden the national carrier is the Scandinavian Airlines System (SAS), while in Finland the national carrier is Finnair.⁷

More than 90 per cent of the domestic passengers in Finland fly Finnair. In comparison, SAS' share of the domestic passengers in Denmark, Norway and Sweden is 60, 35, and 74 per cent, respectively. In reality, SAS' and Finnair's market power is further strengthened by cross-ownership and cooperation agreements with other airlines (see Table 2.2). Both SAS and Finnair have code-sharing agreements with their cooperating airlines, just as it is possible to collect EuroBonus or Finnair Plus points⁸ on flights with some of the cooperating airlines. Code-share partners also often run advertisement campaigns together.

These structures have led to a situation in which domestic competition is limited, not only on the thinner routes, but on most of the denser routes as well. Only in Sweden and

7 The Danish, Swedish and Norwegian states own 50.8 % of SAS, while private investors own 49.2% (see facts about SAS 2001/2002, www.sas.se). The Finnish state owns 58.4 % of Finnair, while private investors own the remainder.

8 EuroBonus and Finnair Plus are the frequent flyer programmes of SAS and Finnair, respectively.

Denmark do airlines compete, and only on a limited number of routes. In Norway, SAS and Braathens have been competing on several routes up until 2001. After the merger⁹, they hold a 98 per cent market share. The competition in Norway is thus practically non-existent,

and the same is true for Finland. The competing company to Finnair, Air Botnia, has decided to focus on regional traffic instead of domestic traffic, and the airline has stopped all domestic operations.

Table 2.2: The domestic airlines in Denmark, Finland, Norway, and Sweden

Country	Airline	Domestic share of passengers (per cent)	Ownership and cooperation
Denmark	SAS	59.4	-
	Cimber Air	24.1	Owned 26 % by SAS + cooperation with SAS
	Maersk Air	16.5 ¹⁰	Cooperation with SAS
Finland	Finnair	91.9	-
	Golden Air	5.7	Cooperation with Finnair
	Air Botnia	2.4 ¹¹	Fully owned by SAS
Norway	Braathens	50	Fully owned by SAS (as of 2002)
	SAS	35	-
	Widerøe	13	Owned 96.4 % by SAS
	Other	2	
Sweden	SAS	74	-
	Skyways	13	Owned 25 % by SAS + cooperation with SAS
	Malmö Aviation	10	
	Other	3	

In some cases, however, depending on the distances and on the quality of transport infrastructure and level-of-service, surface travel modes may be substitutable for air transport services, at least within some traveller segments. This is probably the case for some of the shorter air routes in Finland and Sweden, and to a lesser extent in Denmark and Norway. Hence, although there is no effective competition between airlines, the market power of carriers may be limited by the competitive chal-

lenge posed by railways, bus services, or even private cars.

In Figure 2.5 an attempt is made to characterise the domestic market performance of the Nordic flag carriers, i. e. the SAS Group and Finnair, compared to their French and German counterparts¹². Here, we consider the «domestic» market of the SAS Group to consist of all flights inside Scandinavia (Denmark, Norway, and Sweden)¹³.

9 The Norwegian Competition Authority did not intervene against SAS' acquisition of Braathens, since Braathens was a failing firm.

10 Since 12 May 2002, Maersk Air no longer serves the domestic Danish market.

11 Air Botnia stopped domestic operations in 2002.

12 Comparable data for British Airways have not been available. Their domestic market is, however, relatively small. Also, note that the figures for Air France do not include flights to the French territories overseas.

13 Not including Widerøe flights.

After the SAS-Braathens merger, the SAS Group probably enjoys the largest «domestic» market of any European carrier, in absolute, RPK¹⁴ terms as well as relatively speaking. No other major European carrier has anywhere near 35 per cent of its activity in the domestic market.

The airport in Copenhagen, Kastrup, functions as the main hub for SAS. It is also the biggest airport in the Nordic countries with 16.4 million passengers passing through in 2000. There are currently 111 international routes to and from the airport (see Table 2.1). Due to the

minimum amount of domestic air traffic the international travellers account for around 90 per cent of the passengers, a very high percentage compared to most other airports. This means that a lot of the feeder traffic comes from the surrounding countries, primarily from Sweden and Norway. For that purpose, SAS has direct routes between Copenhagen and the smaller Swedish and Norwegian cities, plus a dense schedule between the three capitals. On account of this extensive network, SAS is quite dominant in Kastrup airport, having 58 per cent of the departures in 2000.

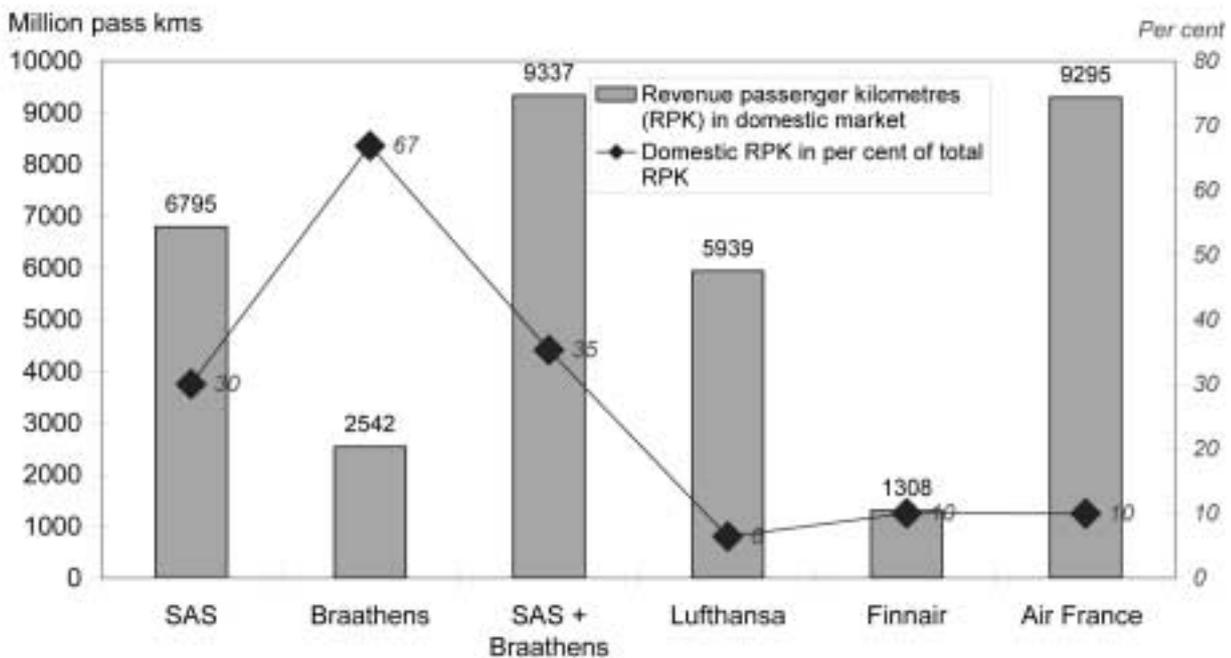


Figure 2.5: Domestic market performance of the Nordic, French, and German flag carriers. Source: Airlines' annual reports for 2000.

SAS is just as dominant in their secondary hubs, Arlanda airport in Stockholm and Gardermoen airport in Oslo. This is also due to the extensive network of domestic routes that feed passengers to SAS' international routes to and from Arlanda and Gardermoen. This network has given SAS a dominant position in the air traffic within, between, into and out of the three Scandinavian countries.

Finnair has a similar network of domestic routes, which feeds passengers into their hub in Helsinki, from where 39 scheduled international routes originate. This has also given Finnair a strong position in Finland. The carrier has also a set of European routes (12 in 2001) originating from Stockholm, and it also operates to Skavsta airport near Stockholm. To some extent it also feeds passengers to SAS' routes from Stockholm and Copenhagen.

14 Revenue Passenger Kilometres.

SAS and Finnair both cooperate with other airlines. Where SAS is a member of the Star Alliance, a cooperation between fifteen airlines, Finnair is a member of the other big alliance, Oneworld, where eight airlines cooperate.

2.2.2 SAS in an international perspective ¹⁵

To get an idea of the positioning of the European airlines, and in particular of SAS' position in this market, we present, in Table 2.3, some key figures for 22 of the largest airlines. The numbers are from 1995/1996. Even

Table 2.3: Descriptive statistics for 22 of the world's largest airlines in 1995.

Airline	Revenue tonne kms (millions)	Number of passengers (thousand)	Number of employees (units)	Per cent internat'l RTK	Stage length (kms)	Passenger load factor (%)
<i>North America</i>						
American	17 660†	79 389†	90 980	36.9	1 799	69†
United	19 637†	81 945†	80 902	42.3	1 683	72†
Delta	15 168†	97 271†	62 832	30.7	1 224	70†
Northwest	12 821†	52 722†	44 682	47.8	1 363	73†
US Air	5 949†	56 893†	43 614	7.4	904	69†
Continental	6 009†	35 986†	32 272	20.0	1 315	68†
Air Canada	3 453	12 801	20 503	67.3	1 536	63
Canadian	2 948	8 578†	13 228†	70.1	1 681	71†
Average North America	10 456	53 198	48 627	40.3	1 438	69.4
<i>Asia-Pacific</i>						
Japan	10 204	28 880	20 482	85.6	2 348	68
Nippon	4 583	37 870	14 649	41.2	1 112	64
Singapore	9 512†	12 022†	13 258	100.0	4 300	74†
Korean Air	8 261	21 422	16 478	93.9	1 714	65
Cathay	7 092†	10 985†	15 657†	100.0	3 283	74†
Qantas	5 603†	15 551†	24 429†	79.5	2 064	72†
Thai	3 795	12 821	20 718	92.0	1 559	67
Average Asia-Pacific	7 007	19 936	17 953	84.6	2 340	69.1
<i>Europe</i>						
Lufthansa®	12 205	32 599	26 578	95.2	1 131	70
British Airways	12 215	35 000†	50 477	98.1	1 863	72†
Air France	9 701	14 498	36 384	91.1	1 846	71
SAS	2 195	19 828†	21 348†	83.1	728	64†
KLM	8 630†	12 285	26 385†	99.9	1 748	76†
Swissair	3 574	8 826†	16 520	99.0	1 268	64
Iberia	2 850	14 600†	22 500	79.6	1 194	70
Average Europe	7 339	19 662	28 599	92.3	1 397	69.6

Source: Oum and Yu (1998a), quoted by Steen and Strandenes (2002).

†1996 data

® Lufthansa went through dramatic restructuring during 1994-1995. Its Technical Services and Cargo divisions became independent public limited companies on 1 January 1995. The parent company Lufthansa AG is now purely a scheduled passenger airline company.

15 This section draws heavily on the report by Steen and Strandenes (2002), using parts of their text verbatim.

the newest studies of airlines (e.g. Ng and Seabright 2001) only include data up to 1995. Hence, since we are using secondary sources, all comparisons done here are based on data up to 1995. Note that, since then, the SAS Group has grown considerably through the acquisition of Braathens.

As can be noted from Table 2.3, the US airlines are the world's largest. Only two of the European carriers can compete among the top ten, i. e. KLM and British Airways. SAS is the smallest among the 22 carriers in Table 2.3 if we look at the revenue tonne kilometres figure, but ranks 11 in terms of passenger volume. This reflects the fact that SAS has by far the lowest average stage length, with only 728 kms, suggesting also that they have a cost disadvantage compared to their competitors (see Chapter 4).

On the other hand, if we look at the employee/passenger ratio, the SAS figure (1.08) is best in Europe if one disregards Lufthansa, whose data are not exactly comparable due to their restructuring (see note to the table).

Actually, the SAS figure is closer to the North American average (0.91) than to the European average (1.45). Air France has more employees compared to passengers than any other carrier (2.51). The differences between Europe and both North America and Asia-Pacific suggest a much higher productivity within the latter two industries.

The «Per cent internat'l RTK» statistic is the percentage of the revenue tonne kilometres that stems from international transport. The North American carriers have a significantly smaller international share than any of the other carriers: 40 per cent, as compared to the European and Asian-Pacific averages of 84 to 92 per cent. SAS has, along with Iberia, the lowest international share of their income from abroad (83 per cent) among European carriers, but this figure is still higher than for any North American carrier. However, if we account for the fact that SAS' domestic market consists of three countries, Denmark, Norway, and Sweden, their «domestic base» is much higher than 17 per cent, as illustrated in Figure 2.5.

3. LEGAL FRAMEWORK

3.1 Community Law/EEA Law

Articles 81 and 82 of the EC Treaty, and Articles 53 and 54 of the EEA agreement¹⁶, set out general prohibitions on anti-competitive agreements and abuse of dominant position.

Article 81(1) prohibits agreements, decisions, and concerted practices between undertakings, if they have as their object or effect to distort competition, and if they affect trade between Member States. The prohibition covers cooperation between two or more undertakings. Cooperation may take place through an agreement, a decision by an association of undertakings, or through concerted practices of undertakings. A decision by an association of undertakings would, for instance, be where a trade association, by virtue of its rules of association, would be able to determine or change the behaviour of other undertakings on the market.

Concerted practices refer to those situations where undertakings, without having a formal agreement, apply a certain form of behaviour jointly. For this to be regarded as a concerted practice, some form of communication must have taken place between the undertakings. Natural parallel behaviour, where a number of undertakings act in the same way without having either a direct or indirect agreement, is not by itself subject to prohibition. These situations will, however, be difficult to distinguish.

In Article 81, a number of examples of cooperation are given that are regarded as being particularly restrictive in terms of competition. The list of examples is not exhaustive since there are other forms of cooperation that are anti-competitive. The Article is particularly strict as regards price cooperation. Agreements where there is direct price cooperation, and also where prices are indirectly determined, are prohibited. It makes no difference whether the

undertakings involved cooperate directly or indirectly in e.g. a purchasing or trade association. As will be pointed out below, airlines are exempt from this as regards price consultations for interline tickets.

If companies want to be assured that their agreements do not infringe the Community Regulations, they can notify the agreements to the Commission with request for negative clearance or individual exemption according to Article 81(3). Certain types of agreements are exempted from the prohibition against anti-competitive cooperation. These have been grouped into block exemptions. An undertaking itself may, at its own risk, decide whether an agreement is covered by a block exemption and thus exempt from the prohibition.

Article 82(1) prohibits abuse of dominant position by one or more undertakings if it affects trade between Member States. For the prohibition to be applicable, an undertaking is required to have not only a dominant position in the market, but also be abusing its position. Being dominant is not in itself prohibited, what is prohibited is the abuse of a dominant position.

As a rule a dominant position is based on a number of factors, each of which does not by itself have to be critical. Examples of factors that are important, are financial strength, barriers to entry into the market, patents and industrial property rights, as well as technology and other knowledge oriented advantages. An important factor is the market share of the undertaking in the relevant market. A market share of between 40 and 50 percent is regarded as being a clear indication of a dominant position. If the market share exceeds 65 percent, the presumption of a dominant position is virtually conclusive.

¹⁶ Art. 53 and 54 of the EEA Agreement follow Art. 81 and 82 of the EC Treaty verbatim. They have been implemented in Norwegian Law through Act of 27 November 1992 No. 109.

The Article lists a number of examples of practices that can be regarded as constituting abuse. The list of examples below is not exhaustive. An example of unfair purchase or selling prices is when excessive prices are set. Another example is predatory pricing, i. e. where a dominant undertaking applies prices below those that would normally be needed to cover costs and where the aim is to eliminate competitors or make market entry more difficult.

In 1989, the Council issued Regulation 4064 on merger control.¹⁷ All mergers, take-overs and joint ventures of EU dimension¹⁸ are to be notified to the European Commission for approval. If the Commission considers a concentration to create or strengthen a dominant position, resulting in a significant impediment to competition in the common market, the Commission can declare the concentration incompatible with the common market.

Council Regulation No. 17/62¹⁹ empowers the Commission to require necessary information and to undertake investigations in matters concerning violations of Articles 81 and 82. In case of violation the Commission can decide that the infringement should be terminated.²⁰ The Commission also has the power to impose fines and periodic penalty payments.²¹ Enforcement through the Commission is complemented by enforcement brought by private parties through national courts. This is a consequence of the doctrine of direct effect.²² Agreements or clauses in an agreement cov-

ered by the prohibition against anti-competitive cooperation are void, according to Article 81(2). Pursuant to case law an undertaking may also be liable to pay damages to another undertaking.²³

Originally, Regulation No. 17 did not apply to the transport sector,²⁴ and air transport was not included in the EC Treaty provisions on transport policy. Therefore, it was not possible for the Commission to investigate violations of Articles 81 and 82 in cases concerning air transport.

Inspired by the deregulation of domestic air transport in the USA in 1978 as well as by the decision of the European Court of Justice in the so-called *Nouvelles Frontières* case,²⁵ the Council decided to establish a single European aviation market. Thus, the market for air travel in Europe was liberalised in three steps around 1990, known as the three packages.

By the first package in 1987, the Commission received means to treat infringements in the market for air transport in the same way as in most other markets within the EU. The following two packages (in 1990 and 1992) included renewals and supplementary regulation to the first package.

Council Regulation No. 3975²⁶ lays down the procedure for the application of the rules on competition set out in the Treaty, as Council Regulation No. 17/62, as mentioned before,

17 Council Regulation (EEC) No. 4064/89 of 21 December 1989 on the control of concentrations between undertakings, OJ L 395 30.12.1989 p. 1, amended by Council Regulation (EEC) No. 1310/97 (OJ L 180 09.07.1997 p.1). EEA Agreement Art. 57, Annex XIV. Implemented in Norwegian Law through Act of 27 November 1992 No. 110 and Regulation No. 966 of 2 December 1992 and Regulation No. 964 of 2 December 1992.

18 Defined in Regulation 4064, Article 1.

19 Council Regulation 17/62: First Regulation implementing Articles 85 and 86 of the Treaty, OJ 013 21.02.1962 p. 204. EEA Agreement Protocol 21, The Surveillance and Court Agreement Protocol 4, Part I, Chapter II. Implemented in Norwegian Law through Act of 27 November 1992 No. 110 and Regulation No. 966 of 2 December 1992.

20 Council regulation 17/62, Article 3.

21 Council Regulation 17/62, Article 15 and 16.

22 Case 127/73, *Belgische Radio en Televisie and Société Belge des Auteurs, Compositeurs et Editeurs (BRT) de Musique v. SV SABAM and NV Fonior*, Judgment of the Court of 30 January 1974, European Court reports 1974 page 51.

23 Case 453/99 *Courage v. Crehan*, Judgment of the Court of 20 September 2001.

24 Council Regulation No. 141/62, Exempting transport from the application of Council Regulation No. 17, OJ 124 28.11.1962 p. 2751.

25 Court Ruling in *Ministère Public v. Lucas Asjes and Others*, Judgment of the Court of 30 April 1986, Joined Cases 209-213/84, European Court reports 1986 page 1425.

26 Council Regulation (EEC) No. 3975/87 of 14 December 1987 laying down the procedure for the application of the rules on competition to undertakings in the air transport sector, OJ L 374 31.12.1987 p.1, amended by Council Regulation (EEC) No. 1284/91 (OJ L 122 17.05.1991 p.2), amended by Council Regulation (EEC) No. 2410/92 (OJ L 240 24.08.1992 p.18). EEA Agreement Protocol 21, The Surveillance and Court Agreement Protocol 4 Part II, Chapter XI. Implemented in Norwegian Law through Act of 27 November 1992 No. 110 and Regulation No. 966 of 2 December 1992.

does not apply to transport services. According to its preamble, the Regulation aims in particular to give the Commission the means for investigating cases of suspected infringement of Articles 81 and 82 in this sector, and the powers to take decisions and impose appropriate sanctions in order to put an end to infringements recorded by the Commission.

Agreements solely on technical standards, improvements and cooperation of technical matter are excepted from the prohibition laid down in Article 81 of the Treaty.

3.2 Exemptions for the airline industry

Council Regulation No. 3975 applies only to air transport between Community airports. This means that agreements or behaviour concerning air transport between Member States and third countries may still constitute infringements of Articles 81 and 82, only the Commission will not be empowered to investigate it or impose sanctions.

It is fully optional for a Member State to enter bilateral agreements with third countries concerning air transport between the two. But the Member States' national authorities are not allowed to approve or encourage agreements that are contrary to Articles 81 and 82.²⁷ Bilateral agreements are discussed below.

By Council Regulation No. 3976,²⁸ the Commission was given power to adopt block exemption to certain categories of agreements, decisions, and concerted practices as listed in Article 2(2) of the Regulation. A block exemption means that the prohibition set out in Article 81(1) does not apply to the types of agreements mentioned in the regulation concerned.

As a part of the liberalisation programme, the Commission granted wide block exemptions in the area of air transport related services. In 1988, the Commission issued three block exemptions concerning capacity planning, revenue sharing, tariff consultation, slot allocation, computer reservation systems, and ground handling services, in each case subject to detailed conditions.²⁹ These block exemptions have been updated continuously throughout the 1990s.

The block exemption on cooperation between airlines including slot allocation was renewed in 1993, and has been amended several times since.³⁰ By the latest amendments, the extent of the block exemption has been narrowed significantly. The block exemption thus no longer excepts joint planning and coordination of schedules and consultations on cargo tariffs from the prohibition in Article 81. After the latest amendment, the Regulation applies until 30 June 2002 to agreements concerning consultations on passenger tariffs, and until 30 June 2004 concerning slot allocation.

The Regulation on passenger tariff consultations only affects one organisation, IATA, whose primary purpose is to organise interlining and coordinate tariffs in this connection. The airline companies' cooperation through IATA is described below in Chapter 6.

The Commission has been examining whether or not to amend the block exemption on passenger tariff consultations. The question to be considered is whether the advantages of cooperation outweigh the disadvantages of allowing the companies to exchange information on prices. There is, as of May 2002, a proposal pending to prolong the exemption until 30 June 2005.

27 See the Court Ruling in *Ahmed Saeed Flugreisen*, Judgement of the Court of 11 April 1989, *Ahmed Saeed Flugreisen and Silver Line Reisebüro GmbH v Zentrale zur Bekämpfung unlauteren Wettbewerbs e.V.*, Case 66/86, European Court reports 1989 Page 0803.

28 Council Regulation (EEC) No. 3976/87 of 14 December 1987 on the application of Article 85 (3) of the Treaty to certain categories of agreements and concerted practices in the air transport sector, OJ 1987 L 374/9, amended by Council Regulation (EEC) No. 2344/90 (OJ 1990 L 217/15), amended by Council Regulation No. 2411/92 (OJ 1992 L 240/19).

29 Regulation Nos 2671-2673/88.

30 Commission regulation (EEC) No. 1617/93 (OJ 1993 L 115/18), amended by Commission regulation (EEC) No. 1523/96 (OJ 1996 L 190/11), amended by Commission regulation (EEC) No. 1083/99 (OJ 1999 L 131/27), amended by Commission regulation (EEC) No. 1324/01 (OJ 2001 L 177/56. EEA Agreement Annex XIV p. 6) no. 11b. Implemented in Norwegian Law through Act of 27 November 1992 No. 110 and Regulation No. 964 of 2 December 1992.

By the adoption of the third package, the Council allowed free tariff fixing³¹ and introduced Community-wide procedures for licensing carriers, so that Member States were required to allow any licensed Community carrier to operate between any two points within the Community.³² This also removed the remaining restrictions on domestic air transport. The result of these Regulations was that airlines – and especially national carriers – could no longer rely on government protection and had to adapt to a more competitive environment.

Still, if a Member State and the Commission can agree upon certain routes in «thin» areas as vital to the economic development of the concerned regional area, Regulation 2408³³ authorises the Member State to impose a public service obligation to the routes.

In 1993, the Council issued a Regulation on common rules for the allocation of slots at Community airports.³⁴ The purpose of the Regulation is to facilitate the entry of new carriers into the market, by requiring all Member States to manage and allocate airport slots under the same rules. According to the Regulation, a carrier is allowed to maintain a slot if the slot has actually been used 80 per cent of the time during the period for which it has been allocated – the so-called «grandfather rights». Furthermore, the Regulation states that airline companies can exchange slots among each other.

At present, the Commission is planning a renewal of the Regulation to ensure an easier entry into the market for new carriers. The Commission also wants to clarify the legal status of slots in order to open up the possibility

to exchange or even trade slots between airline companies. Slots and capacity are discussed more thoroughly below in Chapter 6.

In 1989, the Commission released a Code of Conduct for computer reservation systems.³⁵ By the Regulation, the Commission wanted to ensure that such systems be used in a non-discriminatory and transparent way, and to avoid any abuse of the computer reservation systems that might distort the competition between air carriers. Computer reservation systems are discussed further in Chapter 6.

In 1996, the Council passed a directive to the effect that agreements on ground handling services were no longer exempt from article 81(1).³⁶ To fulfil the obligations contained in the directive, Community airports with more than 2 million passengers a year must open up the market for ground handling services in the airport to at least two third-party suppliers. For smaller airports, the directive does not require member states to ensure free access for third-party ground handling suppliers.

3.3 Bilateral agreements

Air traffic between states that are not both members of the EU/EEA, are to be negotiated bilaterally. Bilateral agreements include rules on the establishment of routes, quantities and price structures on all origin-destination pairs between the two countries concerned.

The USA offers so-called Open Skies agreements to countries wanting bilateral treaties on cross-Atlantic flights to the USA. A bilateral Open Skies agreement between the USA and a third country gives complete freedom for airlines registered in the two countries to travel

31 Council Regulation (EEC) No. 2409/92 (OJ 1990 L 240/15). EEA Agreement Annex XIII, Chapter VI. Implemented in Norwegian Law through Act of 11 June 1993 No. 101 and Regulation No. 691 of 15 July 1994.

32 Council Regulation (EEC) Nos 2407 and 2408/92 (OJ 1990 L 240/1 and 8). EEA Agreement Annex XIII, Chapter VI. Implemented in Norwegian Law through Act of 11 June 1993 No. 101 and Regulation No. 691 of 15 July 1994.

33 Article 4(1)(a).

34 Council Regulation (EEC) No. 95/93 (OJ 1993 L 14/1). EEA Agreement Annex XIII, Chapter VI. Implemented in Norwegian Law through Act of 11 June 1993 No. 101 and Regulation No. 691 of 15 July 1994.

35 Council Regulation (EEC) No. 2299/89 of 24 July 1989 on a code of conduct for computerised reservation systems OJ L 220 29.07.1989 p.1, amended by Council Regulation (EEC) No. 3089/93 (OJ L 278 11.11.1993 p.1), amended by 0323/99 (OJ L 040 13.02.1999 p.1). EEA Agreement Annex XIII, Chapter VI. Implemented in Norwegian Law through Act of 23 June 2000 No. 54.

36 Council Directive (EEC) No. 96/67 (OJ 1996 L 272/36). EEA Agreement Annex XIII, Chapter VI. Implemented in Norwegian Law through Act of 11 June 1993 No. 101 and Regulation No. 1096 of 11 March 2000.

between the two, both on new and existing routes.

The European Commission has been trying for some years to negotiate such a deal with the USA on behalf of all 15 EU Member States, but has still not succeeded. Thus, several Member States have individually negotiated Open Skies agreements with the USA.³⁷ The United Kingdom has a rather restrictive bilateral agreement with the USA, the so-called «Bermuda II» treaty³⁸.

The Commission considers bilateral agreements to infringe Community Regulations, as the agreements only ensure the Member State's own air carriers the right to fly from their territory to the USA. According to the Commission, the involved Member State in this way creates serious discrimination and distortions of competition towards other Member States. The Commission has therefore submitted applications to the Court against the Member States that have made bilateral agreements with the USA.³⁹ In an opinion delivered by the Advocate General to the European Court of Justice on 31 January 2002, it is proposed that individual member states no longer be allowed to entertain such individual aviation treaties with non-EU countries.

As to the EEA countries, there are no formal limitations to the possibilities to negotiate bilateral agreements. Both Iceland and Norway have signed Open Skies agreements with the USA.

3.4 National competition legislation

In the EU member states Denmark, Finland, and Sweden, the competition legislation is, in general, more or less fully harmonised with

Community law (see Subsections 3.4.1, 3.4.2, and 3.4.4 below).

In Norway, however, important differences still persist⁴⁰, especially as regards the prohibition against the abuse of dominant position. At present, such a prohibition does not exist under Norwegian law. On the other hand, the Norwegian Competition Authority has extensive powers to intervene against (e.g. prohibit) any action or agreement which is *liable to* restrict competition contrary to the goal of efficient resource allocation (see section 3.4.3). Also, whenever the trade between EEA member states is affected, Articles 53 and 54 of the EEA agreement (corresponding to Articles 81 and 82 of the EC treaty) become applicable. Thus, the EU/EEA competition rules are valid alongside the Norwegian competition regulation. In case of conflict, the EEA rules prevail, making the prohibition against abuse of dominant position applicable even in Norway.

3.4.1 Denmark

Effective 1 January 1998, the Danish Competition Act was amended to achieve a higher degree of EU-conformity. The amendment introduced a prohibition against anti-competitive agreements and against abuse of dominant position – both similar to the ones contained in Articles 81 and 82 of the EC Treaty. Effective 1 October 2000, rules on merger control were introduced in the Competition Act as well.⁴¹ In accordance with the wish to achieve EU-conformity, the Competition Act has been construed in a manner similar to the EU competition rules.

The limit for agreements of minor importance in the Danish Competition Act is a turnover of 1 billion⁴² Danish kroner and a 10 per cent

37 Austria, Belgium, Denmark, Finland, Germany, Italy, Luxembourg, Netherlands, Portugal, and Sweden.

38 The «Bermuda II» treaty places particularly severe restrictions on the US-London service, especially in regard to Heathrow Airport. Only four carriers – American Airlines, British Airways, United Airlines, and Virgin Atlantic Airways – are allowed to provide services between Heathrow and the USA. The treaty also limits the number of US cities that may be served from London's Gatwick Airport. Finally, the Bermuda II agreement permits either government to restrict capacity expansion in any US-UK city pair, and to restrict carrier pricing in certain respects.

39 C-466-469/98, C-471-472/98 and C-475-476/98. The cases are still pending before the Court.

40 The Norwegian Competition Act is currently (as of May 2002) under revision. One issue being considered is precisely whether to harmonise the Act with Community Law.

41 Consolidated Act No. 687 of 12 July 2000 on Competition.

42 In this report, «billion» means «1000 millions».

share of the relevant market. Mergers are only subject to Danish merger control if the merging companies have a joint turnover in Denmark of more than 3.8 billion Danish kroner.

Violations of the Competition Act are sanctioned by fines. But the Danish Competition Authority is not empowered to impose the fines. Instead, the Competition Authority must ask the police to press charges for violations of the Competition Act.

Violations of the Competition Act are not subject to imprisonment or personal penalty for the physical persons involved.

Regarding competition in the air transport sector, the leading case in Danish Competition practice concerns agreements between two Danish airline companies (SAS and Cimber Air). The two companies had negotiated a package of bilateral agreements on code sharing, use of SAS' frequent flyer programme on Cimber Air routes, joint advertising and joint ground handling. The parties had also made common traffic planning on four routes on which they were both operating. The agreements were notified to the Danish Competition Board with request for negative clearance or individual exemption.

The Competition Board granted individual exemption to the agreements on several conditions and obligations. The most important terms were the following: Any airline company should have access to buy through tickets on the domestic routes concerned on open and non-discriminatory terms, and any airline company should have access to SAS' frequent flyer programme on the routes concerned on open and non-discriminatory terms, if the airline was not connected to other international frequent flyer programmes. This condition was made in accordance with previous decisions by the Commission.⁴³

On 18 July 2001, the Commission decided to

impose fines on *SAS and Maersk Air*, in the amounts of € 39 and 13 million, respectively, for having made illegal market sharing agreements.⁴⁴ During a dawn raid, the Commission found proof of secret market sharing agreements of two types between the parties.

In a general market sharing agreement, the companies had agreed upon leaving each other's «home markets». This meant that SAS would withdraw from routes out of Maersk Air's hub in Billund in Jutland, while Maersk Air would keep from starting up new routes out of Copenhagen, unless SAS allowed Maersk Air to do so.

In a more concrete market sharing agreement, the parties divided specific routes among them: Maersk Air would stop flying Copenhagen-Stockholm. In compensation for this, SAS would leave the route Copenhagen-Venice to Maersk Air. Finally, SAS would stop flying Billund-Frankfurt and leave the route to Maersk Air.

The agreements made SAS almost totally dominant on the very important route between Copenhagen and Stockholm. Meanwhile, the general part of the agreement strengthened the already existent hub-and-spoke structure of SAS, controlling all air traffic out of Copenhagen, while Maersk Air would be able to underpin its position in Jutland.

The Commission stated that the agreements constituted a most serious infringement of Article 81.

3.4.2 Finland

The material rules of the Finnish competition law are to be found in the Act on Competition Restrictions (no. 480/92), which came into force on 1 September 1992. The last amendment of the Act entered into force on 1 March 2002. The Act is based on the prohibition principle.

43 For example 96/180/EC: Commission Decision of 16 January 1996 in case IV/35.545 - LH/SAS, OJ L 054, 05/03/1996 p. 28.

44 Commission Decision of 18 July 2001 in *Sun-Air v. SAS and Maersk Air*, OJ 2001 L 265/15.

Finland's Act on Competition Restrictions is not applied to competition restrictions occurring outside Finland, insofar as they are not directed against a Finnish clientele.

There are no exclusions or special rules regarding small and medium sized firms.

Article 4 in the Act prohibits resale price maintenance. The prohibition covers both maximum and minimum prices, but it does not cover price recommendations.

Article 5 in the Act on Competition Restrictions prohibits tendering cartels. The prohibition does not cover joint tendering for joint performances.

In Article 6 paragraph 1 of the Act on Competition Restrictions, horizontal agreements, recommendations and other such arrangements concerning prices or charges, are prohibited. The prohibition against price cooperation applies not only to the prices charged for goods or services, but also to discounts, delivery charges, and delivery conditions.

Article 6 paragraph 2 of the Act on Competition Restrictions as a rule forbids horizontal agreements between undertakings aimed at limiting production and dividing markets or sources of supply. The prohibition does not, however, cover restrictions that are necessary for arrangements that contribute to the efficiency of production or distribution, or promote technical or economic development, the benefit of which mainly accrues to customers or consumers. Naked restrictions of production or division of markets or sources of supply, which restrict competition and benefit only the undertakings involved, are per se prohibited.

The Act on Competition Restrictions prohibits abuse of a dominant position by an undertaking or association of undertakings. Article 7 of the Act lists examples of abusive and hence prohibited practices, which include refraining from a business relationship without a justified cause; tying; excessive, predatory, and discriminatory pricing practices; and the use of a dominant market position to restrict competition in the production or marketing of other commodi-

ties (e.g. cross-subsidisation).

Article 9 of the Act covers vertical restrictions excluding resale price maintenance and abuse of a dominant market position. It also applies to horizontal restraints not explicitly prohibited. These restraints are treated under the so-called abuse principle, which means that restraints are evaluated case by case. Where a restraint is deemed both to have harmful effects and to be incompatible with sound and effective economic competition, action can be taken to eliminate such effects.

In the first stage the Finnish Competition Authority will negotiate with the undertakings concerned. In case the harmful effects cannot be eliminated through negotiations, the Authority shall refer the case to the Market Court, which can prohibit the restraint.

According to Article 8 of the Act on Competition Restrictions the Competition Council can impose a penalty payment on a business undertaking or an association of business undertakings based on a proposal by the Finnish Competition Authority.

The prohibitions of Articles 4-6 (resale price maintenance, tendering cartels, horizontal cartels) of the Act on Competition Restrictions may qualify for an individual exemption from the prohibitions. This requires that the restriction promotes the production or distribution of commodities or technical or economic development, and that the benefit primarily accrues to the clients or the customers.

Applications for exemptions are made to the Finnish Competition Authority, which in the first instance decides whether an exemption can be granted. If the Authority does not grant an exemption, the decision can be appealed to the Market Court.

The Finnish competition legislation largely corresponds to the EC competition rules. Horizontal cartels, resale price maintenance, and abuse of a dominant market position are prohibited competition restraints.

As far as prohibition against horizontal cartels

is concerned, the Finnish Act on Competition Restrictions outright prohibits price and other cartel agreements without stating anything on the consequences of the restraint or the motives of the parties concerned.

Pertaining to the abuse of a dominant market position, it differs from Article 82 primarily with respect to wording of the lists of examples on an abuse. In practice, both provisions lead to the same conclusion. However, unlike Article 82, the Finnish Act on Competition Restrictions (Article 7) explicitly mentions the use of exclusive agreements as a means of abuse and the use of a dominant position to restrict competition in the production or marketing of other products.

A significant difference between the Finnish and EC competition rules lies with the treatment of vertical restraints. Whereas the EU applies the prohibition principle, in Finland an abuse principle is applied. An exception to this is the prohibition against resale price maintenance covered by Article 4 of the Finnish Act on Competition Restrictions.

The control of concentrations began in Finland on 1 October 1998. The provisions on the control of concentrations apply to concentrations where the combined turnover of the parties to the concentration exceeds € 336 375 853 and the turnover of a minimum of two parties exceeds € 25 228 189.

In the Act on Finland's entry into the European Union (No. 1540/94), it is stated that the provisions of the EC Treaty are effective in Finland. On the basis of this and of the direct applicability of certain provisions of the Treaty, the Finnish competition Authorities have been considered empowered to apply the provisions of the EC Treaty that are in force as Finnish law.

As of May 2002, the Finnish Competition Authority is examining the possible abuse of dominant market position by Finnair. The case involves many aspects of the carrier's business activities including the use of FFPs, corporate customer agreements, travel agency agreements, and ground handling.

In the year 2000 the Competition Authority approved – subject to conditions – the travel agency Fritidsresor's acquisition of Finnmatkat, which was a part of the Finnair group.

3.4.3 Norway

Act No. 65 of 11 June 1993 relating to Competition in Commercial Activity (the Competition Act) contains a combination of prohibitions and provisions to intervene against restraints on competition. The Competition Act has a defined purpose in Section 1-1, viz. to achieve efficient utilisation of society's resources by providing the necessary conditions for competition.

The prohibitions in the Act are contained in Sections 3-1 to 3-4. According to Section 3-1, it is prohibited for two or more undertakings to cooperate on prices, mark-ups, or discounts. Section 3-2 covers cooperation and influence on tenders, while Section 3-3 deals with market sharing and Section 3-4 with commercial regulations and restrictions.

The Norwegian Competition Authority (NCA) may, according to Section 3-9, through individual decisions or regulations, grant exemptions from the prohibitions in Section 3-1 to 3-4 for a limited period of time. Conditions may be imposed for exemption.

A rather powerful set of provisions is included in Section 3-10, on «Interventions against anti-competitive behaviour». According to this section, the NCA may intervene by individual decision or regulation against terms of business, agreements, and actions, where the Authority finds that these have the purpose or effect of restricting competition, or are liable to do so, contrary to the purpose stated in Section 1-1 of the Act.

It is, in other words, not necessary for the NCA to prove that an action actually has had the effect of restricting competition – it is sufficient to show that it is *liable* to do so.

Section 3-11 of the Norwegian Competition Act deals with merger control. The NCA may prohibit acquisitions of enterprises if the NCA

finds that the acquisitions creates or strengthens a significant lessening of competition, contrary to the goal of efficient resource utilisation set out in Section 1-1.

According to the guidelines of the NCA, the failing firm argument may be invoked to justify an acquisition. If one of the enterprises is a failing firm, and if bankruptcy does not lead to a preferable situation in terms of competition, the conditions for intervention by the NCA are not fulfilled. On account of this argument, the NCA did not intervene against the merger between the two largest Norwegian domestic air carriers, SAS and Braathens, which became effective in December 2001.

Pursuant to Section 1-7 the prohibitions of Section 3-1 to 3-4 do not encompass agreements between undertakings or concerted practices which come under the rules concerning categories of agreements under Article 53 (3) of the EEA Agreement or which have been granted individual exemption under Article 53 (3) of the EEA Agreement.

Any of the NCA's decisions may be appealed to the Ministry of Labour and Government Administration within three weeks of the date of the decision.

The sanctioning for infringement of the Norwegian Competition Act differs from the EU/EEA law in the way that persons can be liable to imprisonment, normally for up to three years, and under aggravating circumstances for up to six years pursuant to Section 6-6. According to Section 6-5, an undertaking that has achieved a gain from infringing the Competition Act, may be required wholly or partly to relinquish it. The NCA may issue a writ giving an option of relinquishment of such gain. Agreements and clauses that infringe the prohibitions in the Act are invalid between the parties according to Section 5-1. Parties can also claim damages in national courts pursuant

to general rules relating to damages, as well as apply for an interim measure pursuant to the Enforcement Act.

Norway entered into the European Economic Area (EEA) Agreement on 2 May 1992, and the agreement came into force on 1 January 1994. The Agreement and its regulations and directives have been implemented in Norway through laws and regulations.⁴⁵

The rules are enforced by the EFTA Surveillance Authority and the EC Commission according to Article 56 of the EEA Agreement.

The EEA competition rules are valid alongside the Norwegian competition regulation, but in case of conflict the EEA rules prevail, according to the EEA Act Section 2. According to Articles 53 and 54 of the main agreement, the rules become applicable if the trade between member states is affected.

Article 57 of the EEA Agreement concerns mergers that create or strengthen a dominant position. The control of concentrations shall be carried out by the EC Commission or by the EFTA Surveillance Authority. Council regulation (EEC) 4064/89 defines which concentrations need to be notified to the EC Commission or to the EFTA Surveillance Authority. Whether a concentration is covered by article 57 and Regulation 4064/89 depends, *inter alia*, on whether the companies' turnover exceeds certain thresholds. If the concentration meets these requirements, the Norwegian Competition Act is inapplicable.

Pursuant to Section 3-10 of the Norwegian Competition Act, the Norwegian Competition Authority has recently intervened against the frequent flyer programmes of the SAS Group. Further details are given in Subsection 6.1.6 of this report.

45 For implementation of the EEA agreement in Norwegian Law, see section regarding EU/EEA.

3.4.4 Sweden

The Swedish Competition Act (1993:20) that entered into force on 1 July 1993 is based entirely on the principle of prohibition. In material terms, the prohibition provisions closely resemble the competition rules set out in the EC Treaty. EC case law shall be taken into account when applying the Swedish Act. It contains prohibitions against anti-competitive cooperation, Article 6, and abuse of a dominant position, Article 19.

Infringements of the Competition Act are subject to powerful sanctions. The Act also contains rules governing concentrations between undertakings. Violations of the Competition Act are, however, not subject to imprisonment or personal penalty for the physical persons involved.

A year before the law took effect, the Swedish Competition Authority was founded. Enforcing the new Competition Act is one of its prime tasks. A series of amendments have been made to the Act in order to make the monitoring of competition more effective in increasingly international markets. The Competition Authority has since 1 January 2001 the powers to directly apply provisions of the EC Treaty contained in the Articles 81 and 82, i. e. the prohibitions against anti-competitive cooperation and abuse of a dominant position. The power to grant negative clearance has, however, been limited to cases that are of special relevance to Sweden. In addition, the power to grant an exemption according to Article 81 is restricted.

Undertakings unsure of whether an agreement or a practice is in conflict with either or both prohibitions in the Act may apply to the Competition Authority for negative clearance or exemption. Granting negative clearance means that the Competition Authority regards the agreement or practice as not being in conflict with the Competition Act.

Decisions made by the Authority under the Competition Act usually apply with immediate effect, and thus have direct effect on the market. This applies even though the decision may be appealed against.⁴⁶

Anti-competitive cooperation prohibited in accordance with the Competition Act may be granted exemption, providing the undertaking can show that the cooperation has favourable effects outweighing the unfavourable ones.

In the event of an infringement of a prohibition, an undertaking may under penalty of a fine be ordered to terminate the infringement. In addition, agreements or clauses in an agreement covered by the prohibition against anti-competitive cooperation are void. An undertaking may also be liable to pay damages to another undertaking.

The Act also contains rules governing concentrations of undertakings. In cases where the undertakings concerned have a combined aggregate world-wide turnover of more than SEK 4 billion and at least two of the undertakings concerned have a turnover in Sweden of more than SEK 100 million each, the acquisition shall be notified to the Competition Authority. The Competition Authority may intervene against an acquisition where there are adverse effects in the long run.

According to Article 6 of the Competition Act, cooperation between companies is prohibited, if it has the object of preventing, restricting or distorting competition in the market to an appreciable extent, or if it leads to such results. Cooperation restricts competition, if it in any way restricts the possibility for one or more undertakings to act independently of each other. Cooperation between small and medium-sized undertakings where the products regulated by the agreement cover a smaller part of the relevant market, normally falls outside the scope of the prohibition.

⁴⁶ The Swedish Competition Authority's Annual Report 2000.

The first paragraph of Article 19 in the Competition Act states that abuse of a dominant position by one or more undertakings on the market is prohibited.

Due to the complaints filed by *Malmö Aviation AB*, formerly known as Braathens Sverige AB, and *Svenska Resebyråföreningen* (the Swedish Travel Agents' Association), the Swedish Competition Authority intervened, in 1999, against the frequent flyer programmes of the SAS carrier group. Further details can be found in Subsection 6.1.5 of this report.

3.5 Aviation legislation and institutional conditions

The main regulatory system for civil aviation was determined by the Chicago convention of 1944, where the most important principle was that each country should have full sovereignty over its airspace. As a result of the Chicago convention, the ICAO (International Civil Aviation Organisation) was formed. ICAO determines international standards and recommendations for safety in the civil aviation area. In addition, there are bilateral agreements between individual countries, as well as agreements within the framework of the International Air Transport Association (IATA), the representative international organisation for airline carriers. The EC regulatory framework in the aviation area applies to air travel between airports within the Community.

3.5.1 Denmark

The Danish Aviation Act states that the provisions of the act only apply if the concerned matter is not covered by EU regulation.⁴⁷ Denmark being an EU Member, the EU regulations on air transport are all applicable in Denmark.

According to the Aviation Act, the Ministry of Transport is the permitting authority regarding all air services on Danish territory. This means

that the Ministry of Transport controls all licences on air transport as well as aviation security matters.

Public airports are empowered to collect charges for use of the airport facilities. The charge level is to be approved by the Danish Parliament under rules set by the Minister of Transport. Only Copenhagen Airports Inc. can fix the charge level without previous approval. Taxes can also be collected on the use of Danish air territory.⁴⁸

Danish civil airports have different structures of ownership:

Copenhagen Airports Inc., which runs Kastrup Airport (the largest airport in Denmark) and the smaller Roskilde Airport, is owned 33.8 per cent by the Danish State, while the rest of the shareholders are private investors.

Billund, Aarhus, Aalborg, Karup, and Soenderborg Airports are all owned by surrounding local communities in joint ownership. The Danish State owns Roenne Airport.

The Council Regulation on Ground handling was implemented in Denmark in 1997.⁴⁹ Only Kastrup Airport has more than 2 million passengers a year and is therefore the only Danish airport subject to the obligation of opening up the market for ground handling services in the airport to third-party suppliers. Apart from the airport itself, there are three independent ground handling providers in Kastrup Airport.

The Danish Marketing Act⁵⁰ contains a general prohibition on throw-in in consumer sale. But there is an exemption in the act especially to frequent flyer programmes. The exemption was added in 1992 to make it possible for Danish airline companies to compete with foreign airlines in the international market. Due to the provisions of the Marketing Act, it will not be possible to make an overall prohibition of frequent flyer programmes as such in Denmark.

47 Consolidated Act No. 769 of 16 August 2000 on Aviation, paragraph 74a.

48 Consolidated Act No. 769 of 16 August 2000 on Aviation, paragraph 71.

49 Executive Order No. 933 of 9 December 1997 on Ground handling Services in Danish Airports.

50 Consolidated Act No. 699 of 17 July 2000 on Marketing, paragraph 6.

3.5.2 Finland

In Finland, the legislation regarding the field of aviation has been harmonised with EU legislation. The Finnish market forms part of the EU common market, and it is not possible to intervene with operations therein other than in individual cases cited in the community legislation (e.g. the «downward spiral» of prices or public service obligations).

The majority of the existing norms on aviation are security-based and correspond in content to the Joint Aviation Requirements (JAR) of the Joint Aviation Authorities (JAA). Some of the JAR norms have also been included in the community legislation. To the extent that they have not been included in the community legislation, they have been enforced in Finland as aviation regulations pursuant to the Aviation Act.

The main Act governing aviation is the Aviation Act (281/1995), which is a so-called framework act. Its focus is on safety aspects. Under the Aviation Act, the Finnish Civil Aviation Authority (FCAA) is the competent authority, which issues permits to new companies and maintains an aircraft register. Companies having obtained a permit for air traffic within the EU area are allowed to conduct air traffic in Finland after having applied for a route permit from the FCAA, to which companies have a near automatic right under community legislation. With respect to carriers from within the EU region, registration of aircraft cannot be forbidden on market-based grounds. Refraining from registration is only possible on the basis of safety norms in such a situation.

With respect to third countries, air traffic is governed by mutual bilateral agreements, which may contain considerably tighter constraints for air traffic operations.

Under the Act on the Finnish Civil Aviation Authority (1123/1990), the FCAA, which commenced operations in 1991, is a state enterprise operating under the Ministry of Transport and Communications. The FCAA finances its oper-

ations entirely through its own revenue, without support from the state budget. The State Council sets the FCAA's service, operational, and result targets. The FCAA is the topmost authority in the field of aviation in Finland, and its duty is to produce airport and air safety services for the needs of civil and military aviation and to conduct other business related to its field. The FCAA operates 25 airports in Finland. In addition, there are two municipal airports in operation.

It is also the task of the FCAA to supervise general aviation safety, to give orders and instructions on aviation, to handle aviation licences, permits and other matters related to air traffic, air eligibility, and registration of aircraft, and to otherwise promote aviation, its development and control. The FCAA also manages international agreements related to civil aviation and the international cooperation of civil aviation, to the extent that these do not fall within the competence of another authority.

The maintenance of aviation safety duties has been separated from business operations into a unit of its own – aviation safety management – the head of which solves matters concerning the issuing of orders and instructions, control of civil aviation, permits, air traffic, air eligibility, and registering. In the commentary to the government bill on the Act on the Finnish Civil Aviation Authority, it is said that the FCAA is not in a competitive situation in its field, making it unnecessary to separate the official duties from the FCAA.

The operating objectives of the aviation safety management are approved and provided for by the Ministry of Transport and Communications. It also determines the fees collected by the aviation safety management, which shall correspond to the costs incurred of the goods produced. Security demands and the promotion of aviation may be considered in pricing, however, which is why the prices of many official goods produced often remain lower than the costs incurred. The state enterprise FCAA prices the services and goods produced on commercial grounds.

3.5.3 Norway

The EEA Agreement contains rules regarding the civil aviation market in Annex XIII, chapter VI, see chapter regarding EU/EEA legislation.

Act of 11 June 1993 No. 101, The Aviation Act, regulates the Norwegian civil aviation market. The Ministry of Transport and Communication is responsible for the supervision of the Act and has issued supplementary regulations. Norway signed the Chicago convention in 1944. In addition, there are bilateral agreements between Norway and other countries, as well as agreements within the framework of IATA.

The Norwegian Air Traffic and Airport Management (NATAM) is a state enterprise accountable to the Ministry of Transport and Communication. The activities of NATAM are divided into two parts. NATAM owns and operates 45 airports all over the country, 11 in association with the armed forces. NATAM is also responsible for air traffic control services in Norway.

From 1 January 2000 the aviation authority was separated from NATAM's commercial services in a new administrative unit, the Civil Aviation Authority (CAA).⁵¹ The Ministry of Transport and Communication has delegated its authority over civil aviation to the CAA, and in particular the power to enforce Regulation No. 691 of 15 July 1994, regarding implementation and enforcement of the EEA-agreement in the aviation sector.⁵²

The CAA is an independent body under the Ministry.⁵³ Its main objective is increased safety within the aviation market. Decisions made by the CAA can be appealed to the Ministry. This means that the CAA monitors the Aviation Act and its supplementary regulations.

The CAA also controls the quality of material and issues licences to airlines, pilots, and crew.

A member state may impose a public service obligation on routes that are not commercially attractive.⁵⁴ The right to operate such services can be offered by public tender. The Ministry of Transport and Communication has issued Regulation No. 256 of 15 April 1994 regarding public tender on certain routes. In the first public tender held in 1997 for the period 1998-2000, the Widerøe airline carrier won all concessions. The tender for concessions from 2001 through to 2003 was held in 2000. Whereas Widerøe was able to renew most of their concessions, they did lose some western Norwegian routes to Coast Air.

The power to issue regulations and decisions in order to enforce Council Regulation 2409/92, regarding tariff fixing, is delegated to the NCA.⁵⁵ Regulation No. 1050 of 2 November 1998 is issued by the NCA and states that airlines operating routes within Norway and between Norway and other EEA countries are required to report their prices on full-fare tickets to the NCA.

3.5.4 Sweden⁵⁶

The EC regulatory framework and the national Swedish Aviation Act (1957:297) regulate conditions for transit over Swedish territory. In addition, regulations issued by the Swedish Civil Aviation Authority (SCAA) apply to each civil airport and airline. These regulations govern the activity and follow in principle international standards.

The SCAA plays a central role in the Swedish aviation market. The SCAA is a commercial public utility with certain authority functions and has overall responsibility for airports and aviation in Sweden. The Administration is

51 Its activities are regulated in Instruction for the Civil Aviation Authority of 10 December 1999.

52 Regulation No. 1273 of 12 October 1999.

53 Its activities are stated in Instruction for the Norwegian Air Traffic and Airport Management of 10 December 1999.

54 Council Reg. 2408/92 Art. 4.

55 Regulation No. 1112 of 16 October 1997

56 This subsection relies heavily on SCA (1998:63ff).

responsible for the operation of around 19 state-owned airports, of which five are military airports open to civil aviation. The SCAA responsibility covers different infrastructure services such as air traffic control, fire and emergency services, as well as security checks. Other services are more commercially focused. In addition, the SCAA carries out the tasks of an authority in e.g. the air safety area, where the Aviation Safety Department has an independent position.

There are altogether 43 airports in Sweden.⁵⁷ In addition to state owned airports, there are 24 municipal or private airports with facilities for scheduled air transport. The municipal airports are in essence financed not only by state but also municipal funds, but in the majority of cases they are dependent on municipal grants for maintaining operations.

Prior to the deregulation of Swedish domestic civil aviation, SAS and its associated company, Linjeflyg, had a monopoly on the primary routes, i. e. those routes that were part of these companies' domestic route network. Being based on established practice, the monopoly was not laid down in law, neither was there any support for it in the Aviation Act. This Act stipulated that domestic air transport should only be operated by Swedish citizens and legal entities controlled by Swedish citizens – the prohibition on cabotage – and that SAS had preferential access to international routes. In addition, a permit issued by the government

was required in order to operate scheduled flights. The conditions governing the rights granted to SAS and Linjeflyg included a clause on price regulation, which meant that prices had to be approved by the Swedish Board of Civil Aviation.

The deregulation of domestic civil aviation in Sweden was initiated at the end of the 1980s, since air transport during this period was undergoing rapid development. The aim of deregulation was to create a more «consistent» transport policy, where different modes of transport would be treated equally. An additional reason for the deregulation was that the new market situation would strengthen the competitiveness of Swedish companies prior to the forthcoming European deregulation.

In its report «Competition in Domestic aviation» (SOU 1990:58), the Competition Commission proposed that routes with more than 300 000 passengers per year – in practice the 8-10 major routes – be exposed to competition. In April 1992, the Swedish Government decided to deregulate the domestic civil aviation market as of 1 July 1992.

Under the new, deregulated regime, any Swedish airline company could obtain a licence to operate a given route, and no company would have preferential rights. In addition, free pricing was introduced, subject, however, to the obligation to notify the SCAA.

⁵⁷ www.lfv.se (2002-05-07)

4. TOPICS IN AVIATION ECONOMICS

The aviation industry exhibits a number of interesting characteristics in terms of networking, cost structure, yield management, and marketing strategies. A competition analysis bearing on the airline industry must take these aspects into account. In this chapter, therefore, we present and discuss some of the industry's most important economic characteristics.

Section 4.1 explains the concept of *network economics* and its relevance to aviation. In Section 4.2, we discuss the economic welfare effect of *price discrimination*, a marketing practice that seems to be more widespread in the airline industry than in most other business sectors. Section 4.3 deals with the *cost structure* of the airline industry. Finally, in Section 4.4, we reproduce certain comparative results from the literature, shedding light on the *cost* and *productivity level* of the most important American and European carriers.

4.1 Aviation network economics⁵⁸

The aviation industry can be described as a system of links (routes) that connect nodes (airports). It is, in other words, a *network industry*.

As such, the aviation industry is characterised by large *network externalities*, in the sense that the costs and revenues involved in carrying passengers on different, interconnected routes are interdependent. There are, in other words, large *economies of scale*, *scope*, and *density* present. These externalities may originate either at the *supply (production)* side or at the *demand (consumption)* side.

Economies of scope signify that it costs less to produce services jointly by one firm rather than separately by different firms. Economies of density exist if an airline's unit costs, or the

travellers' generalised costs, decline when the airline adds flights or seats on existing routes.

Other typical characteristics of network industries are *switching costs* and *lock-in effects* (Shy 2001). High switching costs result in customers being locked in. This limits competition between operators by stopping price differentials from being competed away.

4.1.1 Economies of scale

Generally speaking, *supply side* economies of scale exist when the average production costs decline with the number of units produced. Economies of scale are also called increasing returns to scale. The combination of a large fixed cost and small constant marginal costs is a common source of economies of scale on the supply side.

Using a *larger aircraft* reduces the cost per passenger. Pilots and crew costs do not rise proportionally with the number of seats. Landing fees are partly calculated per passenger and partly set by the weight of the aircraft. When landing fees are weight based, the cost per passenger falls with aircraft size.

The Swedish Civil Aviation Authority (Luftfartsverket 2001) refers to AEA (1998), where it is argued that the estimated economies of aircraft size are often exaggerated since costs are compared for the different aircraft in their typical routes. Since larger aircraft tend to be used on longer distances, the economies of stage length may influence the comparison. Specific estimates of scale economies at vehicle level may be overstated if the effects of differences in stage length are not adjusted for. Economies of vehicle size are, however, well known in transport industries, including in air line operations.

58 This section is based in part on the paper by Steen and Strandenes (2002), using elements of their text more or less verbatim.

Obtaining lower unit costs for large aircraft requires that the number of passengers per seat – the *load factor* – not be reduced when introducing larger aircraft. Thus, the increasing returns to aircraft size cannot be achieved unless demand in the relevant airline market is correspondingly higher. The link between unit cost and load factor is illustrated in Figure 4.1, and indicates a wide variation in average load factor across airlines.

Longer *stage length* reduces the costs per passenger in two ways. Firstly, landing fees, handling cost, and ground manoeuvring cost fall relative to the passenger kilometres produced. In addition, the capacity of the aircraft is better utilised since the aircraft is grounded for a shorter time. Turn-around between flights is reduced with longer stage lengths and fewer landings per period. This is illustrated in Figure 4.2 showing unit costs vs. stage length.

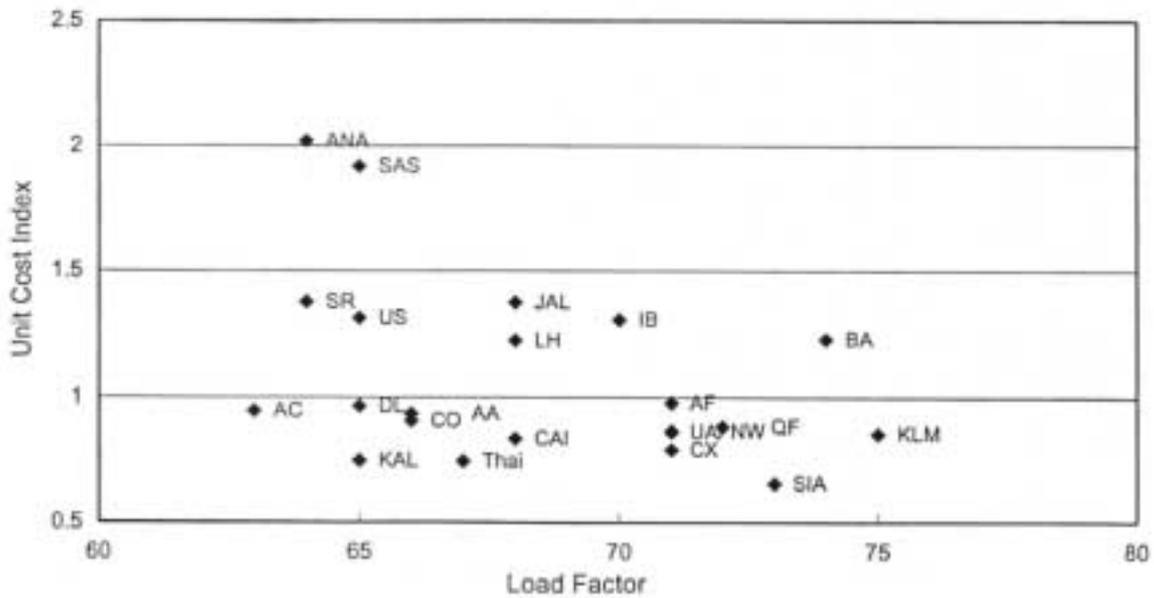


Figure 4.1: Unit cost and load factor, 1995. Source: Oum and Yu (1998a)

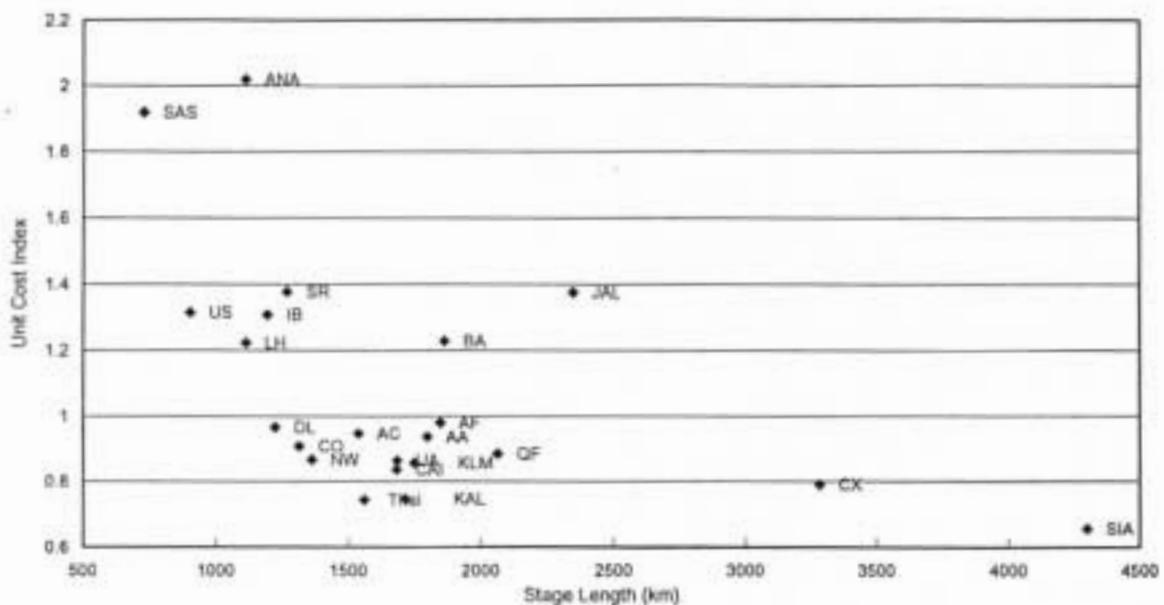


Figure 4.2: Unit cost and stage length, 1995. Source: Oum and Yu (1998a)

So far we have looked at scale economies related to costs characteristics for a single flight. Caves *et al.* (1984) try to identify economies of *firm size* in the airline industry. From data for trunk and local service airlines in USA, they study whether airlines operating larger networks enjoy lower unit costs. They found that any differences in scale had no role in explaining higher cost for small airlines. The primary factor explaining cost differences was density of traffic within an airline's network. Hence, a large airline will incur similar costs as a medium sized airline when it operates the smaller airlines' routes. Both earlier and later studies, e.g. Caves (1962), Strazheim (1969), White (1979), and Gillen *et al.* (1985, 1990), confirm that there are no significant economies of scale at the firm level.

Ng and Seabright (2001) argue, in a study of state ownership impact on costs, for scale economies in airline operations. They estimate the effect on cost of an increase in network size. Whereas most studies use increase in output and points served when estimating economies of scale, Ng and Seabright (2001) measure size by the number of city routes served. They reject the hypothesis of constant returns to scale in their sample of American and European airlines. By using network size they also, however, capture scope effects.

Thus, the economies of scale in air transport are linked to aircraft size, load factor, and stage length. Any given route is, however, characterised by a certain load factor and a certain stage length. The optimal aircraft size therefore follows from route characteristics. This implies that the unit cost per revenue passenger kilometre mirrors the network operated by an airline. Hence, a large airline operating the network of a medium sized airline will incur similar unit costs on that part of its operations to those faced by the smaller carrier. In other words, there are no significant economies of scale from operating costs at the firm level. Economies of firm size are exhausted at an intermediate level. Even so, economies of scope may be present.

On the *demand side*, economies of scale appear when the demand for a good increases with the

total number of goods sold. This happens when the utility that a user derives from the consumption of a good increases with the number of other agents consuming the same good.

Demand side economies of scale can appear in two types. They can be *direct* as in a telephone network. A telephone user benefits directly from others being connected to the same network.

In certain industries, *indirect* economies of scale may appear on the demand side as a result of increasing returns to of scale on the supply side. A greater number of complementary goods can, e.g., be supplied, and at a lower price, when a network grows. A case in point is the software industry. In aviation, such effects are probably of limited importance, although it might be argued, e.g., that the more economical, larger aircraft may also appear more comfortable and secure to the traveller, and hence induce a certain additional air travel demand.

4.1.2 Economies of scope

In general, economies of scope on the *supply side* are present when the cost of producing two products or services by the same firm is lower than when they are produced by separate firms. There are, in other words, cost-saving externalities between production lines.

Well-known economies of scope in the airline industry arise from the combined production of passenger transport and air cargo. SAS exploited this opportunity in the early 1970s when carrying fresh salmon to the USA. Another traditional source of scope economies that may allow airlines to better utilise the fleet, is to engage in both scheduled and charter traffic. Braathens exploited this possibility by operating some aircraft in the charter market during weekends. In a study of Canadian Airlines, Gillen *et al.* (1990) found, however, that there was lack of cost complementarity between schedule and charter operations for airlines where charter services exceed 7 per cent of total output. Thus, this cost effect is also exhausted at a low level.

However, the most important economies of scope in the aviation industry no doubt arise from the complementarity of routes within the network. By operating several interconnected routes, the airline company is able to utilise aircraft, crew, reservation systems, marketing devices, and other overhead cost items in various production lines (i. e., city pair connections).

This complementarity is important for several reasons. First, an airline that supplies end-to-end trips consisting of at least two legs but only operates on one of the leg routes, has to buy a seat on this route from another airline. In contrast, an airline that operates on both legs can supply all parts of the same end-to-end flight itself. In general, this difference gives a competitive advantage to the latter airline. If competition on the leg routes is imperfect, the selling airline marks up the price of the seat above marginal costs. This mark-up is a cost to the buying airline, which means that an airline operating on both legs can supply the end-to-end flight at a lower cost than an airline that operates on only one of them. The selling airline is, in other words, able to raise its rival's cost.

Second, efficient operation within a network requires a close coordination at airport nodes. Incoming flights must be coordinated with outgoing flights and arrive at gates close to the gates of the relevant outgoing flights.

Thus, economies of scope may be particularly important when slot capacity at airports is limited. Airlines operating several flights out of one airport obtain flexibility to adjust their network to changes in the demand pattern. They may switch the use of a slot from one route to another, when demand develops differently in two market segments. Thus an airline will enjoy flexibility by concentrating several routes on a hub⁵⁹ airport.

Much of this coordination depends on city pair specific investment at the hub airport. If two

legs forming an end-to-end flight are operated by independent airlines, unforeseen events on the first leg may not be accounted for by the airline that operates the second leg.

Furthermore, free-rider problems may mean that all needed investments are not made, and having made the necessary city pair specific investments, the airlines are exposed to strategic behaviour by their rivals. Both problems may mean that the transaction costs in the hub airport are higher than if one airline operates all leg routes.

These sources of economies of scope all originate from the production side. Perhaps even more important economies of scope emerge from the *demand side*. This occurs when the demand for a range of goods is larger than if the same goods were offered individually. For example, it is often assumed that the demand for an airline's services increases with the number of routes that are covered by its network. A carrier offering a larger network of services will be more attractive to the traveller, since she will have more destinations to choose from and a larger probability of finding a suitable connection from her particular origin to any given destination.

Economies of scope on the *demand side* of the airline industry are due to two factors:

- Consumer preferences
- Marketing practices

Consumer preferences

Economies of scope on the demand side due to more routes served are connected to the concept of *switching costs*, which customers have to pay when they shift from one supplier to another. Without switching costs, a customer's choice of airline on a flight from A to C via B does not depend on whether it is the same or another airline that operates on the route A-B and the route B-C. When switching has a price, the customers care about the full range of products sold by each supplier.

⁵⁹ See Subsection 4.1.3 on hub-and-spoke networks.

Shapiro and Varian (1998) group the typical switching costs into: contracts, training and learning, data conversion, search costs, and loyalty costs.

In the airline industry, switching costs may appear because many people prefer a trip by a single airline compared to one involving two or more airlines. A high quality end-to-end journey via a connecting airport requires that the passengers be able to go through the connection without delays, baggage handling problems, extra costs, or other unforeseeable events. However, the risk of such events is often perceived as higher when two or more airlines are involved, and the respective airlines' liability vis-à-vis the traveller becomes less clear. In addition, some passengers think that travelling by one airline is more comfortable than using two or more carriers.

Switching costs mean that the airlines realise economies of scale on the demand side by increasing the number of routes. An increase in the number of routes means fewer transfers between aircraft for the passengers. As many passengers prefer fewer shifts, more routes make the airline's services more attractive to the passenger, and the airline will face an increased demand.

Marketing practices

Economies of scope on the demand side are often intensified by the marketing practices of the airlines. Examples of such marketing practices are *frequent flyer programmes* (FFPs) and *travel agent agreements*⁶⁰.

Schemes and programmes such as these create synthetic economies of scope on the demand side because they make it more attractive for passengers and travel agents to concentrate their demand at one or a few airlines. The schemes and programmes increase the loyalty of the customers toward the airlines through an artificial increase in the switching costs.

4.1.3 Economies of density

In aviation, *supply* side economies of density exist if an airline's unit cost declines when the airline adds flights or seats on existing routes, all other things held constant (Gillen *et al.* 1985). These increasing returns to density are due primarily to improved utilisation of aircraft capacity and crew.

Even more important are the *demand* side economies of density. A higher route frequency will decrease the average time cost experienced by the traveller and hence induce a higher demand for air transport, especially from business travellers.⁶¹ Morrison and Winston (1986) found that a doubling of the frequency of domestic routes in USA would increase the demand from business travellers by 21 per cent.

This feedback mechanism, implying that the demand for travel in a network is in a sense self-reinforcing, is sometimes referred to as the *Mohring effect* (Mohring 1972). As the demand for travel increases, a higher frequency of departures can be supported, and a smaller average generalised cost is incurred by the individual user. This in turn induces a still higher demand, and so on until equilibrium is reached.

The generalised cost concept implies that it is not only the out-of-pocket expenditure that matters when a consumer chooses between modes of travel. The opportunity cost in the form of waiting and in-vehicle travel time matters at least as much. As a higher frequency of service reduces the average waiting time, the service becomes more attractive.

The Mohring effect has traditionally been applied to means of transport where the time of departure is hard to predict accurately, such as daily commuting by a public transport system.

In the airline industry, a Mohring effect due to more frequent service is likely to have some

⁶⁰ For a discussion of FFPs and travel agent agreements, see Sections 6.1 and 6.3.

⁶¹ Whereas tourist class travellers have relatively high price elasticity of air travel, business class travellers are more sensitive to travel time.

significance in the business segment, while the demand for leisure air travel is less likely to be much affected by the frequency of service. Most leisure trips are planned days, weeks, or months in advance. Whether there are two or three daily departures on a route is unlikely to influence demand. In contrast, business trips are generally planned or changed on short notice.

A Mohring effect due to a higher quality of the services offered is likely to be a more general phenomenon. Other things being equal, both leisure and business travellers are likely to choose the more comfortable and punctual of two alternative airlines. In addition, air travel is likely to gain competitiveness versus other travel modes if it is seen as more comfortable or punctual.

Of particular importance for the economies of density involved in aviation networks is the *hub-and-spoke* mode of operation. Rather than operating a large number of point-to-point, non-stop routes, the airline company channels all or most passengers through a «hub» airport, from which all connections extend like the spokes of a wheel. In this way the number of different non-stop routes needed to serve all possible pairs of destinations is drastically reduced, allowing for quite remarkable cost savings.

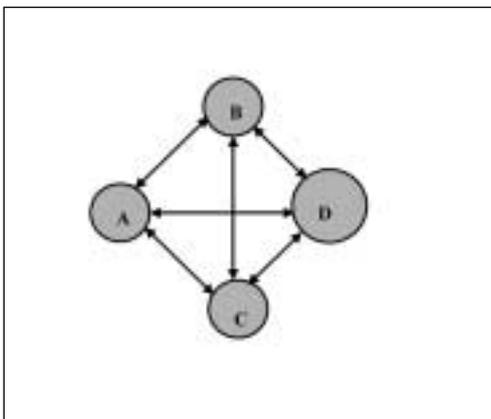


Figure 4.3: Point-to-point network

In a point-to-point network with $n > 2$ cities an airline has to operate $n(n-1)/2$ two-way routes to offer services between each pair of cities in the network, cf. Figure 4.3. In a hub-and-spoke

network an airline can service n cities with only $n-1$ two-way routes, cf. Figure 4.4.

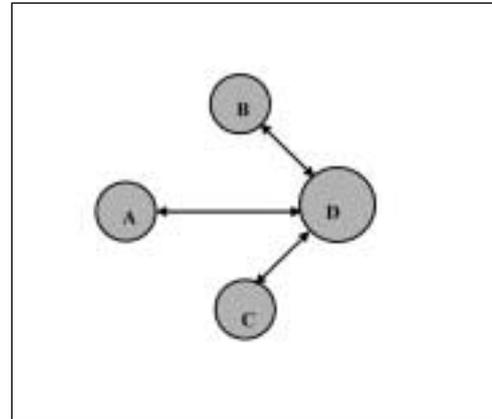


Figure 4.4: Hub-and-spoke network

Hanlon (1999) argues that the most important economies of scope in the aviation industry stem precisely from the carriers' possibilities to consolidate traffic by employing a hub-and-spoke network. This consolidation enables airlines to obtain economies of density from directing passengers via hubs, since they may use larger aircraft and/or fly with higher frequencies.

The lower number of routes in the hub-and-spoke network means that by transforming its network from a point-to-point network into a hub-and-spoke network, an airline is able to reduce its costs without lowering the number of served destinations.

Furthermore, the operation of a hub-and-spoke network often allows an airline to offer air services on routes that, in isolation, do not generate sufficient volume of traffic to justify service. Flights out of a hub airport to spoke airports can be loaded with feeder traffic from other spoke routes into the hub. In addition, feeder routes always collect or generate some volume of local traffic. Both the local traffic and the feeder traffic mean higher load factors on other flights out of the hub. On some spoke routes, the load factor will be raised from a level *below* to a level *above* the minimum viable scale load factor. In these cases, the hub-and-spoke network is a decisive factor in making the routes profitable.

Using a formal model, Hendricks *et al.* (1995) find the hub-and-spoke network to be optimal for a monopoly airline, when there are such economies from consolidating passengers. In the above discussion of a simple hub-and-spoke network we disregarded this effect of density since we (implicitly) assumed that the variable costs of carrying one passenger did not change, i. e. that the airline used the same type of aircraft irrespective of the network structure chosen.

Nero (1999) analyses competitive advantage in a large hub-and-spoke network. He finds that adding destinations to a hub-and-spoke network show decreasing returns to firm or network size. This is consistent with our discussion of economies of scale. This negative effect is dominated, however, by the positive effect due to economies of traffic density. Nero (1999) assumes that adding destinations does not result in congestion at the hub airport or higher cost from increased circuitry. The effect on density comes from spillover effects throughout the hub-and-spoke network, which translate into higher traffic and lower fares in the model.

However, there are also disadvantages connected to the hub-and-spoke network structure compared to the point-to-point network structure. Passengers who must travel via a hub also face an increase in trip duration as compared to a direct point-to-point service.

On the average, a hub-and-spoke journey is longer than a point-to-point flight. For example, a trip from A to C is clearly longer in Figure 4.4 than in Figure 4.3. This is especially true when the hub-and-spoke network is geographically very dispersed. Longer flights increase the airlines' operating costs and the passenger's total travel time.

Thus, the economies of density involved in hubbing must be traded against the disadvantage of increased trip duration and against the inconvenience of passengers having to transfer between flights. Typically, business travellers are highly time sensitive. They will therefore have a strong preference for point-to-point

services, even if this may mean considerably higher fares.

4.1.4 Aviation networks and competition

The increasing returns to scale, scope and density in the airline industry have several anti-competitive implications.

First, economies of scale on the supply side sets a natural limit to the number of competitors that can operate without economic loss on a given route. The combination of a large fixed cost and small variable cost gives rise to a *minimum viable scale*, which has to be exceeded in order for the firm to earn a profit in the market. If this minimum viable scale is greater than half the total industry demand, the industry may be regarded as a natural monopoly where competition is unsustainable. Aircraft can easily be transferred between routes, but each aircraft operating on a given route invokes a fixed cost.

Second, economies of scope on the demand side may reduce the competition in the airline industry, as they give the airlines an incentive to merge or join alliances with other airlines so as to increase the number of routes offered and the flight frequency on every route. Entry is often not possible on the scale of one or a few products. To be competitive, and exploit the economies of scope, each firm in the industry often has to produce a full range of products.

Third, the hub-and-spoke system of operation, while economically efficient to the individual carrier firm, seems to give rise to strong anti-competitive effects. The economies of scope and density characteristic of these networks are such as to grant the (one and only) hub airline very considerable market power at and around its hub. Hence, different airlines have an incentive to operate hubs at different airports, as indeed they do. The hub-and-spoke system as operated among a set of large individual carriers is therefore liable to practically divide the market between the airlines. Although the networks of different carriers overlap, very few origin-destination pairs, if any, will exhibit more than two carriers operating non-stop flights.

Thus, even though the European airline industry has been liberalised for some time, almost 75 percent of all non-stop routes within the EEA-area were monopolised (served by a single airline) in 2000, cf. Table 4.1. In most cases the monopolist competes against other airlines on other routes, and on many of the monopoly routes there is no serious threat of effective competition. Many monopolies are

due to low demand and economies of scale on the supply side. This last claim is supported by the fact that only about 40 percent of the available seats in 2000 were offered on the 73 percent monopolised routes, cf. Table 4.1. Other monopolies are due to legal restrictions to entry. For example, on some routes a license is required to operate, and only one license is granted.

Table 4.1: Competition on intra-EEA, non-stop routes, July 2000

Number of carriers on route	Number of routes	Per cent of routes	Number of seats	Per cent of seats
1 (Monopoly)	3 445	73.2	3 650 165	41.7
2 (Duopoly)	1 056	22.4	3 960 942	45.2
3	177	3.8	1 001 285	11.4
4	20	0.4	113 265	1.3
5	8	0.2	31 870	0.4
Total	4 706	100.0	8 757 527	100.0

Source: European Commission (2001).

The competitive advantage of hub-and-spoke networks is effectively reinforced through the loyalty programmes operated by the carriers. A frequent flyer programme becomes more attractive to the traveller the larger is the carrier's network of destinations, and vice versa.

In total, the competitive advantages allow the hub airline to dominate most routes out of the hub airport. This is confirmed empirically by the fact that in eight of the top 10 European airports, the hub airline in 2000 accounted for more than 50 per cent of the traffic to and from the airport (European Commission 2001).

Today, most major airlines concentrate a large share of their traffic at one, two, or three so-called hub airports. For example, in the US, Northwest Airlines operates hubs at Detroit, Minneapolis, and Memphis. Continental Airlines operates hubs in Newark, Cleveland, and Houston. In the EU, KLM operates a hub in Amsterdam, SAS operates hubs in Copenhagen, Oslo, and Stockholm, while Lufthansa operates hubs in Frankfurt and Munich, and Finnair in Helsinki, cf. Table 4.2.

Furthermore, in the nineties, most major airlines have joined alliances with other airlines that operate in complementary regions or continents. Today a few global alliances cover more than fifty percent of the world passenger market.

Several studies have confirmed the role of network economics for the development of the airline industry in the years after the liberalisation. A study from 1999 concluded that there was no sign of cost advantages to large-scale airlines before the deregulation. However, by building hub-and-spoke networks the large airlines had managed to gain competitiveness by exploiting technical economies of scope (or density).

However, studies have also shown that the cost advantages related to network economics are not always reflected in lower airfares. In many cases dominance of a hub-and-spoke network gives rise to market power. There is at least some empirical evidence that this market power is exploited by the airlines to increase the fares especially on outgoing flights from airports that are highly dominated by the hub airline, cf. Lijesen *et al.* (2000).

Table 4.2: Selected airlines' hub domination in 1999 and 2000

Airline	City	Hub airport	Airline's percentage of hub departures in 1999	Airline's percentage of hub departures in 2000	
SAS	Copenhagen	Kastrup	53	55	
	Stockholm	Arlanda	46	50	
	Oslo	Gardermoen	43	44	
Finnair	Helsinki	H.-Vantaa	64*	63	
British Airways	London	Heathrow	37	38	
		Gatwick	64	65	
Lufthansa	Frankfurt	Rhein-Main	62	59	
		Munich	Franz	50	53
		Joseph Strauss			
KLM	Amsterdam	Schiphol	44	41	
Iberia	Madrid	Barajas	55	55	
Air France	Paris	C. de Gaulle	57	55	
		Orly	47	55	
Alitalia	Rome	Fiumicino	53	50	

Sources: www.cph.dk, SAS (1999), SAS (2000), and European Commission (2001).

* Data covering the last 3 months of 1999 and the first 3 months of 2000.

It must be predicted that hub airlines have market power on almost all spokes out of the hub airport. Empirically, this thesis is partly confirmed by Lijesen *et al.* (2000). According to their study, among European airlines there is evidence of a significant and positive hub dominance premium for Swissair, Air France, and Lufthansa, but not for KLM, British Airways, Alitalia, Sabena, or Olympus.

Obviously, in a hub-and-spoke network, externalities abound on the cost side as well as on the revenue side. The incremental cost of operating an extra route in a hub-and-spoke network is often smaller than suggested by the average unit cost of the network. Moreover, an extra route may generate feeder traffic – and hence revenue – to the larger network. It will, in other words, be relatively inexpensive for an incumbent hub airline to *cross-subsidise*⁶² a single spoke route or a limited set of such routes.

Essentially, this leaves a dominant hub airline with ample opportunity to fight a rival new entrant through increased capacity, dispropor-

tionately reduced fares, and/or other predatory strategies. Unless met by timely and resolute interventions on the part of the competition authorities, such strategies could make the market almost incontestable.

4.2 Price discrimination and economic welfare⁶³

Price discrimination is observed in many industries. It implies that firms are charging different prices from different customers, and that the price difference cannot be explained by cost differences. It is well known that the airline industry has been practicing price discrimination for many years.

One type of price discrimination used is *versioning* (see Subsection 4.2.1). One can buy an expensive, flexible ticket, which can be changed or even cancelled without costs. Or one can buy a cheaper ticket, with more or less severe restrictions: Saturday night stay-over, advance-purchase, etc. These different versions are, in principle, all available to each and every passenger.

⁶² Fjell *et al.* (2000) provide a discussion of the cross-subsidisation problem in relation to competition.

⁶³ This section draws heavily on the paper by Steen and Sørgaard (2002), using parts of their text almost verbatim.

Another type of price discrimination is represented by the *corporate discount schemes* (Subsection 4.2.2). Large customers use their buying power to obtain special fare contracts with an airline, whereby a certain discount is given on every ticket bought.

It might be argued that *frequent flyer programmes* constitute a third type of price discrimination practiced in aviation, although such an interpretation is not obviously appropriate (Subsection 4.2.3). The bonus points earned by frequent flyers can later be exchanged for extra flights, hotel visits, car rental, etc.

Does airline price discrimination increase or decrease the welfare of passengers and of society? To shed light on this question, we shall review all of the above three forms, regarding them in a theoretical economic perspective.

In the literature, it is common to distinguish between three different degrees of price discrimination. Varian (1989) uses the following definitions:

- *First degree*: The seller charges a different price for each unit, so that the price of each unit equals maximum willingness to pay.
- *Second degree*: Each consumer faces the same price schedule, but the schedule involves different prices for different amounts of the good purchased.
- *Third degree*: Different consumers are charged different prices, but each consumer pays a constant price for each unit of the good bought.

How do the three forms of price discrimination we described – versioning, corporate discounts, and frequent flyer programmes – fit into these definitions?

4.2.1 Versioning

Versioning implies that all consumers are facing the same price schedule. They can choose to buy an expensive, high quality version or a cheap, low quality version. Technically, this is

an example of second degree price discrimination. The consumers pay different prices for different amounts of quality of the good purchased.

Versioning usually implies that one version of the product is deliberately made less attractive. The consumer with a low willingness to pay is offered this inferior version, while a full quality version remains available to those with a high willingness to pay.

The inferior version must be sufficiently unattractive to the customers with a high willingness to pay, that they choose to adhere to – i. e., pay for – the superior quality version. Otherwise the seller will only be able to charge the same low price from (almost) every customer. Typically, the airline carrier would offer the leisure traveller a «damaged» – i. e., inflexible – ticket, in order to make the inexpensive version unattractive to the less price elastic business traveller segment.

At first sight this may seem clearly detrimental to welfare. Such is, however, not necessarily the case. It depends on what the alternative to versioning might be. According to Varian (1996), the key question is whether versioning leads to an increase in total output. If versioning implies that some groups are served that would otherwise not have been served, versioning may lead to higher welfare.

In the airline industry, an increase in total output is typically related to frequency. Higher demand means that the airline can find it profitable to offer more flights and thereby to increase the frequency. If so, versioning has a positive externality. In the business segment, in particular, higher frequency is valuable, since a typical business passenger would benefit from a large choice of departure times.

Given that the airline needs a certain revenue in order to cover its fixed costs, a discriminating price structure may in fact be the most appropriate one from a societal and economic perspective. The welfare loss due to prices above marginal costs is at a minimum if the price-cost margins are high in segments with price inelastic demand and low in segments

with price elastic demand. This is exactly what we observe in an airline industry environment with versioning and competition.

Steen and Sørsgard (2002) suggest three conditions that may contribute to welfare improving versioning: (i) the fraction of consumers with high willingness to pay is large, (ii) their valuation of extra quality is high, and (iii) the other group's valuation of quality degradation is limited.

It may be argued that all of these conditions are commonly present in the air travel market. A large part of the market is made up by business travellers, whose willingness to pay for quality is high. The product damaging is harmful for those who do not buy the inexpensive ticket, but probably not very harmful to those who do buy it. A leisure traveller might travel during the weekend, and then a Saturday night stay-over is not harmful at all.

Moreover, the alternative to versioning might be that no low quality version would be offered. Without the ability to price discriminate, many routes would become unprofitable to the airline and hence not be served at all. Other routes would have a much less frequent service, the capacity being determined by the volume of business travel demand. In such a case, the segment with low willingness to pay would have been hurt by a shift from versioning to no versioning.

Finally, empirical studies indicate that competition leads to a cheaper «damaged» product. Since this segment is typically quite price elastic, it would lead to a substantial output increase and thereby a substantial welfare increase at the end of the day.

In conclusion, Steen and Sørsgard (2002) therefore suggest that versioning, as practiced in the airline industry, is ultimately welfare improving. This is so in a monopoly situation, and probably even more so in a competitive setting.

One aspect, however, that should not be overlooked is the fact that versioning reduces price transparency. The more versions are offered in the market, at different prices, the harder it becomes for a consumer to compare prices and quality between suppliers. An incumbent supplier may exploit this to reduce a new entrant's potential for attracting customers through price rivalry, thus easing the competitive pressure.

4.2.2 Corporate discount schemes ⁶⁴

These kinds of agreements are examples of third degree price discrimination.

Usually, price competition will be more intense in some market segments than others. Large private and public customers – say, segment A – may be able to exploit buying power by triggering competition between the producers for an exclusive contract involving large discounts. By allowing for such price discrimination, one may actually trigger intense price rivalry in the affected segment.

In spite of this, such price discrimination may be detrimental to welfare, for the following reasons. Among other customers – say, segment B – there may be no buying power present and hence no discounts available. The price setting in this segment is no longer constrained by the competition for large corporate consumers. The company may increase the price in segment B, without losing business in segment A.

The net welfare effect of the price discrimination scheme will depend on the respective price elasticities of demand in the two segments. Steen and Sørsgard (2002) show that if segment A is comparatively inelastic, even a limited price increase in segment B may lead to a loss of output and welfare that outweighs the welfare gain in the segment with intense price rivalry.

Unlike versioning, corporate discount schemes

⁶⁴ See Section 6.2 for a more detailed discussion of corporate discount schemes in general. In this subsection, only the price discrimination aspect is dealt with.

usually discriminate between customers not on the basis of price elasticity, but on the basis of buying power. At least this tends to be so under competition⁶⁴. Thus there is no guarantee that the more price elastic segment receives the lower price – in fact the opposite may seem more likely. This increases the risk that the welfare gain in the large customer segment (A) will be more than outweighed by the loss affecting all other clients (B).

So far we have assumed the same degree of competition both before and after the introduction of third degree price discrimination. Note, however, that such discrimination may jeopardise profits among the firms involved in price rivalry. If so, competition may no longer be viable. Then the alternatives to consider are (i) competition without price discrimination and (ii) monopoly. In most cases, welfare will be higher under effective competition than under monopoly, implying that society as a whole is better off with no third degree price discrimination in a competitive environment.

In summary, corporate discount schemes have ambiguous effects on welfare. Discounts may tend to be large in segments with quite inelastic demand. This is not an optimal way for the airlines to cover their fixed costs. Moreover, selective discounts may lead to intense price rivalry between suppliers. Large customer discounts may therefore lead to exits from the market, because not all the airlines are able to cover their fixed costs. In a similar manner, potential entrants might be deterred, knowing that the incumbent airline is able to meet any challenger by offering selective discounts to large, attractive clients. Since these discounts are secret and therefore difficult to detect for competition authorities, such price discrimination may make predation a more credible threat. This suggests that corporate discount schemes are anti-competitive, especially in a setting with a dominant, incumbent carrier and smaller potential entrants.

4.2.3 Frequent flyer programmes

Although such an interpretation is not obviously appropriate, a *frequent flyer programme* (FFP) may be regarded as an example of second degree price discrimination. The consumers are rewarded for large purchases, and they receive a special kind of quantity discount.

Note, however, that the discount is given, not in the form of a reduced price, but in the form of added quantity. Also, note that the extra good provided «for free» is not necessarily of the same type or quality as the good purchased. To most customers, bonus trips are generally available only on certain flights. Moreover, although the customer may have earned her frequent flyer points buying fully flexible tickets, the bonus tickets are generally inflexible from the time they are issued. A bonus trip is, in other words, no ordinary rebate.

The price discrimination aspect of FFPs is therefore, in our view, not the most important. They are more appropriately analysed within the framework of loyalty or fidelity inducing marketing strategies. For such a discussion, we refer the reader to Section 6.1 ahead.

4.3 The cost structure of the airline industry

From a competition viewpoint, an interesting subject of investigation would appear to be the variable costs in a given market, as their size in relation to the price of a service or product may indicate the presence of abuse of a dominant position as regards pricing under Article 82 of the EC Treaty.⁶⁵

Obtaining reliable estimates of air carrier costs is, however, a very difficult task, not least because carriers generally tend to be reluctant to release such information

A number of cost items are often hard to apply in estimates and analyses. In order to compare

⁶⁵ For a monopoly, it may still be optimal to discriminate according to price elasticity.

⁶⁶ Case *AKZO v. Commission* [1991] ECR I-3359.

costs with each other and between different countries, an appropriate rule of measure is needed. One such measure might be *cost per seat and kilometre*.

This measure does have its limitations, however, since the costs per seat kilometre across airlines will depend on the structure of the airline's network⁶⁷.

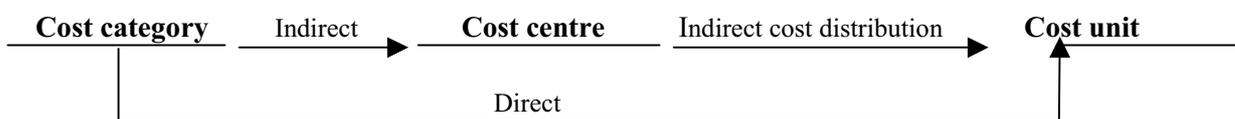
Data concerning the costs of aviation in the Nordic countries are hard to come by, and for this reason the present section offers comparisons with the situation in the US, where comparable cost data are more readily available.

Costs may, in principle, be divided between *direct* and *indirect* costs, or between *fixed* and *variable* costs. Operating costs are usually divided into direct and indirect. In theory, the

difference between the two terms is relatively clear, but in practice a number of problems arise. In the case of carriers operating regular air services, direct operating costs generally amount to just over one half of the total operating costs.⁶⁸

4.3.1 Direct versus indirect costs

The division of costs into *direct* and *indirect* is based on the way financial accounting deals with costs.⁶⁹ This makes it possible to see how costs are distributed step by step. First, costs are divided into different cost categories. Thus, costs that can be directly charged to a cost unit are considered direct costs. Indirect costs are those that cannot be immediately debited to a cost unit. These must first be collected together at cost centres before being distributed to cost units:



Costs, then, can be distributed or debited to a:

- *Cost category*: Costs of approximately the same kind can be debited to the same category. One example is costs for raw materials.
- *Cost centre*: The company department in which the cost arose. For example, an organisational unit with cost responsibility.
- *Cost unit*: That which is produced. The product that is to bear the cost. Examples include a product or an order.

Direct costs are costs where the connections between products/services and costs are relatively clear-cut. It may for instance be a simple

matter to estimate the cost of the raw materials for a specific product.⁷⁰ So direct costs are those that can be attributed directly to a cost unit. Direct operating costs should include all the costs associated with and contingent upon the type of aircraft used, which means that costs change when the model changes. Pilots' wages and fuel costs, as well as the aircraft's maintenance and capital costs, are to be counted as direct operating costs. Often, infrastructure charges, which are generally based on maximum weight at takeoff, are also included.⁷¹

Indirect costs are also referred to as overheads and comprise other kinds of costs that are not direct. These can be debited to cost centres. In distributing them, a standard model is often

⁶⁷ To mention one example, an airline operating in a network with longer stage lengths will on the average face lower unit cost per seat kilometre than one with shorter average distances, since it will make fewer landings per period. The Nordic airlines have shorter average stage lengths than US airlines. Braathens flies shorter stage lengths than SAS and Finnair.

⁶⁸ SCAA (2001:84ff).

⁶⁹ Ljung (1995).

⁷⁰ Ljung (1995:61).

⁷¹ SCAA (2001:84ff).

used.⁷² Indirect operating costs are all costs that are not contingent upon the type of aircraft used. This means that such costs are passenger related rather than aircraft related. These costs cover items like passenger service in the air and on the ground, sales and distribution, and administration. Costs for cabin crew are generally counted as indirect costs (part of the costs for passenger services), despite the fact that the number of cabin crew used depends on how large the aircraft is and on its seating capacity.

4.3.2 Fixed versus variable costs

Fixed costs are costs that are unaffected by changes in volume. These costs are always constant even when production varies. One example of a fixed cost is rent of premises.

Variable costs are costs that increase or decrease with fluctuations in production. Wages are normally considered a variable cost.⁷³ This is based, however, on a situation involving piece wages only and on the assumption of transferable labour between different manufacturing processes. Such conditions do not always pertain, however, and for this reason it is often more appropriate, when taking short-term decisions, to treat all wages (both blue and white collar) as fixed. In the longer term, though, total wage costs change in relation to volume of activity as a result of recruitment, retirement, and dismissals. If labour is transferable between different products, wages can be treated as variable costs even in short-term product costing. In the aviation market, infrastructure, wear, and the bulk of the fuel are often placed in the variable cost bracket.

When analysing changes in fixed and variable costs at different points in time, it is often advisable to start by asking: When would a cost disappear should production cease immediately?

In the extremely short term, all costs are fixed, while all costs may be regarded as variable in

the very long term. For the purpose of pricing, for instance, a cost structure is required that expresses the time horizon at which different cost categories may be considered fixed or variable.⁷⁴ To describe dependence on a time horizon satisfactorily, at least three different time spans are required:

- *Medium-long term*: Once the schedule is in place, the costs of operating air services are relatively *fixed*. This means that capital costs for aircraft, pilots' wages, technical staff and other skilled labour cannot be influenced.⁷⁵
- *Short term*: Once the carrier decides to embark on the flight, all costs under the *Medium-long term* heading become *fixed* as do the costs for infrastructure charges (except passenger service charges), wear and the bulk of the fuel.
- *Very short term*: The costs for ticketing, food, travel agency commissions, and extra fuel consumption due to the advent of an extra passenger become *fixed* once the carrier has decided to accept a ticket reservation.

Wage, capital, and fuel costs, which are central cost items, are decided to a great extent in markets where it may reasonably be assumed that a single carrier has little influence over prices. Experience shows, however, that major carriers are able to influence all the above costs through negotiation. It is very difficult, though, for observers outside the carrier community to assess the extent of these potential negotiating gains.

4.3.3 Factors affecting airline costs

In the US, air carriers have a wide-ranging obligation to report to the Department of Transportation (DoT). Confidentiality does not apply, and it is actually possible to obtain data per type of aircraft and carrier even when the carrier only has one aircraft.

⁷² Ljung (1995:61).

⁷³ Olsson and Skärvad (1997:109).

⁷⁴ SCAA (2001:84ff).

⁷⁵ It is possible, however, to avoid costs for items like infrastructure charges, fuel and wear by cancelling flights.

These data provide valuable insights into the cost structure of airline operations. When applied to the Nordic countries, it must, however, be born in mind that American and Nordic conditions differ considerably between them, primarily because the American domestic market is vastly superior in size, and because the stage length is generally larger in the US. Also, for such comparisons to be reliable, adjustments should be made for differences in network structure, density, air-space charges, fuel prices, maintenance costs, insurance costs etc.

Yet, in 1999 the US statistical institute Avmark⁷⁶ produced a comparative study of American domestic aviation and the data that SAS had reported to the Association of European Airlines (AEA). These data concerned the entire SAS operation and gave a good idea of the differences in size. Avmark concluded that there were no significant differences in the costs for flight staff, nor in capital costs.

Types of aircraft

When studying costs for passenger services, it is important to note differences in costs due to the type of aircraft used on the service or routes in question. Even if many of the aircraft's technical properties directly influence operating costs, *size* and *speed* are the most crucial factors for productivity.

In general, larger aircraft could be said to generate lower operating costs per unit produced, i. e. per seat kilometre. In costs terms, therefore, it should be more advantageous to meet higher demand with larger aircraft and no alteration in flight frequency, than with increased flight frequency and the same size of aircraft.

Bearing in mind the relatively low density of

population in the Nordic countries, it is reasonable to expect that relatively small aircraft will be needed if acceptable levels in terms of departure rate and cabin factor are to be achieved. The demographic factor can therefore be expected to give rise to higher costs per passenger in the Nordic countries than in countries with a higher population density.

In Sweden, for example, besides the Boeing 737-600 jet, SAS has now introduced the Boeing 737-700 and Boeing 737-800 as well as the de Havilland Dash 8-Q400 propeller aircraft. Malmö Aviation has purchased a larger model of the four engine Avro RJ85 (formerly the BAe 146), the RJ100. In the case of this specific model, maintenance costs are substantially affected by letting four engines do what could easily be done by two, or, purely in terms of traction, by a single engine. Fuel consumption, too, increases with a four-engine aircraft. City Airlines uses by far the smallest jet in regular passenger service, the 37-seat Embraer 135. Skyways has the somewhat larger EMB 145 model with 48 seats but no longer uses it for domestic flights. Nordkalottflyg operates a northern service with a 7-seater piston engine aircraft, the Piper Chieftain.

Speed is an important factor for inclusion in cost estimates, as a fast jet plane can fly the same route more frequently than a slow propeller plane. Apart from the Saab 2000 and the de Havilland Dash 8-Q400, propeller planes tend to be slower than jet planes. If you can fly twice as fast between A and B on one and the same day with a jet plane than with a propeller plane, you can in theory fly twice as many passengers and thereby use all your resources to better advantage. Staff costs per seat kilometre and day, for instance, will be lower as they can be spread over a larger number of seats offered. It should be noted, however, that a greater number of passengers also means increased passenger and security costs.

76 www.avmarkinc.com

Production volume, occupancy, and average speed

Production measures commonly used for passenger traffic are revenue passenger kilometres/miles (RPK/RPM), aircraft kilometres/miles, and airborne time. Usually, aircraft time is either the time it takes from the point at which the plane leaves the terminal building at one airport to the point at which it parks at the terminal building of another – *block time*, or simply the time between takeoff and landing – *airborne time*. (The terminology is not the same everywhere.) Block time in Swedish domestic aviation can be roughly estimated at approximately 1.2 times airborne time, at least for flights to and from Arlanda. In the US, distances are greater but so too is airport congestion.

The level of utilisation in terms of block hours per day is slightly higher in the US than in Scandinavia. The SAS annual report for 2000 specifies around 7.5 hours on average for the DC 9, MD 80, MD 90 and Boeing 737. The Boeing 767 used for long-distance flights exceeds 14 hours on average. In terms of block hours per aircraft and day, these levels may well be below the equivalent US levels but still be close to the ideal from the SAS' viewpoint.

4.3.4 Costs and charges

Fuel costs

Aircraft fuel is almost invariably what is referred to in Scandinavia as Jet A, jet propulsion fuel. In 1999, the average US airline price was 53 cents/USG (US Gallon), a sharp drop from the 1997 level of 64 cents. For the year 2000 as a whole, the average price was 81, while the December quotation was 92. By May 2001, however, the price had dipped to 79. In view of this situation, it is advisable when performing cost estimates not to tie oneself down to a specific price level. In the Nordic countries, there are differences concerning the burden of VAT, energy tax, other taxes, and envi-

ronmental charges on aircraft fuel. In addition, it is important, incidentally, to remember that fuel prices vary significantly from airport to airport. In Sweden, e. g., the list price may increase by almost SEK 1 per litre from Arlanda to Kiruna.

Fuel costs typically amount to 10-15 per cent of total costs (9 per cent for SAS in 2000, see Table 4.3). Because fuel prices may be lower in other countries, it might be profitable to buy fuel on an international flight and then do the next domestic flight on the cheaper fuel. It is important, though, to bear in mind that extra fuel means extra weight, which in the end means that the aircraft uses more fuel on the flight than would have been the case without the extra fuel. In addition, in many cases pilots do not order more fuel than they will use on their remaining trips. Otherwise the next pilot will have more weight than calculated.

Table 4.3: Airline cost distribution

Costs	Normal range*	SAS (2000)
Labour costs	25–35%	32%
Capital costs	6–20%	8%
Fuel costs	10–15%	9%
Aviation charges		8%

Source: SCAA (2001)

* Interval between airlines with the lowest, respectively highest percentage.

As SAS purchases its fuel for its entire operation and not for its domestic flights alone, it is able to procure substantial discounts on list prices. The 1997 Aircraft Fuel Committee⁷⁷ guessed that on a list price at Arlanda of SEK 2.41 per litre, SAS had in practice paid little more than 65 per cent or SEK 1.50, and the regional airlines around 85 per cent or approx SEK 2.10.

For carriers it is also important to support the companies on the spoke airports that provide them with fuel. Otherwise they could be out of business and therefore be forced to close.

⁷⁷ Dahlin and Sjögren (1997).

Repair and maintenance costs

By tradition rather than for any rational reason, safety philosophy in the aviation field is based on a guild system – aircraft mechanics – and on monopolised spare part manufacturing. This means that competition for maintenance work is meagre, while at the same time spare part prices are assuming truly absurd proportions. There is reason to suspect that this set-up drives up costs to a greater extent in smaller maintenance markets, like those of the Nordic countries, than in a large market like the American one.

According to an assessment of AEA by Avmark⁷⁸, maintenance costs for SAS are about 25 per cent higher than for US domestic traffic. The difference could be greater when it comes to Scandinavian domestic traffic, and still greater for the regional carriers, where the production volume per aircraft model is low. Because of the relatively low production volume the demand for maintenance is fairly low, which means that it would be difficult for new entrants to challenge already existing maintenance shops in Scandinavia. Moreover, it is expensive for airlines to fly the plane to foreign maintenance shops that might be competitive.

Insurance costs

Following the events of autumn 2001, previous data concerning insurance premiums are no longer applicable. At present, it is difficult to assess how insurance costs will develop in the long term. The Swedish trade association Svenskt Flyg⁷⁹ predicts that the long-term insurance cost level will be approximately US\$ 2 per passenger, more or less irrespective of the length of the flight. Thus, on account of the differences in stage length, it will influence costs per seat kilometre more for the Nordic than for several European and most US carriers.

Capital costs

Apart from the costs for infrastructure financing, carriers are able to finance their aircraft in different ways. They can either buy the planes via credit financing, which means accepting costs for interest on borrowed capital, or they can lease or hire their planes from a leasing company, which means accepting leasing or hire costs. For new planes, capital costs will be higher than for second hand aircraft. Capital costs typically amount to 6-20 per cent of total costs (8 per cent for SAS in 2000)⁸⁰. Since leasing of aircraft is an international business, the costs do not depend on the nationality of the airline. Similarly, airlines may borrow money in international capital markets if they choose debt financing. Differences in capital costs should thus relate to equity capital.

Even if an older plane is less costly to buy, an overall assessment may show that the accumulated cost of operating an old plane may be no lower than for a new one, as older planes with less modern engines tend to consume more fuel than newer planes. Also, as older engines may emit more exhaust, emission charges may be higher for older planes. Furthermore, insurance premiums may be higher for older planes than for new ones.

Crew costs

Crew costs comprise wages and social contributions for pilots and cabin crew, and overnight accommodation costs. In addition, costs include living-out allowances, insurance policies, and pension benefits. Both wages and social costs may vary from country to country depending on the terms of wage agreements. Also, wages are affected by market developments, i. e. if there is a labour surplus or deficit.

According to Avmark, cabin crew costs may be estimated at US\$ 20-50 per block hour depending on the size of plane and the age of staff.

78 www.avmarkinc.com

79 www.svensktflyg.se

80 SCAA (2001:88).

Wage levels are very different from those of pilots, and the costs for cabin crew comprise only about one per cent of total costs.

Labour costs as a whole typically comprise 25-35 per cent of total costs (32 per cent for SAS in 2000).⁸¹

Airport and airspace charges

Carriers pay charges for the use of airspace and airport infrastructure. These costs are usually debited per landing, aircraft tonnage, kilometre, or passenger. It is therefore not straightforward to translate them into rates per seat and kilometre. Another complication is that airspace charges incorporate a significant element of capacity cost and must cover long-term investment needs.

Aviation charges

In this section, we describe various types of aviation charges. There could be tariff variations between different airports in the Nordic countries. A description of the differences in charges between the Nordic countries can be found in Chapter 5. Aviation charges amounted to just over 8 per cent of total SAS costs in 2000.⁸²

Air carriers operating domestic services in some Nordic countries pay passenger service charges and security charges to the airports. Many municipal airports, however, do not levy passenger service charges. Also, at airports that are not state-owned, security is taken care of by police and therefore does not command a charge.

In 1999 the gap between highest and lowest passenger service charges and landing fees in Sweden was substantial. In the tariff for 2001 the variations are considerably smaller. This spread in charges constitutes a problem when performing cost calculations, that could be solved by introducing a weighted average

charge, where the weights are the number of passengers. A similar approach could be used for security charges.

As a rule, rates are increased or at least revised at least once a year, usually at the end of the year. According to the trade association *Svenskt Flyg*, however, a doubling of the Swedish security charge from its previous level can be expected as a result of all the costly adjustments required to produce a more exhaustive control system.

In addition, carriers in some countries have to pay a terminal navigation charge (TNC) and a route charge for use of airspace. The TNC varies depending of the weight of the aircraft. In practice planes smaller than the Saab 340 are not liable to this charge.

Finally, a noise surcharge and an exhaust emission surcharge could be payable on the landing fee. The noise surcharge has the character of an environmental tax, i. e. it reflects actual noise disturbance. Its size is determined by the degree of sensitivity to noise in the relevant airport approach zone and also varies with the amount of noise generated by each aircraft. The figures are calculated by means of a highly complicated formula, the results of which suggest insignificant differences in overall operating costs.

There could also be an exhaust emission surcharge concerning nitrogen oxides (NO_x), uncombusted hydrocarbons (HC), and carbon dioxide, often based on the starting weight of the aircraft. As an environmental charge, it is less effective than the noise surcharge, as it only varies with the properties of the aircraft and takes no account of the distance flown. Consequently it does not reflect actual emissions. On a Swedish average, the surcharge is 10.5 per cent of the landing fee. Under the rates, aircraft are subject to charges in proportion to their ICAO certified emissions in grams per kilonewton (kN) of traction.

81 SCAA (2001:88).

82 SCAA (2001:89).

Traction is specified only in the case of jet engines, which lack engine shafts on which to calculate power. Propeller engines are measured in the usual way in terms of power, kW or HP, but the ICAO does not provide emission certification for turboprop engines. There is no clear-cut correlation between traction and power. Power is defined as traction work performed per unit of time (1 kW = 1 newton-metre/sec; 1 HP = 75 kilopondmetres/sec). Thus conversions between power and traction require an assumption as to the speed (metres/sec) at which traction operates. The aviation tariff gives the impression that only jet engines are subject to charges, but with the help of its own calculation model the SCAA is able to convert the specified engine power of turboprop engines into traction and place them in an appropriate charge bracket.

Landing fees, terminal navigation charges and route charges could in some cases be paid via annual cards for aircraft. These cards are often based on the maximum starting weight. This means that for some carriers, such costs could be lower than the list price because they are paid for in advance.

Handling, de-icing, and other costs

Three Swedish carriers interviewed in 1999, all of which used no larger than 19-seat aircraft, agreed that the costs for ground services could be estimated at approximately SEK 1 500 per landing and de-icing at approx SEK 2 500 a time. Spread over a year, the number of occasions when de-icing is required is not likely to exceed about 3 per cent of total flights. Svenskt Flyg has stated that costs for this service have not increased to any great extent since 1999.

In the case of jets, the issue is more complicated. SAS operates its own ground services and also offers them to other carriers. At major airports, competing companies offer ground services. Pricing is a matter of negotiation.

The only indication available hitherto is that this cost would appear to diminish, calculated per seat, as the aircraft size increases.

Other costs such as parking, cleaning, etc. are also incurred. These may vary considerably, due in part to who performs the cleaning work and at which airport the plane is parked. For the purpose of calculation, it would seem appropriate to use an estimated percentage mark-up for this cost.

The events of autumn 2001

The autumn of 2001 brought the terror attacks on New York and Washington, the shooting down of a plane over the Black Sea, the SAS crash in Milan and the American Airlines crash in New York. The result was a drastic reduction in the demand for intercontinental flights in particular. The duration of the slump is hard to predict. It strikes chiefly at the carrier revenue side. On the cost side, these events had one particularly strong immediate effect: insurance premiums rose dramatically. In the slightly longer term, costs will rise for a range of more or less justified security measures. An inevitable effect in the medium term will be lower capital costs as the fall in demand for air travel will lead to an excess supply of aircraft. Both second hand prices and leasing costs may be expected to decline as a result.

4.3.5 Low cost carriers

Low cost carriers are a relatively new phenomenon in the aviation field, even if there are many similarities between them and traditional charter companies. The most successful low cost carrier in the US is Southwest Airlines, which since its arrival in 1967 has grown to almost three times the size of SAS in terms of passenger volume. The EU Commission estimated that European low cost carriers transported approximately 4 per cent of all passengers in the EU in 1997.⁸³ In Europe, the most successful carrier of this type appears to

83 European Commission (1999).

be Ryanair, which has grown to about a third of the size of SAS since entering the arena in 1985. In 2000, Ryanair's profit margin was just over 20 per cent while the SAS margin (for all markets) was just over 7 per cent. Ryanair's cost per revenue passenger kilometre is only about half as high as that of SAS.⁸⁴

Ryanair and Southwest use Boeing 737s only, which is also the aircraft on which SAS bases most of its domestic operation. SAS' operation had a cabin factor (i. e., travellers per seat available) of 64 per cent while Southwest had just over 70 per cent and Ryanair 77 per cent.⁸⁵ It is worth noting that a lower cabin factor implies a higher number of departures for a given number of passengers.

Low cost carriers have been able to reduce costs in a number of different ways. Below are some examples of cost reducing factors.

- Few departures per route and day
- No interlining with other carriers or between own routes
- No entry into very short-haul air markets
- Travel to and from major connecting points
- Closer seating
- More efficient utilisation of aircraft
- More efficient utilisation of cabin crew (serving passengers, cleaning the aircraft, running tax free shops, etc.)
- Lower pay, smaller crews
- Cheaper remote airports via special agreements
- Single aircraft model in the fleet – cheaper maintenance
- Lower service level
- Minimised costs for lounges, the carrier's airport staff, and baggage handling
- No free meals or drinks on board
- Lower distribution costs, i. e. mainly direct online sale to the customer
- No travel agency commissions
- Lower booking and sales costs
- Marketing via discount prices

- Less administration

From the perspective of the traveller, the cost advantage of low cost carriers must, in other words, be traded against certain competitive disadvantages in terms of reduced quality of service compared to traditional carriers.

4.4 Comparative airline productivity⁸⁶

In this section we will summarise a few empirical studies of airline productivity, so as to shed light on the relative competitive position of European carriers in general and of the Scandinavian flag carrier in particular. The studies in question unfortunately do not include Finnair. In general, they should be interpreted with some caution, as they are all based on data from before 1995.

4.4.1 Factor productivity and input efficiency indices

The simplest way to evaluate a production unit's productivity is to calculate the ratio of its output to input. But as long as an airline uses several inputs, this method will be partial. Observed measures of these input and output variables will be affected by the size and structure of the airline network, and hence of many operating variables that are exogenous: stage length, output composition, etc. They must therefore be interpreted with considerable care.

Average partial factor productivity measures representing labour, fuel, aircraft, and materials efficiency are tabulated in Table 4.4.

In the labour efficiency indices, variables such as stage length and output mix have been at least partly controlled for. Asian carriers have the highest average labour productivity. North American carriers have higher labour efficiency than European, but the North American growth rate in labour productivity was substantially lower than for both of the others. One of the explanations for this result is that the num-

⁸⁴ SCAA (2001:74)

⁸⁵ SCAA (2001:74). Comparable figures for other airlines are: Virgin Express 81.7 %, Go rejsjer 77.1 %, Easy Jet 83.0 %, KLM 76.5 %, and BA 71.9 %.

⁸⁶ This section is reproduced more or less verbatim from Steen and Strandenes (2002).

ber of employees is used to measure labour input, and Asian employees work more hours. The growth rate in labour efficiency has been highest for the European carriers, indicating a possible catch-up process. Fuel efficiency is highest in Europe, partly mirroring the lower fuel prices in the US.

Looking at average aircraft efficiency, Europe also takes the lead.⁸⁷ In general, the North American aircraft efficiency is declining for all carriers. This is true also for most European carriers, but less evident for the Asian carriers.

Table 4.4: Average airline efficiency measures as of 1993, relative to American Airlines 1990.

	North America	Europe	Asia
Labour			
Mean	1.041	0.925	1.480
Standard error	0.206	0.212	0.330
Fuel			
Mean	1.049	1.191	1.086
Standard error	0.060	0.067	0.299
Aircraft			
Mean	0.920	1.139	1.082
Standard error	0.135	0.232	0.256
Materials			
Mean	0.871	0.802	0.677
Standard error	0.071	0.101	0.163
Number of carriers	8	6	7

Source: Oum and Yu (1998a)

It is possible that the higher European aircraft productivity might be explained by differences in ownership structure between the US and Europe. Within the corporate finance literature, several authors have argued that it is easier to raise money for investments when the firm is publicly owned, as compared to raising the same amount of money for a private enterprise. The European carriers are predominantly flag carriers owned, at least in part, by governments, whereas the North American carriers to a larger extent are privately owned.

4.4.2 Total factor productivity analysis

Total factor productivity (TFP) is the most commonly used productivity measure. Accounting for the effect that multiple outputs are produced using various inputs, the TFP

measure represents an integrated measure of productivity. TFP is defined as the amount of aggregate output produced by a unit of aggregate input. Using the standard definition of Caves *et al.* (1982), Oum and Yu (1998a) calculate gross TFP indices for the airlines represented in Table 2.3 of Chapter 2 above.

In general, the TFPs grow over the period. A lot of airlines experienced a fall in TFP growth between 1990 and 1992, most probably due to the recession and the Gulf war. SAS exhibits the lowest TFP growth in all but two years.

However, gross TFP measures might be misleading for the same reasons as the partial efficiency scores. Exogenous differences in network size, stage length, and production

⁸⁷ For aircraft efficiency the effect of stage length and output mix is removed using regression techniques.

environments might influence the numbers. One way to solve this is to look instead at residual TFP using regression techniques. The idea is to undertake a second regression analysis on the gross TFP to decompose TFP differentials into various sources, including efficiency. Examples can be found in Caves *et al.* (1981) and in Erlich *et al.* (1994). Here, the gross TFP is regressed against variables that control for the exogenous differences in the operating environment believed to affect productivity, and the residual from this regression – the residual TFP – is now capturing efficiency differences that are not attributable to the exogenous factors.

This residual TFP index can be used to compare efficiency across firms and within firms over time. By including variables such as output, stage length, revenue shares for freight, revenues from non-scheduled and incidental services, load factor, and firm dummies, Oum and Yu (1998a) calculate residual TFP measures. In their regression model, stage length has a positive and significant effect on productivity. The same is true for revenue stemming from non-scheduled and incidental services. They find significant firm dummies, implying that there are significant differences in growth rates across airlines.

Turning to the results for the individual carriers, the European carriers' productivity seems to grow faster than the American carriers' productivity. British Airways is found to have the highest growth in Europe during 1986-93 (4 per cent per annum). SAS had, together with Iberia, the lowest performance as measured by residual TFP growth, even after accounting for other exogenous factors.

4.4.3 Stochastic frontier analysis

The stochastic frontier method postulates that some firms never reach the production frontier. The method assumes that inefficiencies exist, and that these cannot be fully explained by

measurable variables. Instead, two disturbance terms are introduced into the models. In addition to the traditional symmetric noise term, a one-sided «error term» is included in the model in order to capture non-efficiencies that cannot be explained by the variables included.⁸⁸

Typically, a firm is said to be «cost efficient» if a specified output is produced at the minimal cost, given the relevant input prices and existing technology. The question is then which exogenous variables determine the one-sided «error term». In our case this would for instance be variables representing the output mix and/or the network characteristics.

There exist several studies on airlines using this methodology. Barla and Perelman (1989) were among the first to apply the stochastic frontier method to measure airline productivity. Good *et al.* (1993) used the methodology to compare performance of the largest European carriers and their American counterparts. Oum and Yu (1998a) did the same, but included also the largest Asian airlines. Other studies using this methodology on performance include Bruning (1991) and Jha and Sahni (1992).

Good *et al.* (1993) used a panel of 12 airlines, of which four were European and eight were US carriers. Their panel runs from 1976 to 1986. They found a clear productivity gap between Europe and the US. The US had an efficiency score in the range of 77 to 79 per cent (on a scale up to 100), whereas the European score was in the range of 63 to 65 per cent. The European growth rate was also lower in five out of eleven years. British Airways had the highest growth rate over the period and the highest productivity in Europe by 1986 (71 per cent).

Oum and Yu (1998a) use newer data from 1986 to 1993 to analyse all the carriers from Table 2.3 above. They found the European carriers to have a higher growth rate than both the

88 See Bauer (1990) for a review of the literature.

North American and the Asian carriers. British Airways had the second highest productivity, whereas KLM had the highest scores, as in the residual TFP analysis. SAS came out with the lowest productivity scores.

To qualify this result, we shall look into an analysis of unit costs and competitiveness.

4.4.4 Unit cost comparisons and competitiveness

What are the consequences of low efficiency? First and foremost, low productivity might lead to low cost competitiveness relative to other airlines. From the consumer or economic efficiency perspective, one might be concerned that it could lead to higher prices and smaller output.

One way of looking at competitiveness is to compare unit costs between carriers. However, this is not a straightforward technique. No well-established measure of cost competitiveness exists. Some studies have systematically examined this issue. Windle (1991) attempts to attribute unit cost differences between carriers using annual cross-section data for 1983 covering 14 US and 27 non-US carriers. Good and Rhodes (1991) looked at competitiveness among 37 airlines in the Pacific region. A more recent study by Baltagi *et al.* (1995) applied a translog variable cost function to a US panel (1971-86) to analyse changes in the pre- and post-deregulation US industry. Later, Oum and Yu (1998b) used a translog approach to establish unit cost and decompose differences in competitiveness into potential sources: firm attributes, network characteristics, and output mix. Their results are presented in Table 4.5.

Table 4.5: Airline unit cost decomposition and cost competitiveness, 1993. Percentage differences relative to American Airlines.

Airline	Unit cost difference (1)	Stage length (2)	Output mix (3)	All input prices (4)	Efficiency (5)	Cost competitiveness (6)=(4)+(5)
<u>North America</u>						
American	0.0	0.0	0.0	0.0	0.0	0.0
United	-1.7	-1.2	0.2	3.7	-3.8	-0.1
Delta	13.5	7.7	3.1	7.4	-5.6	1.8
Northwest	-3.7	3.3	2.1	4.6	-9.9	-5.3
US Air	40.9	17.6	-4.2	2.6	17.4	19.9
Continental	-10.7	3.8	-2.6	-11.4	-0.7	-12.1
Air Canada	12.7	1.9	3.1	-11.5	19.9	8.5
Canadian	3.6	-1.1	1.5	-8.6	13.7	5.0
<u>Average North America</u> (non-weighted and excluding American)	7.8	4.6	0.5	-1.9	4.4	2.5
<u>Europe</u>						
Lufthansa	29.2	11.2	-2.0	16.8	3.8	20.6
British Airways	21.9	-2.4	11.0	-2.9	10.2	7.3
Air France	19.3	-1.2	-0.8	8.8	12.4	21.2
SAS	81.5	25.0	-4.7	25.4	17.0	42.4
KLM	3.3	-6.2	1.7	16.0	-5.3	10.7
Swissair	46.4	5.4	-2.2	35.5	2.8	38.3
Iberia	36.9	7.6	2.8	5.1	16.4	21.5
<u>Average Europe</u> (non-weighted)	34.1	5.6	0.8	15	8.2	23.1

Source: Oum and Yu (1998b)

In column (1) the estimated unit costs per aggregate unit of output are tabulated. The numbers are expressed in percentage differences relative to American Airlines (AA). For instance, Lufthansa has a 9.2 per cent higher unit costs than AA, Continental a 10.7 per cent lower cost, etc. The general impression is quite clear: the European carriers have all positive and large numbers, indicating high unit costs. On the (non-weighted) average, the European carriers have 34 per cent higher unit costs than American Airlines.

There are two outliers: KLM has only 3.3 per cent higher unit costs than AA, being best in Europe and ranking fourth even among the North American companies. SAS is worse off than the others, having as much as 81 per cent higher unit costs than AA. SAS has a very different route structure from the other European carriers, with an average stage length of only 728 kilometres (see Table 2.3).

Looking at column (2), where the effect of stage length is decomposed, we find this effect verified. In this column, percentage differences in unit costs between each airline and AA, attributable to differences in stage length, are tabulated. As much as 30 per cent (25/81.5) of the SAS unit cost differential is due to shorter stage length. If we compare SAS with US Air, which has an average stage length in the same range as SAS (904 km), we see that even this company exhibits high unit costs: 41 per cent higher than AA, the highest figure in the North American group. US Air also has the second highest figure when we look at the stage length effect (17.6 per cent).

Input prices (column 4) also have a large effect on SAS' unit costs – accounting for another 30 per cent of their unit cost differential. The most important contributing factor here turns out to be SAS' labour costs.

It is interesting to note that SAS has the highest negative figure of all North American and

European carriers when we look at output mix unit cost differential (–4.7 per cent). Here it seems that SAS has a unit cost advantage. This might capture some of the quality dimension. SAS has successfully aimed at the business segment in their marketing profile. This may have given them a competitive advantage within this segment. This effect should be even more significant as viewed from the revenue side, since the costs associated with serving this segment is less significant than the increases in revenue.

Cost competitiveness is summarised in the last column. This figure is the combined effect of high input prices and efficiency. SAS ranks as the least competitive firm, 42.4 per cent less competitive than AA.

In summary, SAS appears to have, at least during the 1980s and early 1990s, significant cost disadvantages. Being confirmed by a variety of studies and methodological approaches, this result appears to be quite robust.⁸⁹

4.4.5 Financial performance and development in yields

Profitability depends not only on cost competitiveness, but also on the company's ability to price above costs. The latter in turn depends on several factors, such as the firm's ability to exert market power, practice price discrimination, or exploit other marketing strategies to their benefit. Conceivably, this might help explain the relatively strong competitive position and good financial results obtained until recently by the SAS.

McGowan and Seabright (1989) compare the wages and labour productivity of European carriers to those found among US carriers. They find that European airlines pay a significant mark-up over US rates for all categories of personnel, whereas their labour productivity tends to be lower. This is also what Neven and Röller (1996) conclude in their study of

⁸⁹ The result is also supported by a study of Röller and Sickles (1994), who use a quite different methodology. They estimate a structural model to establish the market power and rent sharing in the airline industry in Europe. However, they also provide an estimate of technical efficiency. By 1990 (their last sample year), SAS had a technical efficiency score of 52.2 per cent as compared to 100 per cent, which is normalised to represent Northwest Airlines. Only Air France is worse off with a score of 47.6 per cent.

European airlines over the period 1976-90. They find strong support for the hypothesis that lax competition induces extensive rent sharing through excessive wages. They also find that this rent sharing varies considerably across carriers.

Looking at the differences in rent sharing, Neven and Röller estimate a model with firm specific effects for eight European carriers. Their results are presented in the second column of Table 4.6. The third column includes

the labour cost estimates of McGovan and Seabright. Interestingly, SAS ends up with the highest estimated rent sharing parameter, suggesting that the missing competition may have lead to comparatively high levels of remuneration for the employees. According to figures produced by McGovan and Seabright, SAS has the second highest labour cost estimate. KLM and BA are the two carriers exhibiting the lowest rent sharing estimates, indicating a more competitive environment for both of them.

Table 4.6.: Differences in rent sharing across European carriers. Point estimates, with t-statistics in parentheses.

Airline	Estimated rent sharing parameter 1976-90 (Neven and Röller 1996)	Labour cost 1989. Per cent of US level – cabin crew (McGovan and Seabright 1989)
Air France	0.548 (3.14)	273 (UTA only)
Alitalia	0.650 (3.89)	Na
British Airways	0.245 (2.71)	94
Lufthansa	0.436 (7.02)	141
Iberia	0.520 (6.07)	231
KLM	0.090 (0.31)	Na
SAS	0.612 (2.17)	251
Sabena	0.660 (3.02)	167

Source: Neven and Röller (1996).

Oum and Yu (1998a) have used their output data to look at the development in the airline companies' yield. They have calculated the average yield and compared it to the unit cost over the period 1986 to 1995.

With the exception of two carriers (US Air and Delta) previously known as high cost airlines, the average yield for the North American carriers measured in constant domestic currency decreased less than 20 per cent during the sample period.

Looking at Europe, British Airways, KLM, and Swissair managed changes in average yields and unit costs in order to secure profits. All three airlines managed to widen the gap between average yield and unit costs from 1990, ensuring increased profitability. It is remarkable that KLM and Swissair remained

profitable despite the fact that their average yields, in real domestic terms, decreased by 32 per cent and 38 per cent, respectively. Air France had real financial difficulties throughout the sample period. Increases in average yield were far short of increased costs.

Turning now to SAS, the average yield, as measured in Swedish kronor, decreased by only 3 per cent between 1986 and 1995. Thus, SAS appears to have dealt with its rising unit costs by rising yields, i. e. by increasing air fares. SAS average yield in 1995 was 2.5 times higher than that of KLM.

One might think of two main explanations for this result. In part, it can be due to SAS' relatively large and protected «domestic base» market. As shown Table 2.3, SAS has a larger share of its income from the domestic market

than any other European airline. As pointed out in Chapter 2, this market consists of three countries, exhibiting high air travel frequencies between them, and of which two – Norway and Sweden – are also among the largest in Europe in terms of domestic air travel demand.⁹⁰

The second explanation might be SAS' «Business traveller profile». This will typically result in a higher average yield than obtained by the competitors.

In summary, SAS seems to be a high cost air-

line no matter how one does the calculation. Their surprisingly good performance is probably explicable in terms of their high yield. Their ability to maintain a high yield may in turn be understood in terms of their dominant position in a large «domestic» market.

Note, however, that since the data underlying the above analysis and conclusions are no more recent than from 1995, there is reason to interpret the results with caution, as applied to today's situation.

⁹⁰ Iberia also has a large share of its income from the domestic market. Along with SAS, they are a high cost airline, and may also have benefited from its domestic market power.

5. TAXES, SUBSIDIES, AND PUBLIC CHARGES

The taxation system represents an important part of the institutional and economic framework within which the aviation industry, or any other trade, must operate. In general, taxes, subsidies, and public charges represent powerful policy instruments, by which governments may influence the activity in any particular sector, if they so desire.

In this chapter, therefore, we present a brief survey of the duties, charges, subsidies, and tax rules of most immediate importance to the Nordic aviation sector. A general discussion of the corporate taxation systems of the Nordic countries would, however, be far beyond the scope of this report.

In Section 5.1, a fairly systematic overview in tabular form is presented. Some of the duties and charges are further described and analysed in relation to competition. Section 5.2 is a brief account of the environmental externalities generated by aviation. To the extent that payments correspond to such externalities, they may be seen, according to standard economic thinking, as efficiency enhancing forms of taxation. Section 5.3 contains a short description of the use of state aid in Nordic aviation.

5.1 Taxes and charges in Nordic aviation

In Table 5.1, we present a survey of taxes and charges in the Nordic aviation industry.

A general note should be made. For most of the charges there are exemptions, be it for small aircraft, passengers under two years of age, airline employees, etc. In the context of this report, it has not been possible, or desirable, to give a complete, detailed description and interpretation of all the regulations currently in effect.

As can be seen from Table 5.1, taxes and charges are not quite uniform across countries, although there are many similarities.

The total effect of the taxes and charges, i. e.

the sum of effects on demand and on the airlines' costs, depends on additional factors like the general corporate taxation, the cost of capital, the cost of labour, etc. Furthermore, when it comes to charges for state aviation facilities and services, they will differ between routes, aircraft types, etc. This section will therefore concentrate on the taxes and charges that may have a more direct impact on competition, and we consider the competitive effects of each tax and charge separately. It is therefore not possible to draw conclusions on the airlines' complete competitive situation from this analysis.

5.1.1 Passenger tax

Denmark levies a passenger tax, while Finland, Norway, and Sweden have no such tax. In Norway, however, an air passenger tax was being levied until 1 April 2002.

The passenger tax is a pure fiscal tax, charged on trips *from* domestic airports. As a result, domestic trips face, roughly speaking, twice the tax of international trips. Whether the tax is passed on to the passengers or not, it is liable to reduce the airlines' revenue, in the former case because demand is constrained.

The tax is the same for all airlines operating in the same market, but airlines having the greater part of their operations in the domestic market are hit harder than airlines operating primarily in international markets. Perhaps of greater importance is the fact that the passenger tax affects the low cost carriers proportionately harder than the «ordinary» airlines, in the sense that the tax corresponds to a larger fraction of the total ticket expenditure. Hence, it may be argued that the passenger tax is particularly «effective» in preventing entry by low cost carriers.

5.1.2 The VAT system in general

In all the Nordic countries there is a general obligation to pay VAT on both goods and services. In Finland and Sweden, passenger trans-

Table 5.1: Survey of taxes and charges affecting aviation in the Nordic countries

	Denmark	Finland	Norway	Sweden
Fiscal charges				
Value added tax (VAT)				
- Is VAT imposed on commodities in general?	Yes, standard rate is 25 %	Yes, standard rate is 22 %	Yes, standard rate is 24 % (12 % for food)	Yes, standard rate is 25 %
- Is VAT imposed on services in general?	Yes, standard rate is 25 %	Yes, standard rate is 22 %	Yes, standard rate is 24 %	Yes, standard rate is 25 %
- Is VAT imposed on domestic freight by air?	Yes, by 25 %	Yes, by 22 %	Yes, by 24 %	Yes, by 25 %
- Is VAT imposed on international freight by air?	Yes, by zero rate, but freight from Denmark to other EU countries is taxed in Denmark if the freight purchaser does not use a VAT identification number issued in another member state.	Yes, by zero rate, but freight from Finland to other EU countries is taxed in Finland if the freight purchaser does not use a VAT identification number issued in another member state.	No	No, irrespective of whether freight takes place within the EU or to/from non-EU country.
- Is VAT imposed on domestic passenger traffic by air?	No VAT on international transport outside EU. No	Yes, by 8 %	No ⁹¹	Yes, by 6 %
- Is VAT imposed on international passenger traffic by air?	No	Yes, by zero rate	No ⁹¹	No, independent of whether it is traffic between EU countries or third-country traffic.
- Is VAT imposed on ground handling services?	Domestic traffic: Yes, by standard rate of 25 %. International traffic: No	Domestic traffic: Yes, by standard rate of 22 % International traffic: No	Yes, by 24 %	To some extent. For domestic ground handling services towards the customer VAT is imposed, by 25 % No
- Is VAT imposed on fuel?	Yes, by 25 %	Yes, by 22 %	Yes, standard rate is 24 %	
- If yes, is international traffic exempt?	Yes, no VAT on international flights within or outside EU (except for traffic to Malmö)	Yes, by zero rate	Yes, zero rate on international flights	

91 Since 1 April 2002.

	Denmark	Finland	Norway	Sweden
Fiscal charges (continued)				
Value added tax (VAT) (continued)				
- Are sales of goods and services in international traffic in general liable to duty? If yes, is input VAT deductible?	To some extent. No duty on third-country traffic. Within the EU no duty on goods for consumption during flight, full VAT on goods for sale on board.	Delivery of goods and services for international flights is liable to duty, but has zero rate. Input VAT is thus deductible.	Where international traffic is liable to duty, input VAT is deductible. No VAT on goods or certain services for use on board.	To some extent. No duty on third-country traffic. Within the EU no duty on goods for consumption during flight, full VAT on goods for sale on board.
- Are there other exemptions for air transport?	Input VAT is deductible in international traffic. Yes, zero rate for sale, repairs and maintenance of airplanes	Yes, zero rate for lending of aircraft, their parts or equipment, and for repairs and maintenance.	Yes, zero rate for sale, repairs and maintenance of aircraft	Yes, zero rate for sale, repairs and maintenance of aircraft
- Is cabotage considered domestic or international traffic in relation to VAT?	International	International	Domestic	International
Passenger tax				
- On which routes?	Yes Charge per ticket from Danish Airport. Exemption for transit and transfer passengers. DKK 75 (DKK 37.50 for small domestic airports)	No	No ⁹²	No
- At what rate?	In general yes, but aviation is exempt. The tax is paid for domestic traffic via the passenger charge.	In general yes, but aviation is exempt	Yes, for domestic flights, NOK 0.27 per litre fuel. VAT not included	No
Environmental taxes				
- CO ₂ tax?	In general yes, but aviation is exempt. The tax is paid for domestic traffic via the passenger charge.	In general yes, but aviation is exempt	Yes, for domestic flights, NOK 0.27 per litre fuel. VAT not included	No
- NO _x tax?	As for CO ₂ tax.	No	No	No, included in pollution fee
- HC (Hydro Carbon) tax?	As for CO ₂ tax	No	No	Included in pollution fee
- Other?	No	No	No	A pollution fee calculated as a percentage of the landing fee.

Table 5.1 (continued): Survey of taxes and charges affecting aviation in the Nordic countries

	Denmark	Finland	Norway	Sweden
Miscellaneous conditions				
Profit requirement imposed on airports?	No	No obligation. The board of the FCAA decides every year about dividends to share holders. The target for the returns on initial capital is 4 %. Usually a part of this is paid out as dividends.	Yes, the Norwegian Air Traffic and Airport Management's equity is built up through retained earnings.	Yes
Cross-subsidisation between airports?	No	Yes, equal charges at all airports independent of costs at that specific airport.	Yes, equal charges at all airports independent of costs at that specific airport.	Yes, among airports owned by Swedish Civil Aviation Administration.
Charges for state aviation facilities and services				
Take-off Charge/Aircraft Landing Fee? ⁹³	Yes, take-off charge: DKK 62.40 per ton, min. DKK 818.70 for scheduled flights. Other: DKK 62.40 per ton, min. DKK 1663.40.	Yes, aircraft landing fee: 0-5.7 tons: € 3.78/ton 5.701-35 tons: € 22.71 + € 5.63/ton > 35.1 tons: € 186.10 + € 7.82/ton.	Yes, take-off charge: 0-75 tons: NOK 99.65/ton > 75 tons: NOK 99.54/ton for the part of the aircraft not exceeding 75 tons, NOK 49.83/ton for the part of the aircraft exceeding 75 tons.	Yes, aircraft landing fee: 0-25 tons: SEK 28/ton, >25 tons: SEK 700 + SEK 61-73/ton for the part of the aircraft exceeding 25 tons. Minimum charge SEK 250-350.
Terminal charge/Passenger service charge?	Yes, passenger service charge: Domestic flights: DKK 34.80 per passenger International flights: DKK 90.40 per passenger. Transfer: the passenger charge will not exceed DKK 45.20. Transit: free	Yes, passenger service charge: Domestic and international flights: € 3.87 – € 11.10 depending on weight and nature of the flight. Transfer: free Transit: free	Yes, terminal charge: Domestic flights: NOK 51.25 per passenger International flights: NOK 87.15 per passenger. Transfer: NOK 35.90 per change. Transit: free	Yes, passenger service charge: Domestic flights: SEK 45-50 per passenger International flights: SEK 59-98 per passenger Transfer: free Transit: free
En route Air Navigation Facility Charge?	No, is included in the take-off charge.	Yes	Yes ⁹⁴ .	Yes, calculated in the same way as in Norway (see footnote).

93 Whether take-off charge or landing fee is used varies between countries. However, the charge is in principle the same, based on the weight of the aircraft.

94 For each flight a single charge is collected equal to the sum of charges accruing in respect of that flight in the airspace of the Flight Information Regions falling within the competence of the individual States concerned. The individual charges are calculated by a unit rate multiplied with the number of service units on a flight (calculated from travelled distance and aircraft weight)

	Denmark	Finland	Norway	Sweden
Charges for state aviation facilities and services (continued)				
Terminal Navigation Charge?	No, is included in the take-off charge.	Yes < 35 tons: € 31.45 (AFIS) or € 40.73 (ATC) ⁹⁵ > 35 tons: € 47.18 (AFIS) or € 60.56 (ATC)	No	Yes, the charge is paid for each arrival and consists of a fixed and a variable component 9-15 tons: SEK 35 16-50 tons: SEK 35 + SEK 24 per ton over 15. 51-100 tons: SEK 875 + SEK 17 per ton over 50. > 100 tons: SEK 1725
Other charges?	Aircraft parking fee: In the open: in excess of 6 hrs: min DKK 52 per 24 hrs, or DKK 13 per ton. It is possible to rent for a period of three months or more. At the numbered stands: in excess of 3 hrs: min DKK 71.50 or DKK 6.60 per ton and hour. No parking charge between 22 and 06 hrs.	Aircraft parking fee: Helsinki: No charge: i) less than 2 hours, ii) in the nighttime (22-06) 2-5 hrs.: € 1.31/1000kg of the MTOW, minimum € 5.22 5-10 hrs.: € 2.61/1000kg of the MTOW, minimum € 10.44 10-24 hrs.: € 3.91/1000kg of the MTOW, minimum € 15.67 Other airports: No charge: i) less than 2 hours, ii) in the nighttime (22-06) 2-24 hrs: € 1.31/1000kg of the MTOW, minimum € 5.22 More than 24 h./each beginning 24 h: € 1.31/MTOW, minimum: € 5.22/each beginning 24 h	Noise charge (only from Bodø Airport) Night fee (only from OSL)	Noise charge Security charge (only from Arlanda): domestic flights SEK 5, international flights SEK 16
		Electricity fee		

95 AFIS: Airport with Aerodrome Flight Information Service, ATC: Airport with Traffic Control.

port by air is part of the general VAT system. In Denmark and Norway, on the other hand, the passenger transport by air is not included in the VAT system.

When the airlines' operations are included in the VAT systems, input VAT will be deductible. When an industry is left out of the system, such an option to deduct input VAT is not present. However, Denmark and Norway have rules allowing the airlines to deduct input VAT regarding their international operations, thus preventing a concealed tax on export. Not all VAT will be deductible, however. This may cause certain competitive distortions.

All the Nordic VAT systems are set up in such a manner that the VAT is not dependent on an airline's nationality, but on where the purchase is being done. There are, to some extent, different rules for domestic and foreign companies when it comes to registration and deduction, but the results and realities turn out quite similar.

Nevertheless, the VAT systems may give rise to competitive distortions. Vertical integration and the airlines' distribution between domestic and international traffic are some factors of importance when considering the competitive effects of the VAT systems. The same will be true of some of the other taxes and charges. In addition, different VAT regimes may lead to unequal profitability levels on account of differences in demand patterns and cost structures.

5.1.3 Ground handling

Norway

Ground handling services are liable to duty. If aviation is within the VAT system, input VAT will be deductible for the airlines. In such a case the airlines will, roughly speaking, be indifferent between buying and producing the ground handling services.

A decision to remove passenger transport by air from the VAT system, effective 1 April 2002, has been passed by the Norwegian

Parliament. As a consequence, airlines will no longer be able to deduct input VAT for their domestic operations, nor, in fact, for all of their international passenger traffic.

Carriers buying ground handling services from third-party suppliers will be charged with input VAT, which, in principle, is not deductible. They will to some extent be able to deduct input VAT regarding international traffic, but as most of the ground handling services are considered to be produced in Norway, the option to deduct is somewhat limited. However, the airlines will still be able to deduct input VAT for fuel and catering for use exclusively on international routes. Apart from this, airlines buying third-party ground handling services will face up to 24 per cent higher costs than airlines relying on self-handling, which, of course, is not subject to VAT.

This could represent an important source of competitive distortion, not only in the ground handling market, but also in the air travel market.

Potential entrants have to decide whether to establish their own production of ground handling services or to buy these from third-party suppliers. Self-handling is uneconomical unless operated at a fairly large scale. The investments necessary to set up a self-handling apparatus will, at least partly, be «sunk costs», which cannot be recovered in the event of a prospective exit from the market. Any smaller, new entrant relying on self-handling therefore exposes himself to an increased risk.

For potential entrants, a much more attractive option will be to purchase ground handling services from a third-party provider. But under the current Norwegian VAT regime, airline-independent ground handling providers are unlikely to survive. Only the large carriers themselves will be able to support such facilities, meaning that any new entrant will have no option but to buy their ground handling services from a large competitor. On account of this, larger carriers will have a distinct competitive advantage over the smaller ones, making the entry of smaller carriers more risky and hence less likely.

Denmark

The situation in Denmark is to some extent the same, but in Denmark the permission to deduct input VAT associated with ground handling services depends on the plane's next destination, not on where the services are carried out. As a consequence, in Denmark the discrimination problem will only arise for domestic flights.

The domestic market consists mainly of feeder routes. It is possible that the VAT rules may have some impact on competition, but considering the size of the domestic market, this effect will probably be limited.

Finland and Sweden

In Finland and Sweden, passenger transport by air is part of the VAT system, and all airlines may deduct input VAT. These countries are therefore not affected by the abovementioned problem.

5.1.4 Fuel

The fuel used by aircraft is subject to VAT and, in Norway, to an additional CO₂ tax. Neither tax is, however, levied for international flights.

Norway differs from the other Nordic countries when it comes to the assessment of cabotage. In all the other countries, cabotage is considered part of the international flight and is therefore not liable to VAT.

If the fuel is bought in Norway and the plane's next destination is domestic, the charges apply. There is no charge for fuel that is imported on board the plane, even if this is used on domestic flights. The charges are independent of the airline's nationality and will therefore not influence, at least not directly, the competition between national and foreign companies.

Instead, it might influence competition in the domestic market. An airline operating both in the domestic and in the international market has the opportunity to acquire fuel abroad, thus

avoiding the charges. The tax-free fuel can subsequently be used for domestic flights. Hence, a certain competitive distortion arises between airlines able to acquire fuel abroad and airlines that do not have such opportunities. For the airline, there is an incentive to alter the utilisation of aircraft between domestic and international flights for the purpose of using tax-free fuel.

The effects will be present in all the Nordic countries, but to different degrees. In Denmark, the domestic market is small, consisting mainly of feeder routes. The problem is therefore probably of minor importance. In Norway, on the other hand, the problem might be of considerable importance since there are two taxes – both VAT and CO₂ tax – that are levied in the domestic market only. In Sweden and Finland, only the VAT applies.

In addition to the effects on competition, such acquisition of fuel has an environmental side. To the extent that aircraft carry more weight in order to take advantage of the cheaper fuel abroad, the CO₂ tax may be partially counterproductive. In 1999 the Institute of Transport Economics (TØI) calculated these effects, under a research contract for Braathens, and concluded that the VAT and CO₂ tax might lead to increased emissions of CO₂ in Norway.

5.1.5 Airport charges

Airport charges typically include passenger, take off, en route navigation, and terminal navigation charges. Apart from the En route Air Navigation Facility Charge, they are usually not directly cost based.

They are, in general, uniform across all airline carriers, and also, with few exceptions, uniform across all airports within a given country. This uniformity of charges implies, at least in Finland, Norway, and Sweden, that there is a system of cross-subsidisation between the airports.⁹⁶ The larger and more profitable airports

⁹⁶ In Sweden, this is limited to the airports owned by the Swedish Civil Aviation Administration (19 out of 44 airports). In Norway, there is one airport (Torp) not operated by the state. In Denmark, on the other hand, the principal airport – Kastrup – is privately owned and operated.

generate revenue that is used to support the smaller ones.

At first sight, the airport charging system thus appears to be competition neutral in relation to the carriers.

It is, on the other hand, not very susceptible to enhance competition or to ensure an economically efficient allocation of resources. One might ask whether a system of differentiated airport charges might be conducive to a more efficient use of airport capacity and to intensified competition. Charges may, e.g., be made to vary (i) over the day, (ii) between airports, (iii) in relation to the amount of services used by the carrier, or (iv) in relation to the fares paid by passengers.

Option (i) would make reasonably good sense in terms of resource allocation, being in line with the traditional economic solution to congestion problems, which is marginal cost (peak load) pricing. If arrivals and departures could be spread more evenly across the day, the amount of airport capacity needed and the unit cost of operation would decrease.

Option (ii) could be seen as an alternative to the present cross-subsidisation system, by which the same amount is charged for using a fully equipped international hub as for a very simple, regional airport facility. If charges were differentiated according to the level of services provided, chances are that smaller regional airports would become more commercially attractive to the airlines, especially to low-cost carriers. It is possible that the increase in traffic volume associated with such a development could more than offset the loss of cross-subsidies from the present airport revenue system.

Low-cost carriers tend to demand simpler and cheaper airport services, being independent of catering services, interline baggage handling, aircraft docking, etc. A system (iii) by which airlines pay according their actual use of facilities might contribute to the entry of low-cost carriers.

Alternative (iv) would also imply considerable advantages for low-cost carriers compared to

today's system, in which the airport charge bears no relationship to the fares paid by travellers. On account of this, it might stimulate competition. From the perspective of the airport authority, one disadvantage would be that the airport revenue would be less predictable, being dependent not only on the traffic volume, but also on the carriers' pricing policy. It may also be argued against such a scheme that it is generally not related to marginal costs and, on account of this, less susceptible to enhance efficiency.

5.2 External costs of aviation

In its Green Paper on transport pricing, the European Commission (1996) estimated the external environmental cost of aviation within the EU at €16.4 billion per annum, of which €12.4 billion relate to passenger transport and € 4 billion to freight. Air pollution and climate change account for an estimated €13.6 billion, while € 2.8 billion is the estimated noise annoyance cost.

Later estimates, by Maibach *et al.* (2000), are generally higher, amounting to € 29 billion per annum for passenger transport and to € 2.8 billion for freight.

As reckoned per air passenger kilometre, external environmental cost estimates range from € 0.0178 (European Commission 1996) to € 0.048 (Maibach *et al.* 2000). As applied to Norway, Eriksen *et al.* (1999) arrive at an estimate of NOK 0.21 per passenger kilometre, corresponding approximately to € 0.025.

In a market economy, external effects are normally not taken account of by decision makers, unless their costs have been «internalised», i.e. incorporated in the market price by means of a tax. External effects lead, in principle, to an inefficient (distorted) resource allocation. Put simply, the volume of a polluting activity becomes larger than desirable, unless the polluter is made to pay. Ideally, the polluter should be charged a tax that, on the margin, is exactly equal to the value of the external damage generated.

In this perspective, it would not seem unrea-

sonable if airline operations were subject to a modest fiscal tax, in addition to charges for their use of infrastructure. Assuming an average stage length of 728 kilometres (cf. SAS' figure in Table 2.3), an air passenger tax somewhere between € 13 and € 35 per departure, or an equivalent charge per litre of fuel, would be consistent with the range of environmental cost estimates produced by the European Commission (1996) and by Maibach *et al.* (2000), respectively.

As of today, airlines enjoy a considerable competitive advantage in relation, e.g., to road transport, in that they usually (except for domestic flights in Denmark and Norway) do not have to pay tax on their use of fossil fuel. Railways, on the other hand, may seem to enjoy an even more advantageous position, to the extent that they do not pay tax on their energy use. Even if railways running on electricity do not cause any direct emissions, the electricity used may have been produced by thermal plants. It would, at any rate, arguably have an environmental «opportunity cost» in terms of reduced emissions from such plants.

Adding to the economic distortion problem is the fact that aviation, along with most other modes of transport, is more or less exempt of VAT. This distorts the resource allocation in favour of transport activities in general, at the expense of most other lines of production and consumption.

Finally, congestion in the air corridors, and at the airports, gives rise to another important set of externalities, which, although they affect the air carriers and passengers themselves, are relevant to consider in an economic analysis of optimal airport charges, cf. option (i) above, on peak load (congestion) pricing.

5.3 State aid

5.3.1 *Direct and indirect subsidies*

In many European countries, national carriers have, up until recently, continued to receive substantial amounts of direct or indirect aid from the national government. Such transfers may destroy the level playing field between airlines and could therefore be harmful to competition.

Following the terror attacks in the United States on 11 September 2001, several governments – including in the US – have been granting direct and indirect financial aid. The airlines have been compensated for the four days of closed American airspace and have received temporary government assistance in relation to insurance coverage. The European Commission and the EFTA Surveillance Authority have accepted these actions and given the airlines temporary exemptions from the prohibition against state aid.

5.3.2 *PSO routes*

Apart from these extraordinary measures, the only direct state aid given to the Nordic aviation industry in recent years is linked to the so-called public service obligation (PSO) routes.

In most cases, these are thin routes serving fairly remote areas. Operating these routes is economically unprofitable, but politically desirable. Following public tendering, a time restricted, exclusive concession is given to the carrier willing to fulfil the service obligation for the smallest amount of subsidies. Thus, although there is no competition *in* the market, there is competition *for* the market.

As of May 2002, Sweden has one PSO route. Starting November 2002, 10 more PSO routes will be opened.

In Norway, there are approximately 40 PSO routes. Their number is, in fact, not given; instead there are certain *route areas* subject to competitive tenders.

Denmark and Finland have no PSO routes.

5.3.3 Public procurement

In most countries, the public administration is itself a major airline client. As such, the government may be able to negotiate favourable fare or rebate agreements for public servants travelling on business⁷. More favourable agreements are likely to be obtainable if the government grants the airline some kind of preference or exclusivity. In so doing, however, the government stifles the competition. In terms of competition policy, it would be preferable if governments used their negotiating power to enhance rivalry in general rather than to obtain privileged fares for their own servants. To the extent that this strategy contributes to price competition, even the public treasury will benefit, perhaps to an extent that more than outweighs the discounts currently obtained in public procurement deals.

To enhance competition, it might be recommended that the following principles be adhered to in public procurement agreements: (i) Public purchases should be tendered in small portions (e.g. route by route), so that small size companies may have a chance to bid. (ii) Preference clauses should admit that, notwithstanding the public purchase agreements, the government is always free to make use of a cheaper and/or higher quality service that may be offered by someone else. (iii) Fixed fares (over a certain time lapse) are preferable to percentage discounts off the nominal fare. This is so because percentage discount agreements tend to bid up the fare for all those clients who do not have a comparable agreement.

⁷ Public procurement should not be confused with public service obligation (PSO). In the latter case, the government accepts to pay a subsidy in order for the carrier to offer *all* travellers a certain level-of-service at a certain price. In the former case, the government negotiates a deal exclusively for *its own purchases*.

6. BUSINESS CONDITIONS AND STRATEGIES

In this chapter, we focus our discussion on the most important market conditions, strategies and competitive restrictions characterising the aviation industry.

Section 6.1 deals with frequent flyer programmes (FFPs), Section 6.2 with corporate discount schemes, and Section 6.3 with travel agent agreements. Corporate travel cards are discussed in Section 6.4 and computerised reservation systems in Section 6.5. In Section 6.6, we discuss the interlining cooperation and the IATA tariff consultations. Last, but not least, in Section 6.7 the topic is the scarcity of airport slots and the need for improvements to the slot allocation systems currently in use.

6.1 Frequent flyer programmes

Frequent flyer programmes (FFP) were introduced as a new marketing strategy by American Airlines in the early 1980's. Other US carriers were quick to follow suit. European airlines took up their example in the early 1990s. Today almost every major airline has its own programme or is connected to one.

6.1.1 General characteristics

Most FFPs have the following characteristics in common:

- Membership is free and open to any traveller.
- Members accumulate bonus points when making (certain types⁹⁸ of) trips or purchases with the airline carrier, with one of its alliance partners, or with other business associates, such as, e.g., a car rental company or a hotel chain.
- The number of points accumulated varies with the distance and with the fare class. Travellers on long distance flights collect more points than short-haul passengers. Business class passengers earn more points

than economy class travellers.

- When a certain amount of points is accumulated, they can be exchanged for free air tickets, hotel accommodation, service upgrades, etc.⁹⁹ Travellers who have accumulated large amounts of points receive various forms of preferential customer treatment.
- «Discounts» are, in other words, granted, not in the form of money, but in the form of free services. However, the service provided «for free» is not necessarily of the same type or quality as the one purchased. To most customers, bonus trips are available only on certain flights. Moreover, although the customer may have earned her frequent flyer points buying fully flexible tickets, the bonus tickets are generally inflexible from the time they are issued. A bonus trip is, in other words, in several respects different from an ordinary monetary rebate.
- To obtain free flights to more or less distant destinations, the customer needs to surpass certain thresholds in terms of travel purchases within a certain time period (say, five years). The closer the customer gets to a threshold, the stronger is her incentive to buy another flight from that particular airline or alliance. The programmes have, in other words, a non-linear (progressive) structure, conferring upon the customer an incentive to concentrate her purchases to one or a few providers.
- In all FFPs, membership is individual and personal. The points are awarded to the traveller and, as a rule, only the traveller and his or her closest family or travel companion can make use of them. In the case of business travel, the traveller tends to differ from the purchaser. This may give rise to a pronounced principal-agent problem, by which the traveller (agent) is faced with a quite different set of incentives from those of her employer (principal).
- Although in principle taxable in many coun-

⁹⁸ On some carriers, passengers collect bonus points on tickets within every fare class. Other carriers award points only on business class tickets or similar. Most carriers award more points on expensive ticket types than on the cheaper ones.

⁹⁹ Empirical evidence shows that 95 per cent of the points are used for free air tickets, while only 3 per cent are used for hotel accommodation and 1 per cent for car rentals.

tries, the private use of frequent flyer points earned by an employee is in practice rarely taxed, for lack of information on the part of the tax authorities. This tax loophole is likely to aggravate the principal-agent problem.

- FFPs become more attractive the more extensive a network can be offered for bonus point redemption. Alliance airlines therefore merge their FFPs for mutually enhanced competitiveness.

6.1.2 Economic welfare effects¹⁰⁰

Although such an interpretation is not obviously appropriate, a *frequent flyer programme* might be regarded as an example of second degree price discrimination (see Section 4.2 above). The consumers are rewarded for large purchases, and they receive a special kind of quantity discount. As noted above, however, a bonus trip is no ordinary rebate. It is more reasonably understood as a reward for loyalty.

In a situation with only one airline, and disregarding the principal-agent problem, Steen and Sørsgard (2002) show that the frequent flyer programmes have an ambiguous effect on the consumer surplus. In the first instance, it may lead to a higher willingness to pay and hence to a larger consumer surplus for a given price. But the airline's response may be to set a higher price, in order to exploit this higher willingness to pay. The extent to which price or quantity goes up will depend on the price elasticity of demand. Among relatively inelastic customers, such as business travellers, the price is likely to increase more than the quantity.

If one takes the principal-agent problem into account, it becomes overwhelmingly likely that the FFP will lead to distortions in decision making and hence in the resource allocation. In effect, the bonus programme drives a wedge in between the personal interest of the business traveller and the economic interest of her company. The two of them are facing different

prices or rewards. While the company may want to limit its travel costs, e.g. by replacing physical trips by other forms of communication, and by choosing – whenever travelling – the most inexpensive travel modes, routes, and carriers, the business traveller will have an interest in frequent travelling by her assigned FFP membership airline, preferably using expensive, business class tickets.

This is not to say that all business travellers will act disloyally to their employer, or that the fringe benefits accruing from an FFP membership may not be a deliberate part of the company's remuneration policy and in this sense implicitly internalised by the employer. But even in these cases, the tax subsidy connected to bonus point redemption is liable to distort decisions: benefits from FFPs become a cheaper way to compensate employees than the ordinary, taxable payroll. In theory, this should lead to an excess consumption of travel by air and to a certain welfare economic loss.

The actual loyalty effect of FFPs on Danish domestic (monopoly) routes has been analysed by Cowi Consult (1998). The analysis shows a price elasticity of demand of -1.05 among travellers not participating in a frequent flyer programme, but only -0.83 among FFPs members who are allowed by their employer to manage and use their own points. This suggests, roughly speaking¹⁰¹, that the airline is able to charge a 26 per cent¹⁰² higher price from these customers, without losing business, than they would have been able to without the FFP. For travellers whose FFP is controlled by the employer¹⁰³, a medium range elasticity of -0.93 is estimated by Cowi Consult (1998).

What happens under competition, i. e. if there is more than one active firm, or one active and at least one potential firm? In the literature, it is pointed out that frequent flyer programs are loyalty inducing.¹⁰⁴ The consumers are becoming loyal to one firm, so as to accumulate fre-

100 This subsection draws heavily on Steen and Sørsgard (2002), using parts of their text almost verbatim.

101 The difference could, alternatively, be explicable in terms of selectivity bias: it is entirely possible that more price elastic individuals choose to travel so rarely that they do not see the point of becoming FFP members.

102 $1.05/0.83 = 1.265$.

103 Some employers deny their employees the right to use bonus points for private purposes, in order to avoid the principal-agent distortion.

104 See, for example, Klemperer (1984, 1995) and Carns and Galbraith (1990).

quent flyer bonus with this particular firm. On the other hand, firms compete to attract new consumers that can become loyal. Although the net effect is ambiguous in theory, in his survey Klemperer (1995:536) concludes that loyalty programs are typically detrimental to welfare:

«While there are exceptions to these conclusions, they suggest a presumption that public policy should discourage activities that increase consumer switching costs (such as airlines' frequent flyer programs), and encourage activities that reduce them.»

The author concludes that frequent flyer programmes must be expected to have anti-competitive effects. In particular, there is reason to be aware of such effects in a setting with one (or a few) established firm(s) and a potential entrant. If incumbent carriers have been able to recruit a large part of the potential clientele into their frequent flyer programmes, a new entrant may find it exceedingly difficult to capture an economically viable market share.

Unfortunately, there are few *empirical* studies of the effect of frequent flyer programs. We shall be referring to the few studies that we are aware of.

Nako (1992) quantifies the effects of FFPs on the business travellers' choice of airlines, and finds it to be substantial. However, the effect varies between airlines. One important determinant is whether the airline is present in the traveller's hometown. The frequent flyer programme reinforces this relationship.

In a telephone interview survey undertaken for SAS by the Norwegian market research organization MMI Interactive (2001), SAS EuroBonus¹⁰⁵ members were asked how they would react to a ban on the frequent flyer programmes as practiced in the *domestic* Norwegian market. 42 per cent of the EuroBonus members interviewed answered that they would then probably prefer another airline than SAS on *international* flights. This

suggests that the loyalty effect of such a program is substantial. Furthermore, more than half of those who had completed a free bonus flight, answered that they would not have made the trip if they had had to pay for it. This suggests that the consumer surplus accruing from the bonus flights might be limited.

Proussaloglou and Koppelman (1995) model air carrier demand, identifying and measuring the relative importance of factors that influence air travel demand. They show, among other things, the importance of a carrier's frequency (number of flights) in a city pair market and the importance of a frequent flyer programme for a passenger's choice of airline. They demonstrate in the empirical part of their study the dramatic impact of frequent flyer programmes on carrier choice for individual flights. Furthermore, they found that these effects are particularly strong among the frequent business travellers.

The latter result is of interest. Most probably, it is explained by the non-linear (progressive) structure of the programme. As the traveller reaches certain threshold levels, she is entitled to some extra benefits from the frequent flyer programme. For example, a member of SAS EuroBonus is entitled to becoming a silver member after a certain number of points earned in one year, and entitled to becoming a gold member when she reaches an even higher threshold. At the highest level the member is entitled to extra service, for example highest priority if the flight is overbooked. Obviously, this means that each traveller has an incentive to concentrate her purchases to one carrier.

This kind of programme, where the accumulated purchase is of importance for the benefits derived, is described in textbooks as an optimal way to create loyalty among consumers (see Shapiro and Varian 1998). To economic welfare, however, such programs are detrimental. Loyal consumers would lead to less fierce price competition, higher prices, reduced output, and a non-negligible deadweight loss, i. e.

105 EuroBonus is SAS' frequent flyer programme.

a reduction in the consumer surplus not offset by a corresponding increase in the producer surplus.

In a situation with one incumbent carrier and one or more potential new entrants, the incumbent's frequent flyer programme would represent a powerful barrier to entry, increasing the probability that the market will remain monopolised.

FFPs enhance the customer loyalty by imposing an indirect *switching cost* on any change of airline or alliance. The phenomenon of switching cost is not uncommon. It is likely also to appear in the industry of mobile phones, when a person changes phone from one operator to another, or in the software industry, when a person changes from one computer operating system to another. The switching costs between airlines are somewhat different from the other types of switching costs, because they are *artificial*, caused by a deliberate marketing strategy rather than by a difference in the technical systems.

If there were no switching costs, the demand for one journey would be independent of the demand for other journeys. When there are switching costs, on the other hand, travellers care about the full range of products sold by each firm, in this instance the airlines' destinations and extra services. The switching costs will induce a person to use the same airline every time, or as often as possible. The demand for different flights in time and space is thereby linked together, and a situation of synthetic economies of scope on the demand side is created. The FFPs thereby favour airlines with a more extensive networks, because they are able to offer a bigger variety of departures and routes.

When FFPs are no longer innovations but something that every airline has or participates in, one might argue that the overall marketing

advantage for the airline will disappear. It will no longer be an efficient instrument to capture travellers from the other airlines. Yet no airline will unilaterally revoke the program, even if such an action would save costs, since it will mean a loss of that particular carrier's market shares, especially in the corporate segment. This is a situation well known from game theory, referred to as the «prisoner's dilemma». The flag carriers acknowledge that they have a common interest in keeping up the existing structure, which allows each of them a dominant position in their respective «home» market. This structure is effectively reinforced by the hub-and-spoke mode of operation. Together, the FFPs and the hub-and-spoke networks allow the major European airlines to divide large parts of the market between them.

6.1.3 Community case law

The European Court has dealt with loyalty rebates on a few occasions. In its ruling in the Hoffmann-La Roche¹⁰⁶ Case, the Court stated that if an undertaking which is in a dominant position in a market ties purchasers by an obligation to obtain all or most of their requirements exclusively from the said undertaking, it abuses its dominant position. Furthermore, the Court stated that

«obligations of this kind to obtain supplies exclusively from a particular undertaking [...] are incompatible with the objective of undistorted competition within the common market, because [...] they are not based on an economic transaction which justifies this burden or benefit but are designed to deprive the purchaser of or restrict his possible choices of sources of supply and to deny other producers access to the market»¹⁰⁷.

In the Michelin¹⁰⁸ Case, the concerned discount system was based on an annual reference period. This meant that discounts were granted according to quantities sold during a relatively

¹⁰⁶ Court Ruling in *Hoffmann-La Roche & Co. AG v Commission of the European Communities*, Judgement of the Court of 13 February 1979, Case 85/76, European Court Reports 1979 Page 461.

¹⁰⁷ Premise 90.

¹⁰⁸ Court Ruling in *Michelin v Commission of the European Communities*, Judgement of the Court of 9 November 1983, Case 322/81, European Court Reports 1983 Page 3461.

long period. In this case the variations in the discount rate over a year were then in fact based on the volume of the last order, as it affected the dealer's margin of profit on the whole year's sale. If a competitor then wished to offer the dealer a competitive offer, especially at the end of the year, he had to take into account the absolute value of Michelin's annual target discount. The Court concluded that binding the dealers in that way was an abuse of dominant position.

As there are no obligations to use only one FFP to collect points or obtain membership advantages, FFPs do not formally presuppose exclusivity in the same way as the fidelity rebates in the Hoffmann-La Roche Case. The effect of the FFPs is more similar to the target rebate system in the Michelin Case.

So far, no case concerning airline FFPs has been tried by the European Court. To use the case law from the Michelin Case, one would have to claim that the concerned airline holds a dominant position in the relevant market.

In 1992, the European Commission's Competition Directorate, DG IV, carried out an informal study of FFPs. The study was based on information collected from all larger European airlines. The result of the study was that FFPs as such could not be considered to be anti-competitive, but in cases of alliances or mergers, FFPs might constitute barriers to entry.

The European Commission has dealt with FFPs in four cases concerning cooperation between airline companies (cooperation in alliance programmes)¹⁰⁹. As part of the alliance agreements, the airline companies allowed the alliance partner's clients to collect and use accumulated points in each other's FFPs. In SAS/Lufthansa, the Commission stated that the cooperation between the two companies on FFPs was likely to be a not inconsiderable barrier to market entry, and therefore a breach of

Article 81(1). The Commission's condition for approval under Article 81(3) was that any other airline which provided or wished to provide services on the routes in question, and which did not have a FFP applicable at the international level, should be afforded the opportunity of participating in the programme.

6.1.4 Denmark

By paragraph 11 in the Danish Competition Act, abuse of a dominant position by one or more undertakings on the market is prohibited. Such abuse may, in particular, consist in:

- directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions,
- limiting production, markets, or technical development to the prejudice of consumers,
- applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage, or
- making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations, which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

For the prohibition to be applicable, an undertaking is required to have not only a dominant position on the market, but also be abusing its position. A dominant position means that an undertaking has a strong economic position, making it possible for the undertaking in question to prevent effective competition by acting independently of its competitors and customers and ultimately of consumers.

As a rule, a dominant position is based on a number of factors, each of which in itself does not necessarily have to be critical. Examples of factors that are important are financial strength, barriers to entry into the market, access to capital goods, patents, and industrial property rights, as well as technology and other knowledge-oriented advantages. An important factor

¹⁰⁹ Commission Decision of 16 January 1996 in *SAS/Lufthansa*, OJ L 54 5.3.1996 p 28, Commission Decision of 13 September 1991 in *Delta/Pan Am*, OJ C 289 17.11.1991, Commission Decision of 11 December 1992 in *British Airways/TAT*, OJ C 326 11.12.1992, and Commission Decision of 5 October 1992 in *Air France/Sabena*, OJ C 272 21.10.1992.

is the market share of the undertaking in the relevant market. In air transport cases, the Danish Competition Authority define the relevant market by a city-to-city principle in accordance with Community Practice for example in the SAS/Maersk case.¹¹⁰ A market share of between 40 and 50 percent is regarded as being a clear indication of a dominant position. If the market share exceeds 50 percent, the presumption of a dominant position is virtually conclusive.

According to paragraph 6 in the Danish Competition Act, any conclusion of agreements between undertakings etc. that have as their direct or indirect object or effect the restriction of competition, shall be prohibited. Such agreements may, for instance

- fix purchase or selling prices or any other trading conditions,
- limit or control production, markets, technical development, or investment,
- share markets or sources of supply,
- apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage, or
- make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations that, by their nature or according to commercial usage, have no connection with the subject of such contracts.

The paragraph is only applicable to agreements between companies. As a FFP in itself is not such an agreement, the prohibition against anti-competitive agreements does not apply to FFPs as such. But if two companies make an agreement, for example on use of each other's FFPs, paragraph 6 in the Danish Competition Act does apply.

The Danish Competition Authorities have dealt with FFPs regarding paragraph 6 on anti-competitive agreements between companies. In a notification case concerning a cooperation agreement between two airlines (SAS and

Cimber Air), the Competition Council adapted the viewpoint of the Commission in the SAS/Lufthansa case; i.e. the agreement was granted exemption under the Danish Competition Act on the condition that competitors should be allowed to participate in SAS' FFP under non-discriminatory terms. The agreement is only granted exemption until October 2003. Subsequently, the Competition Authorities will have to consider the case again.

The use of FFPs may constitute an infringement of paragraph 11 in the Danish Competition Act on abuse of dominant position since it has a significant loyalty inducing effect and makes it more difficult for other airlines to start or maintain competing domestic air services. The Danish Competition Council is examining whether the construction and administration of FFPs on Danish domestic routes constitutes an abuse of dominant position.

6.1.5 Sweden

Swedish Law concerning abuse of dominant position is very similar to that of Denmark (cf. Subsection 6.1.4 above)

The SAS's EuroBonus scheme has been deemed to constitute an infringement of the Swedish Competition Act, since it has a significant loyalty inducing effect and makes it more difficult for other airlines to start or maintain competing domestic air services.

The Competition Authority, in a decision in November 1999, had ordered the Scandinavian Airlines System (SAS), on penalty of a fine of SEK 100 million, not to apply its EuroBonus loyalty scheme or take part in schemes of a similar nature, in such a way that passengers earning points were able to redeem them as bonus awards or the equivalent when using domestic air services. The practice was deemed to be an abuse of SAS's dominant position in breach of Section 19 of the Competition Act.

¹¹⁰ Commission Decision of 18 July 2001 in cases COMP.D.2 37.444 (*SAS/Maersk Air*) and COMP.D.2 37.386 (*Sun-Air v. SAS and Maersk Air*), OJ 2001 L 265/15.

SAS appealed to the Market Court and requested that it reverse the decision in the first instance or, alternatively, modify the injunction so that it would not enter into force until eight months after the date on which the Court announced its decision. Further, SAS asked that the penalty sum be reduced to an equitable level.

SAS argued that the practice did not infringe the Competition Act, and that in any event the Competition Authority's determination of the relevant market was incorrect and thus incompatible with EC case law. Further, the Competition Authority's injunction contravened the principle of priority for Community law over national law.

In its ruling of 27 February 2001 (Market Court 2001:4), the Swedish Market Court, which is the court of appeal in competition matters, only altered the decision from the Swedish Competition Authority inasmuch as SAS was ordered, on penalty of a fine of SEK 50 million, not to apply, as of 27 October 2001, its EuroBonus scheme, or participate in schemes of a similar nature, in such a way as to enable passengers earning points to redeem them as bonus awards or the equivalent. The ruling applies to domestic air travel in Sweden between cities where SAS, or airlines cooperating with SAS on the scheme, encounter competition through existing or newly established scheduled air passenger traffic. At the moment this concerns seven routes. The decision was based on the Swedish Rule on abuse of dominant position. The initiative will hopefully help reducing the barriers to entry for other airlines and thereby increase the overall level of competition.

The Court defined the relevant market as domestic scheduled air passenger traffic. The uniform application of Community law was not considered to be jeopardised by such a market definition, nor was it felt that this definition infringed upon Community law in any other respect. In the market thus determined, the SAS was considered to have a dominant position.

The Court then considered the question of

whether the practice constituted an abuse of the SAS's dominant position. According to the Court, a bonus scheme undoubtedly has a loyalty inducing effect. The allegiance to SAS and its partners promoted by the EuroBonus restricts the possibilities of companies outside the scheme to attract passengers. It also makes it more difficult for new entrants to become established in the domestic Swedish aviation market.

The Court continued: As a result of its previous monopoly in this area, SAS has a strong position on the market. The basic structural conditions therefore lead to a market situation in which competition per se is limited. The EuroBonus scheme applied by SAS, with its significant loyalty inducing and entry impeding effects, is placing further obstacles in the way of proper maintenance and development of existing competition in the market. Under these circumstances, SAS's application of the EuroBonus scheme cannot be considered an acceptable competitive practice.

Hence, SAS's application of the EuroBonus programme in the domestic Swedish aviation market was to be considered an abuse of the company's dominant position.

With regard to SAS's alternative claim, the Court expressed the following opinion: Competitive conditions in the domestic Swedish aviation market are limited. Competing traffic is only deemed possible at the present time on a limited number of routes. Under these circumstances, an order not to apply or assist in the application of the EuroBonus scheme should be restricted to traffic between points where SAS, or an SAS partner involved in the scheme, encounters competition through existing or newly established scheduled air passenger traffic. Traffic to cities with one or more airports, such as Arlanda and Bromma in Stockholm, is to be regarded as traffic to one and the same destination. A penalty sum of SEK 50 million was deemed adequate.

In reaching its decision, the Market Court attached considerable importance to the structural state of the market for Swedish domestic air travel and the lack of adequate competitive

conditions there. In such a situation, the application of a practice that has a significant loyalty inducing effect is not an acceptable means of competition. Conditions in other markets and SAS alliance agreements with foreign airlines did not alter this assessment. Nor were Swedish national restrictions on the EuroBonus scheme incompatible with Community Law.

The decision applies to all domestic air services where the EuroBonus scheme is applied by SAS and its partners. SAS may not assist in the application of other airlines' loyalty schemes to services provided by SAS or its partners. The injunction entered into force eight months after the decision of the Court and is applied immediately as and where competition arises. The court's ruling that the practice in question constitutes an abuse of SAS's dominant position would, however, appear to apply immediately.

6.1.6 Norway

As shown in Chapter 3 above, the Norwegian competition legislation remains, as of May 2002, in important respects different from Community case law, and hence also from Danish, Finnish, and Swedish Law.

Being based on an intervention principle rather than on a prohibition principle, Norwegian Law does not in general require proof that an act of conduct constitutes abuse of dominant position, in order for the Norwegian Competition Authority (NCA) to be able to intervene against the practice. As noted in Subsection 3.4.3, it is sufficient for the NCA to show that an action is *liable* to restrict competition, contrary to the purpose of efficient resource utilisation.

On 18 March 2000, the Norwegian Competition Authority decided to disallow the SAS air carrier group to award frequent flyer points on any domestic Norwegian routes.

The prohibition was issued pursuant to Section 3-10 of the Norwegian Competition Act. The SAS Group filed a complaint with the Norwegian Ministry of Labour and Government Administration – the instance of appeal foreseen by the Competition Act. On

June 7 2002, however, the Ministry turned down the complaint. The prohibition thus becomes effective on 1 August 2002.

The SAS Group will still be allowed to award frequent flyer points on international trips and to offer their customers any kind of services, including bonus trips inside Norway, in redemption of frequent flyer points already earned.

After the SAS-Braathens merger in December 2001, the SAS Group has an approximate 98 per cent market share in domestic Norwegian aviation. The NCA views the present intervention as an essential step towards reopening the Norwegian market for competition. In view of the country's relatively large aviation market, the NCA believes that there is ample room for competition on numerous domestic routes, once an important barrier to entry has been removed. Operations based on smaller aircraft might turn out profitable even on the less dense routes.

Unlike the situation in Sweden, the prohibition in Norway applies on *all* domestic routes, competitive or not. The NCA considers that such an all-out ban may be necessary in order to dismantle the barriers to entry and reopen the market for competition. Although the relevant market consists of a single city pair, a ban affecting only certain routes would, on account of the important network economic effects at play (cf. Section 4.1), still mean that the dominant network airline would retain an important competitive advantage, even on the routes affected by a bonus collection ban.

Moreover, a ban affecting only certain selected routes, and this contingent upon the entry of some second carrier, might not convey a sufficiently unequivocal and transparent message to both sides of the market – travellers and potential new entrants.

The SAS Group has expressed concern that a unilateral restriction on their FFP would put the carrier at a substantial competitive disadvantage in the international market. The NCA has paid careful attention to this argument, but finds it exaggerated. In the opinion of the

NCA, whether or not the SAS Group would lose international competitiveness depends largely on the company's own business strategy. Of particular importance would be whether and how the company chooses to reallocate the domestic frequent flyer points now «saved» to its international routes. Among Norwegian customers, more than half the EuroBonus points are earned on domestic routes. Thus, by reallocating «vacant» domestic points to their international flights to or from Norway, the SAS Group would, in principle, be able to more than double their assignment of frequent flyer points on these routes, thus enhancing the carrier's competitiveness in these city pairs. Although competing airlines might then choose to respond by similarly boosting their bonus point assignment, they cannot, like SAS, do this without incurring extra costs.

Even if the SAS Group were to face intensified international competition, the NCA has expressed that it fails to see this as a valid argument against the prohibition. Enhanced competition on routes to and from Norway would benefit consumers and the economy in general.

6.1.7 Finland

The Act on Competition Restrictions prohibits abuse of a dominant position by an undertaking or association of undertakings. Article 7 of the Act lists examples of abusive and hence prohibited practices which include:

- refraining from a business relationship without a justified cause,
- use of business terms which are not based on fair trade practices and which restrict the freedom of action of the client (e.g. tying),
- use of exclusive selling or purchasing agreements without a justified cause,
- application of a pricing practice which is unreasonable or which is likely to restrict competition (excessive, predatory, and discriminatory pricing practices) and
- use of a dominant market position to restrict competition in the production or marketing of other commodities (e.g. cross-subsidisation).

In the Finnish scheduled domestic air traffic, the only operators as of May 2002 are Finnair and

its cooperating partner Golden Air. Even before Air Botnia's decision to shut down the domestic operations, the situation on the domestic market was different compared to e.g. Sweden, in that all passengers travelling on scheduled domestic routes had the possibility to collect points either with Finnair or with SAS.

Even though the Finnish legislation would in principle allow for an intervention of the same character as the Swedish Market Court's Ruling – where SAS' application of the EuroBonus-programme was prohibited on domestic routes with competition – such a solution would not be possible in view of the current market situation.

As of May 2002, the Finnish Competition Authority is considering the impact of FFPs, as part of a larger survey on the Finnish aviation markets.

6.2 Corporate discount schemes

Airlines conclude discount agreements on air travel services with their major customers, such as corporations and the public sector.

Usually, the agreements are not very binding for the customer. They typically contain a mention that the customers seek to concentrate their air travel purchases to the airline in question, or that the customer promises the carrier a so-called preferred airline status in its internal communication.

The agreements contain provisions on the acquisition and use of flight tickets and the agreed discounts. The conditions may, e.g., prescribe that the tickets must be obtained from the country affected by the agreement, and impose limits on the use of discount tickets and on the changes made to reservations.

Discounts are typically given on the total amount of purchases made during the agreement period and on tickets obtained for separately agreed routes. The term *negotiated fares* is used for route and customer specific prices.

Target sums are set in the agreements for discounts granted from the total amount of pur-

chases, usually containing one to three steps. When the customer has reached a certain step, the airline commits itself to paying a compensation, defined as a percentage off the value of purchases. Such payments are usually effectuated every 3, 6, or 12 months.

The content of the corporate discount schemes differs between customers, in terms of the conditions laid down as well as with respect to the size and form of the discount.

Negotiated prices are usually considerably lower than the prices published by the airlines. Discounts of 30 to 50 per cent are common on business class tickets. Further discounts may be granted to corporate customers at the time of purchase.

Exact terms of agreement are defined in negotiations between the client managers of airlines and the clients themselves. When terms and discounts are defined, factors such as changes in the companies' travel needs and the general market development are considered. Terms and discounts are affected primarily by the development of corporate purchases during the previous agreement period and by expected developments during the impending period.

6.2.1 Market effects

Corporate accounts are valuable to airlines. However, during 2000, airlines appear to have lost customers from business classes, partly on account of reduced travelling, but also because corporate customers have begun to use the economy class tickets.

Large companies have considerable buying power in relation to the airlines, as shown e.g. in the difference between negotiated and published prices. Put simply, the most solvent customers receive the best terms of trade and the largest discounts.

Due to the large volumes of corporate purchases and the considerable benefits granted to them, corporate discount schemes have a major effect on market equilibrium and competition.

Corporate customer schemes have been found to have clear effects on the general (published) price level in regular service. Steen and Sjørgard (2001) examine the partial correlation between listed prices and corporate discount on four domestic Norwegian routes. One of the routes was a monopoly, the other three being duopolies.

Between 1998 and 2000 three kinds of developments could be observed: (i) The amount of corporate customers had increased on all four routes. (ii) The level of the lowest negotiated fares had fallen. (iii) The published C-class (business class) prices had increased.

Other things being equal¹¹¹, the published prices were higher on duopoly routes than on monopoly routes.

This finding could probably be explained by the effects of corporate discount schemes. Under monopoly, the airline customers have a poor bargaining position, resulting in small corporate discounts. Under duopoly, however, there is rivalry for the corporate clients, resulting in large discounts. To compensate for this loss of revenue, and/or to dampen the effect of a given nominal rebate off a listed price, airlines are led to increase their published fares. The larger the number of corporate discount agreements concluded on certain routes, and the larger the discounts granted to companies, the stronger is the pressure on airlines to raise their listed prices.

As noted in Subsection 4.2.2, the use of corporate discount schemes may represent important barriers to entry. Potential new entrants might be deterred by the fact that the incumbent air-

111 The authors run a regression model controlling for: distance (kms), aircraft kms, airborne hours, fuel cost per seat km, passenger tax per seat km, wage costs per seat km, population in city pair, employment in city pair, tax revenue in city pair, and the consumer price index.

line is prepared to offer large, selective discounts to the most solvent and attractive clients.

Although corporate discount schemes amount, in essence, to a set of quantity rebates, many of them do have tying effects. Agreements are usually concluded for one year at a time, the terms being affected by the volume of purchases effectuated the previous year. Often, the structure of the agreement or the development of negotiations provide the companies with an incentive to concentrate as many of their flights as possible to one single airline.

The tying effects of corporate discount schemes are alleviated when corporate clients conclude agreements with more than one airline or alliance. Even though it might be cost saving to concentrate purchases to one carrier, travel costs are not typically a decisive cost item for companies. Other considerations may make it rational for companies to spread their purchases between several aviation concerns.

6.2.2 Community case law

The discount schemes of dominant companies are assessed more strictly than the discounts of companies operating in a competitive market. With respect to dominant companies, both loyalty and target rebates are forbidden under the European competition laws, due to their tying and harmful effects. This principle was established in the rulings of the European Court in the Hoffmann-La Roche and Michelin cases¹¹².

Even dominant companies are allowed to use volume discounts. However, the use of these requires that the discount systems be fair and transparent and treat similar customers in a similar way. If a company uses differing models of agreements, it must have justifiable criteria for offering a certain type of agreement to a certain customer. If discounts of different sizes are granted to different customers, they

must be based on the amount of purchases effectuated. In the Virgin-British Airways decision, the European Commission¹¹³ referred to previous decisions in the Hoffmann-La Roche and Michelin cases and found it to be applicable in evaluating the loyalty creating effects of the travel agent agreements used by British Airways at the time:

«The Hoffmann-La Roche and Michelin cases establish a general principle that a dominant supplier can give discounts that relate to efficiencies, for example discounts for large orders that allow the supplier to produce large batches of product, but cannot give discounts or incentives to encourage loyalty, that is for avoiding purchases from a competitor of the dominant supplier. They also establish that the two discount schemes that gave rise to the cases were of that type and abusive. The commission schemes operated by BA are in breach of this general principle and are very close in form to that condemned by the Court in the Michelin case. Although it is true, as BA argues, that cases must be read in context and that Michelin should be considered «in the context of Roche» this cannot mean that a commission scheme that shows all the same features that the Court found determinative in Michelin must also show the features of the scheme condemned in Hoffmann-La Roche to be considered abusive. The two cases taken together establish that a dominant company can only give rebates in return for efficiencies realised and not in return for loyalty, and establish that the two particular discount schemes concerned are of the type that rewards loyalty rather than efficiencies.»

It would not seem unreasonable to adopt the same principles in relation to corporate discount schemes as well. Some of these agreements are constructed in such a way as to allow one customer to receive bigger rebates for smaller purchases than another customer

112 See Subsection 6.

113 Commission Decision of 14 July 1999 in *Virgin/British Airways*, OJ L 030, 4.2. 2000 p. 1-24

for purchases of larger volume. This kind of asymmetry and non-linearity could be considered abuse of dominant position.

6.3 Travel agent agreements

Traditionally, airlines have used travel agencies as a distribution channel for selling flight tickets. The cooperation is based on agreements between airlines and travel agencies, the latter usually acting as agents for the former. This means that the flight tickets are the property of the airline, and the airlines can, among other things, determine their retail price. Airline companies pay travel agencies a commission on the issuance of the tickets. The amount of the commission varies according to the type of ticket involved; for example, the commissions payable on domestic and international tickets are different.

In addition, airlines include other incentive schemes in the agreements. For example, an airline may provide training for the travel agency staff and pay a compensation for it based on a percentage of the total sales during the contract period, or the airline can carry out a marketing campaign, or similar, together with the travel agency, for which it receives a commission. In the interest of efficient competition, the overriding issue is the additional bonuses on ticket sales.

As a rule, the agreements are made for one year at a time. Under the agreements, travel agencies are paid an additional bonus based on a percentage of total sales during the contract period. The basis for determining the additional bonus is agreed for 6 months at a time. Often, the bonus systems for ticket sales are devised in the same way as corporate discount schemes. Commissions are based on thresholds for ticket sales defined in the agreements. Such thresholds may be either monetary amounts or index values. The indices are formulated by assigning a value of 100 to the actual sales at the corresponding time in the preceding year. A certain additional bonus is paid when a threshold is exceeded. Typically, the additional bonuses amount to a few per cent:

<u>Sales result (e.g. business class)</u>	<u>Bonus</u>
105	1.5 %
110	2.0 %
115	3.0 %
Last year = 100	

Usually, both the sales targets and the amount of bonus paid vary according to the type of ticket involved and whether the travel agency's customer has a corporate agreement with the airline.

The agreements may also specify a certain bonus on electronic tickets sold through the agencies, or that a bonus is paid on sales that generate Frequent Flyer Programme (FFP) points for customers.

6.3.1 Effects on agency behaviour

Bonuses linked to total sales may give rise to effects between airlines and travel agencies similar to those created by FFPs between airlines and customers. Benefits related to «economies of scope» are created for travel agencies when arrangements are made to make the sales efforts on behalf of a single airline profitable. If the agreement specifies, as a criterion for any additional bonus, that the sales of the airline's products must reach a certain percentage of the travel agency's total sales, the agency has an ever greater incentive to focus on selling tickets for a certain airline, in contrast to a situation where a bonus is only paid for the volumes sold. If the airline's market share is included in the bonus agreement, the travel agency will lose the bonus payable by such an airline if it increases sales for competing airlines.

The additional bonuses can constitute a significant part of the profits earned by travel agencies. Over the past few years, their importance for agencies that receive these bonuses has probably increased as airlines reduced their ticket commissions during 1997-1998, at least in Scandinavia. Even though the bonuses are usually of the magnitude 1 to 3 per cent of the sales, their effect on agency behaviour can be quite significant because the bonuses do not require any incremental expenditure. Thus the

bonuses can provide quite a strong incentive for an agency to concentrate efforts on the sales of a certain carrier.

The impact of these agreements on the operation of travel agencies depends largely on the structure of the air travel market. If a company enjoys a dominant position in the air transport market and in relation to travel agencies, the agreements may greatly influence the behaviour of individual travel agencies and, consequently, competition in the air transport market.

6.3.2 Effects on the market

The travel agency agreements create the framework for a principal-agent relationship between the airline companies and the travel agencies. At the same time, airlines use the agreements to secure their position in the air transport market. Specifically for this purpose, the agreements offer additional bonuses for the attainment of predefined sales targets. By paying compensation and bonuses for sales and other performances, the airlines seek to make the concentration of sales efforts on their products profitable for the travel agencies.

If there is adequate competition between the various airline companies, these types of agreements can be regarded as acceptable competitive tools. However, if the market is dominated by a single airline, the agreements may have a number of negative effects.

The more the agreements favour the concentration of ticket sales on a single airline company, and the more dependent the travel agencies are on such a company, the more effectively the agreements prevent entry into the market.

Because airline companies are vertically integrated into the travel agency market, bonus agreements are one potential way of favouring the airline's own travel agencies. By awarding more favourable terms to their own agencies, the airlines can improve their relative competitive position.

Although travel agencies compete with one another, and the customer can ask for quotations from several agencies, proper preconditions for competition do not exist if, for example, all the travel agencies in a national market are dependent on an airline company that enjoys a dominant market position.

Usually the airline companies do not pay bonuses to all travel agencies. It is predictable that bonus agreements will be made with the biggest travel agencies, and that smaller players only receive commission for writing tickets. In this way, the effect of bonus agreements can become rather significant, depending on the level of concentration in the air transport and travel agency markets.

Usually the established carriers (flag carriers) are vertically integrated to the travel agency market as well. For instance, in Finland in 2001, the five biggest travel agencies were responsible for 91 per cent of the business travel sales and for 85 – 90 per cent of all the IATA-tickets. Two agencies out of these five are subsidiaries of Finnair, the flag carrier.

6.3.3 The Virgin/British Airways decision of the EU Commission

In 1993 Virgin Atlantic Airways Limited (Virgin) lodged a complaint to the Commission of the European Union against British Airways plc (BA) and its new scheme on travel agent bonuses. The idea of BA's new scheme was to reward larger travel agents for increasing their sales of BA tickets. In 1998 Virgin made a supplementary complaint when BA reduced the standard rate of commission to 7 per cent of all sales and at the same time introduced yet another bonus scheme, this time for all the travel agents.

The schemes were constructed so that the agents would receive an increased commission for the tickets sold if they were able to achieve targets set out in their agreements with BA. The targets were expressed as percentages of the agent's sales of BA tickets the previous year.

In 1999 the Commission made a decision¹¹⁴ in the case, where it found the BA schemes to be in breach of Article 82. The Commission stated in its decision that BA was the dominant purchaser in the UK market for air travel agency services. This dominance was the result of BA's position in the UK air travel market. It offered significantly more routes to and from the United Kingdom than any other airline, accounting, in 1998, for 39.7 per cent of UK sales of air travel through the travel agent settlement scheme operated by IATA. This share was a multiple of the share of any other airline. The Commission also mentioned BA's proportion of slots at relevant airports. For instance, in the winter of 1998 BA held 38 per cent of the slots at Heathrow while the nearest competitor held only 14 per cent. As a result the Commission held that BA was «an obligatory business partner for travel agents».

Thus BA's schemes were considered illegal, since they were in fact loyalty discounts. These discounts were aimed at creating extra incentives for the travel agents to concentrate their efforts on increasing the sales of the BA tickets. As a consequence the schemes were foreclosing the market from the dominant firm's competitors.

As the market for travel agency services was defined by the Commission as national, the findings of this decision are relevant for all the European countries with potentially dominant flag carriers.

The Commission issued a set of principles that should be applied by dominant airline carriers to travel agency agreements after the Virgin/British Airways decision. The principles read as follows:

1. Commissions offered to different travel agents are differentiated to the extent that the differences reflect

- 1.1 Variations in the cost of distribution through different travel agents; or
- 1.2 Variations in the value of services provided to the carrier¹¹⁵ by different travel agents in the distribution of its tickets.
2. Commissions increase at a rate, which reflects:
 - 2.1 Savings in the carrier's distribution costs; or
 - 2.2 An increase in the value of services provided by the travel agent to the carrier in distribution of its tickets.
3. Commissions relate to sales made by the travel agent in a period not exceeding six months.
4. Commissions do not have targets that are expressed by reference to the sales made by the travel agent in the preceding period.
5. Commissions increase on a straight-line basis above any base line stated in the agreement.
6. The commission paid on any ticket does not include any increase in the commissions paid on all other tickets of the carrier issued by the travel agent.
7. Travel agents are free to sell the tickets of any other airline and the goods or services supplied by any third party.

Airline companies in a dominant position in relation to travel agencies should apply these criteria in the drafting of travel agent agreements of different types and sizes. In their current form, the existing agreements are heterogeneous and prepared specifically for each individual company. It is probable that some airline companies in a dominant market position still entertain agreements that do not satisfy the criteria described above. Competition authorities may want to carefully analyse – in case they have not already done so – the travel agent agreements used by dominant carriers, requiring changes in these agreements to the extent necessary for compatibility with the principles laid down in the Virgin/BA case.

114 Commission decision of 14 July 1999 (2000/74/EC)

115 The principles issued by the Commission used British Airways as an example. Here the company's name has been replaced with «carrier».

6.4 Corporate cards and related discounts

Airlines have devised cards that allow corporate staff to travel without a flight ticket by alternatively presenting the card; this is mainly to facilitate business travel. Also, airlines have cards that can be pre-loaded with a certain number of trips or an unlimited number of trips for a predefined period of time for a particular route. When these cards are used, no conventional paper ticket is required.

6.4.1 Electronic ticketing and travel passes

SAS has launched a corporate card called Travel Pass Corporate (TPC) for ticketless travel, and a card for pre-loading several trips called Travel Pass. In addition, SAS offers an electronic ticket (e-ticket) for ordinary customers to replace the conventional paper ticket. Finnair has a corresponding e-ticket for ticketless travel and the MultiFLYe card for pre-loading.

SAS's TPC is non-transferable between users and can be used on flights between Finland and other Scandinavian countries, and a number of destinations in mainland Europe, Asia, and the USA. The prices are based on the lowest business class rates on which a certain discount is granted. In addition, the corporate customer will receive a bonus afterwards if they make the reservation themselves on the Internet or through the automatic telephone service. There is no minimum purchase requirement and the tickets are paid for in arrears. Finnair does not offer a similar card.

SAS's Travel Pass is available for domestic travel in Denmark, Norway, and Sweden, on routes between the Nordic Countries, or between Scandinavia/Finland and selected European destinations. The Travel Pass is also available for travel from the United Kingdom to selected European destinations.

A Travel Pass is either Limited or Unlimited. An Unlimited Travel Pass is valid for as many trips as a customer likes on a specific route or within a particular zone or country for a period of, e.g., 6 or 12 months, depending on the

country and the destination. A Limited Travel Pass is valid for a fixed number of trips on a specific route or particular zone, 12 months from the date of purchase. The customer may buy, e.g., 10, 20, or 40 trips at a time. The ticket is non-transferable between users and the level of discount increases with the number of trips purchased.

Finnair's MultiFLYe is intended for business travel between two localities on all Finnair and Golden Air routes in Finland and on selected international Finnair routes (to Sweden, Norway, Denmark, and Estonia). A certain number of one-way trips on a specific route are preloaded onto the card. Seats can be booked through the Internet or WAP services.

The price reduction offered by the card is 10 or 12.5 per cent depending on the number of trips booked and the destination involved. The customer signs a billing agreement with Finnair, who provides a password and the MultiFLYe cards. The minimum order is 20 one-way flights that are valid for 6 months. The trips are not user-limited but can be used by all of the company employees identified in the agreement.

The MultiFLYe card gives the following discounts: 10 per cent on 20 to 40 domestic flights and 12.5 per cent on a minimum of 50 flights. On international flights, the discount is 10 per cent of the standard rate for a one-way business ticket for 20 to 90 trips and 12.5 per cent for a minimum of 100 trips.

Finnair's or SAS's e-Ticket does not, as such, offer the holder any discounts.

6.4.2 Effects on competition

Ticketless systems simplify business travel for corporations. By encouraging companies to use electronic cards, the airlines are able to save costs related to reservations, issuance of tickets, and check-in. By compensating customers for booking seats, and by the other benefits offered to airlines by ticketless travel, in the form of discounts, the carriers make the system more attractive to customers.

Corporate cards are one method employed by airlines to reward customers for concentrating their travel purchases, and so their impact on competition does not differ from the impact of other corporate discounts. The volume discount offered to customers encourages them to maximise the reduction in price and to buy the required number of tickets from one and the same airline. As a result, a company with frequent fliers has valid reasons for acquiring a corporate card. The number of trips purchased may be somewhat limited by the fact that the bookings are only valid for 6 to 12 months. Consequently, companies probably buy fewer trips on the cards than they actually fly, reloading it when more trips are needed. Because the discount percentage is determined by the number of trips purchased at any one time, the greater discount percentage may be out of reach for smaller companies.

From the point of competition and economic efficiency, the acceptability of rebate schemes may depend on whether they are linked to corresponding cost savings.

A corporate card facilitates corporate travel administration and offers savings both to the companies and the airlines. Compared with conventional travelling with a paper ticket, the difference is that a company buys a certain number of seats in advance without necessarily knowing exactly when they will be used. This rebate can be regarded as a volume discount granted for a purchase of a certain size. By using the corporate card, it is possible to bypass one intermediary, i. e. the travel agency, between the customer and the airline. If the customer, for instance, books the flight on the Internet, the amount of work required on the part of the airline is reduced even further. Therefore, it is safe to assume that certain savings are made. On the other hand, the volumes involved when making one-off purchases are much lower than in the case of traditional annual agreements. Presumably, the discounts granted are also lower. On the face of it, discounts granted to holders of corporate cards appear more justified than discounts based on contracts. However, the acceptable amount of the discount must be determined as explained above.

Ticketless air travel is growing relative to conventional travel with paper tickets. For example, SAS is determined to increase the volume of ticketless travel considerably. Such a change may have far-reaching implications for travel agencies and their profitability. In turn, this may lead to accelerating centralisation. To the extent that bypassing one intermediary in the supply chain improves efficiency and reduces production costs, the implications for customers may be beneficial despite increasing concentration.

To the extent, however, that e-ticketing is not based on open standards, but requires the traveller to hold an electronic card specific to a particular carrier or alliance, such a ticketing system may be liable to restrict competition between airlines. This is particularly so if e-ticketing is integrated with the airline's frequent flyer programme, by making use, e. g., of the FFP membership card.

6.5 Computerised reservation systems

The Council has adopted a Regulation (2299/89) on a code of conduct for computerised reservation systems (CRS). According to the regulation, CRS shall mean a computerised system containing information about, *inter alia*, air carriers' schedules, availability, fares and related services with or without facilities through which reservations can be made or tickets may be issued, to the extent that some or all of these services are made available to subscribers. The Regulation states that the CRSs, when properly used, may provide an important and useful service. To ensure this, the Regulation includes a number of provisions related to fair and non-discriminatory service, the accuracy and transparency of the information supplied to the system and unfair contract terms.

CRSs provide services to both travel vendors and subscribing agencies. Most of the CRSs are owned by airlines. The major CRSs are comprised of a core facility, a holding company, which provides its functionality, and national marketing companies, which distribute and support the CRS services in national or regional markets. For instance, in Finland,

Finnair holds 95 per cent of the capital stock of Amadeus Finland, a distribution company for the reservation system supplier Amadeus Global Travel Distribution. Amadeus Global Travel Distribution holds the remaining 5 per cent of Amadeus Finland.

CRSs are essential to all but the smallest full-service agencies. In 1995, it was estimated that over 85 per cent of IATA agency sales of scheduled airlines services were arranged via CRSs. These systems appear essential for all but the smallest carriers.

6.5.1 How do CRSs work?

A national licensee or a marketing company signs agreements both with the system subscribers and with the vendors selling their products through the system. Travel agencies are not charged any admission fee to join the system; they only pay for any computer access or other technical services. Only the vendors offering their products for sale via the system (such as airlines and tour operators) are required to pay for the listing of their products within the system.

Two types of searches can be performed in the system: if a neutral search between two cities is made, the system returns all the flights and classes with free seats in a neutral order. This means that the system shows all the flights in the order of superiority, which is based on flight time and the type of flight, so that a non-stop flight is considered better than a flight with an intermediate landing, which again is considered better than a flight with an intermediate landing involving a change of planes. At present, all airlines are required to report flight times to an accuracy of five minutes. The rules were tightened because some airlines were found to be trying to improve their relative position by reporting excessively short flight times to an accuracy of a minute.

For commercial duplicates, i. e. in cases where the marketing company is different from the operating one, the system shows both the company marketing the flight and the airline actually flying it. In accordance with the Council Regulation, only two physically

identical connections are displayed for such flights on the screen at any one time. Primarily, the system will show the online connections operated by a single company, the connections offered by airlines belonging to the same alliance, and «true interline» connections.

Searches can be performed according to time of departure or arrival, or according to total flight time. With additional attributes, it is possible to limit the search by specifying the airline, alliance, or stop-overs. These types of «partial searches», showing only the flights of a particular airline or alliance, are normally used when specifically requested by the customer. Amadeus offers travel agencies a special Value Pricer service that allows the agencies to search for flights according to price.

The marketing company providing system access configures each terminal to specify what/whose information it is capable of retrieving. As a rule, travel agencies can access the information of airlines and the tour operators they represent, the airlines can see their own information plus that of other airlines, while the tour operators usually have access only to their own information.

6.5.2 Global CRSs

The major CRSs – Amadeus, Sabre, Worldspan, and Galileo – are able to provide two different types of booking facilities: one adapted to traditional travel agencies and one adapted to the Internet for online travel agencies. To the extent that they contain air transport products, when offered for use and/or used in the territory of the Community, they must comply with the abovementioned Regulation EEC 2299/89.

Only some CRSs are used globally. In the Nordic countries, Amadeus, Sabre, and Galileo are the most commonly used.

Amadeus was founded in 1987, and has been fully operational since 1992. Since 1999 it has been a publicly listed company. Three founder airline shareholders currently hold 59.92 per cent of the company: Air France (23.36 per cent), Iberia (18.28 per cent) and Lufthansa

(18.28 per cent). The remaining shares are held publicly. Amadeus' headquarters are in Madrid, Spain. The worldwide market share of Amadeus is approximately 35 per cent. Its share is about 60 per cent in Europe and 80-95 per cent in Norway, Sweden, and Finland.

Through the Amadeus system, over 55 000 travel agency locations and almost 8 500 airline sales offices in 199 countries are able to make bookings with around 500 airlines, representing more than 95 per cent of the world's scheduled airline seats.

Sabre is listed on the New York Stock Exchange and has its headquarters in Dallas, USA. At the moment, the AMR Corporation – a parent company to American Airlines – holds the majority of the shares.

Sabre connects more than 59 000 travel agents around the world, providing content from 450 airlines. Sabre's market share in Europe is approximately 14 per cent.

Galileo International was founded by major North American and European airlines: Aer Lingus, Air Canada, Alitalia, Austrian Airlines, British Airways, KLM Royal Dutch Airlines, Olympic Airways, Swissair, TAP Air Portugal, United Airlines, and US Airways. In 1997, Galileo International became a publicly traded company, listed on the New York and Chicago Stock Exchanges, with headquarters in the USA.

The Galileo and Apollo systems connect over 178 000 subscriber powered workstations to over 500 airlines throughout the world. There are over 44 000 travel agents at locations in 115 countries. Galileo's market share in Europe is less than Sabre's.

Worldspan was founded in 1990. It has headquarters in Atlanta, USA. The Worldspan reservation system contains more than 20 210 travel agencies that are able to make bookings with 533 airlines. Worldspan serves customers in nearly 70 countries or territories worldwide. It

is owned by affiliates of: Delta Air Lines, Inc. (40 per cent), Northwest Airlines (34 per cent), and TWA Airlines LLC – a wholly-owned subsidiary of American Airlines, Inc. (26 per cent).

Of the four CRSs listed above, Worldspan has the smallest market share in Europe.

6.5.3 Effects on competition

The Commission has stated in its decisions that the GDS¹¹⁶ market includes the provision of GDS (or CRS) over the Internet to virtual travel agencies, as well as the provision of traditional systems to non-virtual travel agencies. The relevant market for the abovementioned major GDSs/CRSs has usually been regarded as national in character, mainly because the conditions of sale vary from country to country, and because travel agencies operate in national markets.

Assessing the competitive and efficiency effects of CRSs is difficult. A reservation system is a necessity for travel agencies, and a system without price information is of no use. The problem arises from the fact that, through CRSs, the entire global market for passenger transport by air becomes completely transparent when it comes to prices. This again facilitates both explicit and tacit collusion and will certainly have a negative effect on price competition between different carriers. All future fares of airlines are available over CRSs.

Through the CRSs, all airlines are aware of most of the prices applied by the other airlines. The only prices not disclosed in the system are corporate rates negotiated specifically by each individual customer. Also, a travel agency owned by an airline can find out about the prices of the airlines and tour operators included in the system. Transparency applies to the package tour market as well. The decision by the Finnish Competition Authority (5 April 2000) concerning an acquisition by Finnmatkat states that the CRS contributes to transparency in the package tour market and may thus facili-

116 Global Distribution System

tate the attainment of a dominant market position. A similar conclusion was reached by the European Commission in the decision on Airtours/First Choice.¹¹⁷

Bohrenstein (1992) writes in his article «The evolution of US Airline Competition» as follows:

«It appears to be common practice for an airline to announce, through the CRSs, that its price on a certain route will increase by some amount beginning on a certain date in the future. The carrier then waits to see if others will match. If they do, the price increase is implemented. If they don't, the airline suggesting the increase will either withdraw it or push back the implementation dates. Other airlines might counteroffer with a smaller increase, effective a day after the first increase. Then the first airline may proceed with a smaller increase or counteroffer again. All of this occurs without the airlines changing prices on actual sales...»

Each CRS enjoys a strong position in the country in which it is, or has been, owned by the flag carrier of that particular country. For example, Amadeus' market share in Finland is about 95 per cent. Once a travel agency has acquired a certain system, its willingness to switch to a new system diminishes significantly. This is so because the agency's other systems are designed to support the existing seat reservation system. When an existing system is replaced by a new one, additional cost is incurred.

The owner of the CRS can also restrict competition by charging a high fee for access to the essential facility, in the form of high charges for each ticket issued through the CRS. Under EC rules, a CRS must charge the same booking fees to all airlines, but such a non-discrimination rule cannot affect the price or cost paid by the airline-owner for booking its own tickets. As with other vertically related services, there

is a concern that the airline owning the CRS may use its dominant position over the CRS to restrict or prevent competition in the airline industry. Initial concerns focused on the possibility that the airline owning the CRS would display its own flights more prominently than those of its competitors.

When investigating the LH/SAS/UA and BA/AA alliances, the Commission looked into the possibility that the flights of allied airlines or their partners displayed on several rows in a computerised reservation system may completely fill the first page, particularly on routes with a large number of flights. According to its notice of 30 July 1998¹¹⁸, the Commission intended to identify the flights that must be displayed on a single row in a CRS. In accordance with the subsequent amendment of 8 February 1999¹¹⁹ to Regulation 2299/89, only two physically identical connections may be shown on screen for commercial duplicates. To the extent that these regulations are adhered to, the concern that a single alliance's flights may fill the entire screen would seem unjustified.

Airlines are vertically integrated into the travel agency and tour operator markets, too. In a situation where a travel agency or tour operator owned by an airline, or an independent travel agency or tour operator, joins the CRS, discriminatory practices may arise if the CRS is owned or controlled by an airline.

Vertical integration can – at least in principle – facilitate the abuse of information stored in a travel agent's CRS, for the purpose of a single airline's commercial marketing. A carrier that obtains access to information on the bookings made with competing airlines may, e.g., be able to selectively undercut prices or offers extended by these competitors to specified, attractive customers, without risking the loss of revenue connected with general fare reductions. There may be reason to investigate whether the control and enforcement mechanisms currently implemented for CRSs

117 Case IV/M.1524 L093 13.4.2000, p. 1-33.

118 OJ C239, 30.7.1998, p. 4

119 OJ L040 13.2.1999, p. 1-8.

are sufficient to preclude such practices, which are to be considered discriminatory and clearly predatory.

6.6 Interlining

The Commission Regulation (EEC) No. 1617/93 of 25 June 1993 Article 4 grants the airlines within the European Union a block exemption for consultation on passenger tariffs with the aim of facilitating interlining. Article 5 of the Regulation grants the airlines a block exemption for consultation on slot allocation and airport scheduling. The Regulation became part of the EEA-agreement when the agreement was established in 1994 and thus grants the airlines of Norway and Iceland the same benefits as the airlines within the Community.

The Commission Regulation (EEC) No. 1324/01 of 29 June 2001 prolonged the exemption for consultation on passenger tariffs, Art. 4, to 30 June 2002 and the exemption for consultation on slot allocation and airport scheduling, Art. 5, to 30 June 2004.

6.6.1 Description of interlining

The interlining system allows passengers to buy a single ticket in one transaction and in one currency for a journey consisting of multiple sectors, where passengers may travel by different airlines on/through different sectors. The system allows passengers the possibility to change flights, airlines, and routings before and during their journey between A and B. The system also allows passengers to travel to their destination by one airline and return by another, including one-sector journeys. In principle, passengers can choose between all airlines participating in the interline system.

The through baggage and ticketing check-in service is an important part of the interline system. This service limits the number of check-ins to one, although the journey may involve more than one airline and more than one sector.

6.6.2 IATA Passenger Tariff Conferences

In the opinion of the International Air Transport Association (IATA), the system of interlining cannot be maintained unless the airlines are allowed to consult each other on what fares they can charge from passengers. These consultations are conducted during IATA Passenger Tariff Conferences. The consultations establishing interline fares within Europe take place during the meetings «Within Europe sub-area» of Passenger Tariff Coordinating Conference 2. The meetings are held three times a year and address changes to pre-existing fares, charges, and related conditions for different types of interline tickets.

6.6.3 IATA resolutions/agreements and conferences regarding interlining

IATA decides on and manages a number of other agreements (resolutions) which are an essential part of the interline system. The *Multilateral Prorate Agreement* decides the revenue distribution among participating airlines. The agreement describes a weighting system which determines how much an airline will receive when carrying a passenger with an interline ticket on any given sector of a journey. The *Multilateral Interline Traffic Agreement* binds participating airlines to issue and accept each other's tickets according to the fares and conditions decided by the carrying airline. The *IATA Passenger Agency Program* is an agreement between airlines and travel agents, that determines the conditions under which agents can issue tickets for all IATA airlines. The *IATA Passenger Service Conferences* agree on common standards in areas such as baggage handling and ticketing and on common rules for fare construction such as agreed mileage and currency conversion.

6.6.4 Effects of interlining for passengers

A major advantage of the interlining system is the flexibility provided. It allows passengers to choose among all participating airlines' flights between two destinations when a journey covers one or more sectors. Passengers can also

choose between different routings¹²⁰ between the destination of departure and the destination of arrival on a journey covering multiple sectors. The interlining system allows this flexibility for both fully flexible and discounted tickets before the journey takes place. Passengers buying fully flexible tickets may in addition change their routings, time of arrival and departure, or carrying airline, during their journeys.

This flexibility reduces the travel time because of the increased number of options to passengers regarding carriers, flights, and routings. The interlining system may be particularly advantageous in sectors where the airlines offer just a few flights a day. The reduction of travel time is particularly valuable for business passengers, who tend to value travel time highly, relative to travel costs.

On several occasions, IATA has emphasised that the way interline ticket fares covering more than one sector are constructed, is a major advantage to passengers. The through ticket fare is the sum of the ticket fare of each sector decreased by a discount. Without the IATA price collaboration, ticket fares covering more than one sector will simply be the sum of ticket fares of all sectors without any discount, which will result in more expensive tickets. Another point stressed by IATA is that without price collaboration, different routings between two destinations will result in different fares. These advantages will be further examined in Subsection 6.6.6.

The through baggage and ticketing check-in service is another major advantage of the interlining system. The service limits the number of check-ins to one during a journey involving more than one sector. It will make transfers of passengers between airlines less time consuming for both passengers and airlines. Thus the service reduces the duration a journey, to the advantage of both passengers and airlines. It may also reduce the airlines' costs caused by passenger transfers.

The through ticketing service reduces the number of travel documents to one. This advantage seems to be less significant but may reduce the airlines' costs of issuing tickets and may of course make a journey less troublesome for the absent-minded passenger.

6.6.5 Effects of interlining for smaller airlines

The interlining system has been claimed to be advantageous for smaller airlines. This point of view may at least be questionable.

Presumably, one advantage is their possibilities to issue tickets to destinations where they have no service. If the smaller airline does not face any or very little competition on its routes/sectors, passengers have no alternative to the smaller airline's service regarding air transport. When providing interline through-tickets, at (discounted) IATA prices, this may increase demand for its services and thus the airline's revenue. On the other hand, this will also give passengers that nevertheless travel by the airline an option to buy cheaper tickets. That may reduce the airlines' revenue from these passengers. It is difficult to predict in general terms what the net effect on the airline's income will be.

The interlining system may be to the advantage of the smaller airline if it faces competition in its sectors from a larger airline, and if both airlines have only a few arrivals/departures in the sectors in question. The interlining system will result in more flexibility by allowing passengers to choose among both airlines' flights. This may increase the number of passengers travelling by the smaller airline and increase its income. Because this flexibility is of particular importance to time sensitive business passengers, the system may increase the smaller airline's market share in this market segment, which will be particularly profitable.

The advantages of the system for the smaller airline may be less obvious if the larger airline has a substantial or much larger proportion of the arrivals/departures in the sectors in ques-

¹²⁰ To choose among different routings between two destinations implies that passengers can choose to travel via Paris, London, Frankfurt etc. on a journey from e.g. Oslo to Athens.

tion, compared to the smaller one. Under these market conditions, the flexibility of the interline tickets may be less valued. The time sensitive business passengers may thus be less likely to buy substantially more expensive IATA tickets than airline unique tickets. If, in addition, the larger airline participates in an alliance, it will be able to provide passengers with alliance unique tickets covering a large range of destinations in addition to destinations covered by its own network. The demand for interline tickets may then be further reduced. But there is at least one example of the interlining system's importance to smaller airlines' competitiveness.

In 1996 the Swedish Competition Authority (SCA) initiated legal proceedings against Scandinavian Airlines System (SAS) for the imposition of a fine of SEK 10 million for the undertaking's refusal to conclude an interlining agreement with a significantly smaller competitor, Nordic European Airlines. The City Court ruled in favour of the Authority and considered that SAS by virtue of its refusal had abused its dominant position. The City Court imposed fines of SEK 1 million on the grounds that the practice had only been operating for a short period (around 8 months) and that its effects had been limited. Both SAS and the Authority appealed to the Market Court, which upheld the decision of the City Court. Participating in an interlining system was in this case judged to be important to the smaller airline's ability to compete with the dominant airline.

In conclusion, it is questionable whether the interlining system in general offers any significant advantages to smaller airlines. When both the small and the large airline have only a few arrivals or departures each in a specific sector, the interlining system may create more demand for the smaller airline's services. As shown by the abovementioned case, however, interven-

tion by the competition authorities is sometimes necessary in order to secure these advantages for the smaller airlines.

6.6.6 Economic importance of interlining¹²¹

One indication of the importance of interlining is the proportion of the tickets that *are actually used* to interline. Another indication is the proportion of tickets sold that *allow* for interlining.

The Norwegian Competition Authority (NCA) requested in 1997 information from the three largest domestic airlines on the amount of interline tickets sold on domestic Norwegian routes, and on how large proportions of these tickets were actually used to interline. The first finding of the NCA was that the airlines' statistics on this matter were varying in accuracy. Based on the information received, the NCA did find that the proportion of tickets that could be used to interline, was about 44 per cent (by volume). The proportion of tickets used for interlining was estimated to be about 16-20 per cent (volume figures) of the total annual sale of tickets.

From the European Commission DG Competition's consultation paper «IATA Passenger Tariff Conferences» of February 2001, we learn that about 30 per cent of all intra-EU passengers buy a ticket allowing some form of interlining. This number also includes a large (but not specified) number of non-IATA tickets. Non-IATA interlining is also known as «club» or «bilateral» interlining and is based on commercial agreements between airlines. These agreements do not involve coordination of passenger fares. They are treated as technical cooperation under Commission Regulation 3975/97 and are not caught by Art. 81(1). Fully flexible interline tickets are used by about 10 per cent of all intra-EU passengers.

121 This subsection relies heavily on the study by Economic-Plus Limited GRA, Inc. (2000)

One cannot, however, simply add together business passengers' expenditure on fully flexible interline tickets in order to assess their utility of such tickets, for the following reasons.

Business passengers may wish to buy fully flexible interline tickets because they need to be able to change their arrival or departure time or their routings during a journey. The importance of these tickets to business passengers can thus be measured by the amount of money they spend on these tickets or by the number of these tickets they buy compared with the total number of tickets sold. But this approach assumes that the business passengers are free to choose among different types of tickets on an equal basis. Usually one can buy a fully flexible ticket closer to the departure time than a less flexible ticket. This will leave business passengers no other option but to buy a fully flexible ticket on journeys that are decided upon at short notice. Another question is to what extent less flexible tickets are provided on different routes compared to the proportion of fully flexible tickets. A third relevant point to make is whether or not the possibility to collect more FFP bonus points/miles increases the probability that the business passengers buy more expensive, fully flexible tickets.

In a meeting with the Scandinavian transport and competition authorities on 8 January 2001, IATA representatives presented an analysis containing an estimate of consumer benefits attributable to the fare and service features of interlining. This part of the report was based on statistical data for international routes to and from USA. If the results of the analysis were to be representative on a global basis, its estimates imply that the annual consumers welfare losses without IATA interlining would be about US\$ 2.9 billion on a global basis.

In order to calculate consumer benefits from the service effect (the through baggage and ticket check-in system), the assumption was made that without the IATA Service Conferences, passengers must spend more time to make connections between less coordinated services on a multiple sectors journey. It was assumed that the minimum connecting time

would be increased by 30 minutes.

As for the fare effect, the assumption was that without the IATA Tariff Conferences, the airlines would only accept a sum of sector fares regarding interline tickets covering more than one sector. Today, these fares are the sum of sector fares reduced by a discount.

The latter assumption is questionable, to say the least. It is rather difficult to predict what sector fares will emerge in the markets without the IATA Tariff Conferences. Prices established in markets by collaboration among the providers will generally be higher than prices established independently by the same providers under free competition. Chances are that fares would be considerably lower on most sectors, were it not for the IATA price collaboration.

Another advantage claimed for IATA interlining system is that different routings between two destinations will have the same fare. But the fact that different routings may get different fares is not a competition problem, nor an economic efficiency problem, if passengers remain free to choose among the different routings. On the contrary, such a system may provide sound incentives for carriers and passengers to choose short and energy economic routings.

The Nordic competition authorities do not question that the flexibility of the interline system and the through baggage and check-in service as such are advantageous to passengers. However, we find reasons to question whether the advantages of the IATA Passengers Tariff Conferences are larger than the drawbacks. We also do not think that the price collaboration system is necessary to maintain the interlining system.

The alliances have been able to offer alliance unique tickets to an increasing number of destinations. In the US, very few tickets are now sold or used for interlining. A similar development may be foreseen in Europe. Along with the growth of global alliances, the importance of the IATA interlining system is, generally speaking, likely to decline over time.

6.6.7 Anti-competitive effects of IATA Passengers Tariff Conferences

When considering the anti-competitive effects of the IATA Passengers Tariff Conferences, one should take into account the number of airlines participating and the number of routes and fares in question. One should further consider what information is exchanged by the participants of the IATA conferences. In addition there is a need to examine if fares established at the IATA conferences have any influence on the airline and alliance unique fares, which are set independently by each airline and alliance.

According to IATA¹²², as many as 39 European airlines participate in the meetings of «Within Europe sub-area» of the Passenger Tariff Coordinating Conference 2. The airlines establish at least one fare for each one of 6 950 origin-destination pairs within the EEA. Fully flexible and promotional/discounted fares are established for about 6 700 routes. It is difficult to find any statistics, which provide accurate information about IATA tickets' proportion of annual sales (volume figures) on the routes. But the number of airlines participating in the consultations and the number of routes in question suggest that the anti-competitive effects may be substantial. The findings of DG Competition, which indicate that on around 45 per cent of the busiest EU-routes (in 1997), no airline offers other flexible business-class tickets than the IATA fully flexible fare, do support this conclusion.

The IATA tariff conferences may have other anti-competitive effects in addition to those following from consultation on fares. The tariff conferences provide a unique forum for bilateral and multilateral exchange of information, of a kind that would hardly be allowable under Community or national competition law, were it not for the block exemption. Airline managers may discuss whether or not to amend IATA fares and conditions in all classes

between all airports in their countries. These discussions allow airlines to share their analyses of why some routes are under- or over-priced, and of how business and full economy tickets should be priced in relation to cheaper fares. The airlines thus obtain information about the thinking behind their competitors' pricing strategy, something which is rarely seen in other industries or markets. This obviously is liable to restrict competition among airlines.

6.6.8 Interlining without price consultations

The through baggage service implies that passengers do not have to take care of their baggage when transferring between flights of different airlines. This service is based on common standards for classification of the baggage. From a technical point of view, this service may be maintained without IATA price collaboration.

The IATA claims that this service is part of the joint (interline) product, the price of which is determined through price/fare consultations. If the airlines cannot establish a common price of the product on IATA conferences, the airlines will have no interest to maintain any part of the joint product. This point of view indicates either that the through baggage service is of no advantage to the airlines themselves, or that the airlines will not behave like «economic men» in the markets.

It is, however, rather likely that this service decreases the airlines' cost for passenger transfers. And it does not stand to reason that the airlines should close down an operation that reduces their costs.

In its Consultation Paper «IATA Tariff Conferences» of February 2001, DG Competition presented two options to maintain the interlining system without the tariff consultations, both of them highly interesting.

122 DG Competition Consultation Paper «IATA Passenger Tariff Conferences» of February 2001, Annex 1.

One option would be to create a system whereby the airlines inform each other on what prices they would charge on any given route in order to carry the passengers of other airlines. These prices could then be considered as «*wholesale*» prices, which would be basis for the airlines' construction of interlining tickets.

Another option would be that the airlines inform each other on what fares they offer the passengers in each sector («*retail*» prices). On this basis, passengers would be allowed to combine any number of different routes or sectors and different airlines.

Both options require that the airlines have a system for *posting* their prices so it can be possible to calculate and issue interlining tickets. There is, however, reason to think that such a system would mean less transparency of fares between airlines and hence probably more intense competition, without jeopardising the efficiency gains connected with interlining.

6.7 Airport capacity

Since the liberalisation of European aviation in the 1990s, there have, in principle, been no regulations limiting free market access for air transport within the EEA zone.

In practice, however, market access and development have been hampered by the scarcity of infrastructure services. First of all, airlines need airtime and air traffic control (air slots). Second, they need starting and landing time on a runway (airport slots) in the airport of departure as well as in the airport of arrival. Third, they need access to other airport facilities and services, such as terminals, gates, and ground handling services, i. e. catering, baggage handling, security control, de-icing, maintenance, and refuelling of the aircraft.

In principle, all three factors might, in a given situation, effectively limit the access to the market for air transport. At present, however, only airport slots constitute a scarce resource. The supply of ground handling services is, generally speaking, large enough to meet demand, and the constraints on capacity of airtime and air traffic control are not binding. In some instances airlines complain that the ground handling services are not always supplied at non-discriminatory terms. However, the problem may appear limited in the major European airports. All EU airports with more than two million passengers a year are required to open the market for ground handling services to independent suppliers.¹²³

In order to deal with the slot scarcity problem, many European airports are designated as so-called coordinated or fully coordinated airports.¹²⁴ The European Commission has drawn up a number of requirements that must be met before an airport may be designated as coordinated. Once the requirements have been met, the Council Regulation (EEC) No. 95/93 of 18 January 1993 on Common Rules for the Allocation of Slots at Community Airports, henceforth referred to as the Slots Regulation (see Subsection 6.7.3), will apply at the airport.

But in practice, capacity problems and regulatory shortcomings still tend to make it difficult for airlines to obtain the slots they need in order to develop their services. In particular, this applies to new entrants. One reason is that incumbent airlines have long-established rights in the form of so-called grandfather rights (see Subsection 6.7.2).

Thus, opportunities for establishing new services are limited, and competition is being hampered on existing services. If incumbent airlines were to lay claim to all available slots, this would represent an obstacle for a potential

123 Council Directive 96/67/EC of 15 October 1996 on access to the ground handling market at Community airports.

124 A coordinated airport is defined in the Slots Regulation as an airport for which a coordinator has been appointed, whose task is to facilitate the operations of airlines operating or intending to operate at that airport. A fully coordinated airport is a coordinated airport where, in order to land or take off, during the periods for which it is fully coordinated, it is necessary for an airline to have a slot allocated by a coordinator.

competitor. In theory, an incumbent airline might choose to fly at low capacity specifically for the purpose of preventing a competitor from starting up on a certain route.

6.7.1 The definition and ownership of airport slots

Under the Slots Regulation, an airport slot is defined as the scheduled time of arrival or departure available or allocated to an aircraft movement on a specific date at a coordinated airport (Article 2a)¹²⁵.

The definition of arrival and departure times in the Regulation only refers to actual situations. Airlines have contended that slots are their property, on which they have based their network of routes. On the other hand, airports claim right of ownership to the slots on the grounds that the slots are inseparable from airport infrastructure. It is important, therefore, to clarify the legal position of slots and create the kind of stable conditions for slot allocation that would enable both airlines and airports to plan their operations to the greatest possible benefit.

To solve this ownership conflict, an amendment to the Slots Regulation has been proposed¹²⁶. The amendment defines a slot as the entitlement of an airline to use a coordinated airport on a specific date and time for the purpose of landing and take off as allocated by a coordinator in accordance with the Slots Regulation. This makes clear that access to slots does not confer any right of ownership. Access to a slot only gives the carriers the right to take off and land and access to the airport facilities on specific dates and at specific times.

6.7.2 The role of the International Air Transport Association (IATA)

Slot allocation is a complicated procedure that involves coordination between a large number of airports with the same kind of capacity problems all over the world.

The International Air Transport Association (IATA), the representative body of the airlines industry, has a strong position in this coordination process. Since 1947, slots at the various airports of the world have been allocated in accordance with the World-wide Scheduling Guidelines (WSG) from IATA. The guidelines in WSG contain administrative rules of procedure and recommendations concerning order of priority in the slot allocation system.

The airlines meet twice a year for *scheduling conferences*, the objective of which is to facilitate and develop flight connections etc. for the forthcoming season. All airlines have found these conferences to be in their interest. The conferences are aimed at all airlines and coordinators on a global basis.

The slot allocation conferences are held about three months before the season begins. Prior to each conference, carriers present their slot requests to the coordinator for the airport concerned. By applying the WSG principles, the coordinating body in IATA then compiles the schedules in strict secrecy.

One of the most fundamental priorities in the WSG principles is the principle of *grandfather rights*. This principle is a «use or lose it» rule, which means that if an airline has used an airport slot in accordance with the instructions from the coordinator, the airline is entitled to claim the same slot in the next equivalent scheduling period¹²⁷. Basically, the principle of grandfather rights states that airlines can claim

¹²⁵ This section does not deal with air slots, i. e. the right to use specified airspace. There are many different terms to describe takeoff and landing slots. In this document, the term slots will be used for takeoff and landing slots, for arrival and departure times, as well as for movements.

¹²⁶ OJ C 270 E/131, 25.9.2001.

¹²⁷ Article 8.1a of the Slots Regulation.

the same slot in the next period if they can demonstrate that they have exploited the slot at least eighty percent of the time during the period for which it had been allocated¹²⁸.

In addition, the WSG gives priority both to changes in schedule and to new entrants. New entrants are entitled to fifty percent of the slots in what is termed the slots pool¹²⁹, once the initial allocation of established times has been completed and changes in schedule have been sorted out. Times that are not utilised are to be returned to the coordinator for reallocation. Commercial traffic is given precedence over military and other non-commercial traffic. All-year traffic is given precedence over other traffic.

The IATA system is founded on a specific airline administering the allocation of slots at one or more airports. In Europe, it used to be common practice for the national carriers to allocate the slots at their country's airports.

6.7.3 Slot regulation in the EU

In 1993, the EU introduced binding rules for the aviation field by adopting the Slots Regulation¹³⁰. The aim was to create a common set of rules for slot allocation to fit the new liberalised European airline industry.

The Slots Regulation requires each Member State to decide whether an airport should be subject to coordination¹³¹ and prescribes certain institutional arrangements as well as a system of legally binding rules for slot allocation. Also, the rules state that airports that are subject to coordination are obliged to create a coordination body that allocates the slots in an objective manner. The Slots Regulation declares that airport slots are to be allocated in a neutral, non-discriminatory and transparent way.

Today, the degree of implementation of the Slots Regulation differs among Member States. The Commission's studies have revealed a number of matters requiring clarification, and the Commission has raised these questions in its discussions with Member States and the parties concerned. It has pointed out that competition has been hampered by the inability of new entrants to gain access to attractive slots at congested airports in Europe, and that this situation would have to change. The Commission has also pointed to the need to clarify and improve the slot allocation system with regard to the carriers' position vis-à-vis the coordinators and to the Member States' possibilities of supporting the development of regional traffic.⁴²

At a number of EU airports there are too few airport slots to enable new entrants to compete with the incumbent airlines. The EU is to revise the Slot Regulation in an effort to deal with this problem. On 22 June 2001 the Commission presented a draft amendment to the rules. The amendment is subsequently published in the Official Journal C 270 E/131, 25.9.2001.

6.7.4 The current slot allocation process in theory

The Slots Regulation states that in case of excess demand for slots, the airport has to set up a coordination body to allocate slots for the airport. The coordinator is obliged to act in accordance with the Slots Regulation in a neutral, non-discriminatory and transparent way. The coordinator is also to supervise and control that the slots are exploited by the airlines.

After the slots are allocated, on request and within a reasonable time, the coordinator is obliged to make the following information available to all interested parties:

128 See Article 10.3 and 10.5 of the Slots Regulation.

129 In the Slots Regulation this is described as follows: In process of the slot allocation, for each coordinated period, a pool of free slots has to be created. The pool must contain new slots, unused slots, and slots that are given up or have become available for other reasons.

130 The Slots Regulation applies only when an airport is classed as coordinated.

131 The criteria for airport coordination are specified in Article 3 of the Slots Regulation.

132 See Pricewaterhouse Cooper (2000).

- The historical allocation of slots
- Each airline's request for slots
- All allocated slots and outstanding slot requests
- Remaining available slots
- All details of the criteria being used in the allocation.

Each Member State is obliged to ensure that the coordinator carries out his duties under the Slots Regulation in an independent manner.

Furthermore, coordinators are required to participate in international scheduling conferences that are permitted by Community law.¹³³ This is a reference to the IATA slot conferences. The IATA conferences provide airlines with a good opportunity to organise their scheduling effectively so as to match their operative capabilities. Prior to the conference, coordinators are to deal with the airlines' scheduling requests in strict secrecy and allocate slots in accordance with the priority rules laid down in the Slots Regulation and WSG from IATA.

At the IATA conferences, the coordinator informs airlines of the result of their applications. The airlines whose requests are not met, are offered the nearest alternative slot before or after. A new slot proposal means that the airline has to adjust its schedule, not only at the airport concerned, but also at all the other airports it will be trafficking. Should other airports have capacity problems, an alternative slot may necessitate fresh contact with the parties concerned. The allocation process continues until such time as the airline has obtained an operatively feasible programme of schedules. The fact that all coordinators participate in the IATA conferences, as well as a large number of airlines, makes rescheduling easier.

A fully coordinated airport is also required to

have a coordinating committee. The committee must be open at least to the airlines that use the airport at a regular basis and/or to their representative organisations, to the airport authorities concerned, and to representatives of the air traffic control. The committee is to assist the coordinator in a consultative capacity.

In addition, priority is given to changes in schedule and to new entrants. The latter are entitled to fifty percent of the slots in the slot pool that develops following the initial allocation of historical slots and the completion of changes in schedule.¹³⁴ A new entrant that has been offered slots within two hours before or after the time requested but has not accepted this offer, is not allowed to retain its new entrant status. Unused times are to be returned to the coordinator for reallocation. This also applies after the conference and during scheduling periods already under way.

Under Article 9 of the Slots Regulation, the EU countries may in certain circumstances reserve certain slots at a fully coordinated airport for scheduled domestic services.

Slots may be freely exchanged between airlines or transferred by an airline from one route or type of service to another, by mutual agreement, or as a result of a total or partial take-over. However, any exchanges or transfers must be transparent and approved by the coordinator. The conditions for approval of exchanges are (a) airport operations would not be prejudiced, (b) limitations imposed by a Member State according to Article 9 are respected, and (c) a change of use does not fall within the scope of Article 11.¹³⁵

Slots may not be sold, given away or leased out. However, monetary payments are not explicitly forbidden when slots are exchanged.

¹³³ Commission Regulation (EEC) No. 1617/93 of 25 June 1993 on the application of Article 85 (3) of the Treaty to certain categories of agreements and concerted practices concerning joint planning and coordination of schedules, joint operations, consultations on passenger and cargo tariffs on scheduled air services, and slot allocation at airports. The regulation has been amended by Commission Regulation No. 1324/2001 as regards consultations on passenger tariffs and slot allocation at airports, No. 1083/99 and No. 1523/96.

¹³⁴ Article 10 of the Slots Regulation states that a pool shall be set up for each coordinated period and shall contain newly created slots, unused slots, and slots that have been given up by an airline during, or by the end of, the season, or that otherwise become available. Any slot not utilised shall be withdrawn and placed in the appropriate slot pool unless the non-utilisation can be justified by reason of the grounding of an aircraft type, the closure of an airport or airspace, or other similarly exceptional case.

¹³⁵ See Article 8.4 of the Slots Regulation.

6.7.5 Evaluation of the current slot allocation process

From an economic point of view, the current European slot allocation process performs rather poorly. The process does not in any way allocate slots with the objective of generating greatest benefit for the consumers or the economy in general.

The concept of grandfather rights (see Subsection 6.7.2) is a central feature of the current slot allocation regime. Grandfather rights mean that the users of a slot (the incumbent airlines) enjoy a perpetual usage right, almost only subject to a «use it or lose it» obligation. An incumbent airline can expect to withhold its landing and departure slots at a given airport if it can prove that the slots are exploited at least eighty percent of the time.

This priority to historic users of slots makes entry into an airport at a large scale very difficult and quite rare. Experience shows that the turnover of existing slots and the creation of new slots are normally very limited. As a consequence, the level of competition between airlines is reduced, and thereby also the overall level of efficiency within the airline industry, for lack of competitive pressure. The British Civil Aviation Authority (CAA 1998) points out that 70 per cent of the densest international routes within the EU, including all the top ten, have a seriously constrained airport at one or both ends. On these routes, there would be ample room for more competition, had it not been for the limited airport capacity.

6.7.6 Proposals for a more efficient slot allocation process

Basically, there are two ways to improve the economic efficiency of the slot allocation process. First, the current process can be changed to take more account of economic efficiency. Second, the current process can be replaced by a whole new regime of slot allocation. While the first approach may seem easier to implement, only the second approach is likely to yield significant efficiency improvements.

Changing the current slot allocation process

In the following, only four of the most obvious ways to change the current process are sketched. Although it is unclear how large is the potential for improvements, it appears likely that at least some efficiency enhancement would be possible.

First, an increase in the total slot capacity would, at least in principle, constitute one way out. For environmental reasons, however, extending the most crowded airports does not in general seem like a politically viable option.

Second, the current regime could be improved by enforcing the «use it or lose it» obligation more strictly than today. The lack of proper enforcement makes it possible for incumbent airlines to decrease competition at peak hours. To an incumbent airline, it may be more profitable to use an attractive slot for a low density route than to give it up. This kind of conduct, i. e. to make use of the slot for the sole purpose of not having to relinquish it to a competitor, is called «babysitting» of slots. While commercially expedient, such practices are obviously not compatible with an economically efficient resource utilisation.

A stricter enforcement of the «use it or lose it» obligation could be achieved in several ways. An obvious solution is to reserve some slot capacity during the peak hours to certain high density routes. This would make it more difficult for incumbent airlines to «babysit» attractive slot capacity by operating unprofitable routes. Another solution would be to increase the threshold condition in the grandfather rules from eighty to, say, ninety per cent. This could, however, become counterproductive, at least in the short term, if carriers respond by increased «babysitting».

Third, entry and competition could be promoted by the creation of a secondary market for free slot capacity. One of the reasons why «babysitting» of attractive slots is profitable could be that giving up attractive slots involves no reward for the incumbent airlines. If the incumbent airlines could sell the attractive slot capacity to their future competitors, «baby-

sitting» would become more expensive and less attractive.

The traditional economic solution to congestion problems is marginal cost (peak load) pricing. A fourth possible way to bring market forces to bear on the slot allocation system could therefore be to apply this principle and allow airport charges to vary over the day (between peak and off-peak).

In general, it will be important to determine who should receive the revenue – if any – from slot trading or price differentiation. If the revenue accrues to the airport, an incentive is created to build more capacity to the extent that there is a corresponding demand. The long term effect of this might be an improved access to low-priced slots.

Alternative slot allocation processes

If the current «use it or lose it» slot allocation regime were to be replaced by a whole new regime, two possible regimes seem most obvious: An *auction* system and an administrative process, which is often dubbed a «*beauty contest*» system.

The auction system implies that the free slots are sold by auction and allocated to the highest bidding airline. A beauty contest system is more similar to the current IATA system. Here, the airlines apply for slots, and a slot allocating body evaluates the airlines' offers and determines the final allocation of slots, based – preferably – on neutral, transparent, and non-discriminatory procedures

Both an auction system and a beauty contest system are likely to involve a much higher turnover of slots than today's system. Also, both of them would make it easier for new entrants to get access to attractive slots.

A basic element of both systems would be that the «use it or lose it» rule should be replaced by usage right for a limited period of time.

When the period has expired, a new round of slot allocation is conducted. A change from the «use or lose it» rules to a time-limited usage right will almost certainly lessen the barriers to entry.

Which system, auctioning or beauty contest, will be most efficient? At first sight, it may seem obvious that the auctioning system is more efficient, since the most efficient carrier will be able to derive the highest private benefit from using a slot and then also have the highest willingness to pay for it, i. e. the highest bid. In a beauty contest, however, it is much less likely that the winner is also the economically most efficient firm.

This line of reasoning would appear tenable if all carriers competed on an equal basis. If, however, one or more carriers enjoy market power to start with, a different set of arguments may apply. A dominant carrier will typically be able to derive profit from «babysitting» a slot that would otherwise become available to a competitor, because keeping the rival out of the market would allow the dominant carrier to raise its fares. The dominant carrier will therefore have a higher willingness to pay for attractive slots than most other airlines, and may be able to bid up the price to a level deterring potential new entrants. Such a process would certainly not ensure economic efficiency or effective competition.

In a 1998 OECD Competition Policy Roundtables report¹³⁶, it is suggested that one way to ease such a situation might be to use so-called *blind bidding* in periodic auctions. Here, the bidders' identities are kept secret, so as to conceal whether the bids are made by new entrants or by incumbent airlines. If desirable, even the number of bids can be kept secret. Says the OECD (1998:123f):

«When an incumbent has market power on a particular route, a periodic auction would affect the cost the incumbent would have to pay to pursue an anticompetitive strategy by

136 <http://www1.oecd.org/daf/clp/roundtables/airport.pdf>.

outbidding potential entrants. Under the current system, an incumbent interested in protecting certain routes does not have to buy up all surplus slots that come on the market. Small numbers of slots do not present a threat to traffic on lucrative business routes because without adequate frequency, an entrant will generally be unsuccessful in competing with an incumbent. Similarly, slots traded or sold between existing incumbents at an airport often do not represent a threat of new entry because with their hub and spoke structures, many incumbents do not compete on nonstop routings to the same HDTA [High Density Traffic Airport]. With a periodic auction, however, all slots would become available over time, and a strategy of buying up slots for less valuable uses in order to preclude entry would become much more expensive.

The existing system whereby the seller knows who is bidding on the slots also makes entry deterrence by incumbents more likely than under a periodic auction where the identity (and even the number) of potential buyers could be concealed. As noted above, knowing the identity of a bidder is often the equivalent of knowing the likely use of a particular set of slots. Thus, sellers of slots can use the identity of a potential entrant to solicit a counter offer from an incumbent that would be threatened by entry. In contrast, if the incumbent is uncertain about who is bidding on a set of slots, there will be less incentive to bid up the slots for anticompetitive reasons. Although blind bidding in periodic auctions can increase the cost of entry deterrence, periodic auctions cannot eliminate the possibility that an incumbent will use slot purchases to acquire market power or prevent entry. If entry deterrence is sufficiently profitable, then an incumbent may still be willing to buy up spare slots over time in a periodic auction in the same way that an incumbent could buy up slots in the secondary market today.

Periodic auctions could discourage needed investments if slot holding were leased for too short a period of time. Consequently, periodic auctions must be designed carefully

to balance the availability of slots with a reasonably long period of time during which an airline could establish service at an airport. There are sunk costs associated with entry on airline routes, and airport authorities also may have difficulty making the necessary adjustments to accommodate excessive turnover at any one time. Nevertheless, if (for example) 10 per cent of an airport's capacity became available each year under a 10 year lease, the vast majority of all flights at any airport would be unaffected, especially since existing users of the slots being put up to bid might well reacquire some of the slots if they offer the most efficient service. »

Thus, although blind bidding does not completely eliminate the market power of dominant carriers as a factor in slot allocation, it goes a long way to reduce its importance.

However, other design aspects may lead to a conclusion in favour of transparency and thus against a blind auction. In the end, the final choice of auction design may involve several complex trade-offs. The experience from the mobile phone industry with the UMTS auctions showed that the process of running an auction is not simple, even when the number of objects is as low as four, five, or six. If auctions are to be held over usage rights for airport slot capacity, it is most likely that there will be thousands of objects to be auctioned off simultaneously. The auction system will thus have to be much more complex than in the European UMTS auctions.

Second, it is essential that the auction system be compatible with other slot allocation systems. Departure slot capacity in one airport has to be matched with corresponding landing slot capacity in other airports. Moreover, the airlines have a legitimate interest in obtaining slots for landing, ground handling, and take-off that allow for efficient operation at one and the same airport.

Of course, the coordination concern is also relevant in a beauty contest system. But there are reasons to believe that the problem is more limited in a beauty contest than in an auction system. Flexibility is the key to solving the

coordination problem, when it comes to slot capacity in airports in other countries. At this point a beauty contest may be thought to perform better than an auction system. Both theory and experience show that an auction system is economically efficient only if the rules are clear and strictly enforced. This is clearly difficult to combine with flexibility. In contrast, the efficiency of a beauty contest is not likely to change significantly if the rules are enforced with some degree of discretion.

Finally, it should be mentioned that in combination with a shift from the current «use it or

lose it» rule to a usage right system, a lottery system could also be considered. Such a system would make it easier for entrants to gain access to free slot capacity than under today's «use it or lose it» rule. Their chance to gain an attractive slot capacity would be just as good as the incumbent's chance. However, a lottery system will obviously be economically inefficient, as the allocation will in no way be based upon an economic assessment. A lottery system does not create the same incentive to be efficient as both an auction system and a beauty contest system.

7. SUMMARY AND CONCLUSIONS

The Nordic Task Force on Airline Competition has examined the aviation markets in Denmark, Finland, Norway, and Sweden, and – more generally – the European aviation industry, with a view to suggesting measures to enhance competition.

7.1 Network economics and competition

The aviation industry can be described as a system of links (routes) that connect nodes (airports). It is, in other words, a *network industry*.

As such, the aviation industry is characterised by large *network externalities*, in the sense that the costs and revenues involved in carrying passengers on different, interconnected routes are interdependent. There are, in other words, large *economies of scale, scope and density* present. These externalities may originate either at the *supply (production)* side or at the *demand (consumption)* side.

Supply side economies of *scale* originate from using larger aircraft (assuming a constant load factor), from increasing the load factor, or from longer stage lengths. All of these reduce the cost per passenger kilometre. Economies of scale due to firm size are, however, quickly exhausted in the airline industry.

On the *demand* side, certain *indirect* economies of scale may appear as a result of increasing returns to scale on the supply side. In aviation, such effects are probably of limited importance, although it might be argued, e.g., that the more economical, larger aircraft may also appear more comfortable and secure to the traveller, and hence induce a certain additional air travel demand.

Economies of *scope* on the *supply* side are, generally speaking, present when the cost of producing two products or services by the same firm is lower than when they are produced by separate firms. There are, in other words, cost-saving externalities between pro-

duction lines. The most important economies of scope in the aviation industry no doubt arise from the complementarity of routes within the network. By operating several interconnected routes, the airline company is able to utilise aircraft, crew, reservation systems, marketing devices, and other overhead cost items in various production lines (i. e., city pair connections). Economies of scope may be particularly important when slot capacity at airports is limited. Airlines operating several flights out of one airport obtain flexibility to adjust their network to changes in the demand pattern.

Perhaps even more important economies of scope emerge from the *demand* side. A carrier offering a larger network of services will be more attractive to the traveller, since she will have more destinations to choose from and a larger probability of finding a suitable connection from her particular origin to any given destination.

Economies of scope on the demand side are often intensified by the marketing practices of the airlines, such as the frequent flyer programmes and the corporate discount schemes. These may create artificial economies of scope because customers avoid a certain switching cost if they concentrate their demand to one or a few airlines.

In aviation, *supply* side economies of *density* exist if an airline's unit cost declines when the airline adds flights or seats on existing routes, all other things held constant. These increasing returns to density are due primarily to improved utilisation of aircraft capacity and crew.

Even more important are the *demand* side economies of density. A higher route frequency will decrease the average time cost experienced by the traveller and hence induce a higher demand for air transport, especially from business travellers. This feedback mechanism, implying that the demand for travel in a network is in a sense self-reinforcing, is some-

times referred to as the Mohring effect. As the demand for travel increases, a higher frequency of departures can be supported, and a smaller average generalised cost is incurred by the individual user. This in turn induces a still higher demand, and so on until equilibrium is reached.

A particularly efficient way of organising an aviation network is the *hub-and-spoke* mode of operation. Rather than operating a large number of point-to-point, non-stop routes, the airline company channels all or most passengers through a «hub» airport, from which all connections extend like the spokes of a wheel. In this way the number of different non-stop routes needed to serve all possible pairs of destinations is drastically reduced, allowing for quite remarkable cost savings. The operation of a hub-and-spoke network often allows an airline to offer air services on routes, which in isolation do not generate sufficient volume of traffic to justify service. On some spoke routes, the load factor will be raised from a level below to a level above the minimum viable scale load factor.

Judging by the experience earned through 23 years of deregulated aviation markets in the United States, the airline industry – when left without regulation – will tend to consolidate into a few, large air carrier concerns with continent-wide hub-and-spoke networks.

While obviously economically efficient to the individual carrier firm, the hub-and-spoke system of operation may have strong anti-competitive effects. The economies of scope and density characteristic of these networks are such as to grant the (one and only) hub airline very considerable market power at and around its hub. Since different airlines choose to operate hubs at different airports, the hub-and-spoke system as operated among a set of large individual carriers is liable to practically divide the market between the airlines. Although the networks of different carriers overlap, very few origin-destination pairs, if any, will exhibit more than two carriers operating non-stop flights.

In Europe, the hub-and-spoke mode of opera-

tion has an even longer history than in the US, having grown out of the past regulatory framework and of the prevailing geographic and political conditions, rather than as an autonomous market process. Each nation has had its own «flag carrier», with a privileged position in and around its domestic market and frequently a large government ownership share. More often than not, flag carriers have been benefiting from considerable amounts of subsidies or direct financial support from the state.

The flag carrier typically organises its network around a hub located near the national capital or main business centre. At its hub airport, the flag carrier tends to have considerable direct and indirect influence on slot allocation practices, on ground handling services, and on other essential facilities. Backed by its own government, the flag carrier usually also tends to obtain privileged positions in whatever bilateral aviation agreements are signed with other countries. Each flag carrier therefore enjoys considerable market power at and around its domestic hub. Thus, although there are almost as many flag carriers as there are European nations, the competition between them is severely restricted, as they have been able to divide the market between them to a very considerable extent.

In summary, the hub-and-spoke mode of operation generates abundant network externalities on the cost side as well as on the revenue side. The incremental cost of operating an extra route in a hub-and-spoke network is often smaller than suggested by the average unit cost of the network. Moreover, an extra route may generate feeder traffic – and hence revenue – to the larger network. It will, in other words, be relatively inexpensive for an incumbent hub airline to cross-subsidise a single spoke route or a limited set of such routes.

Essentially, this leaves a dominant hub airline with ample opportunity to fight a rival new entrant through increased capacity, disproportionately reduced fares, and/or other predatory strategies. Unless met by timely and resolute interventions on the part of the competition authorities, such strategies could make the

market almost incontestable (confer Section 7.4 below).

The anti-competitive effects of hub-and-spoke networks are likely to be strongly reinforced by the carriers' frequent flyer programmes, and vice versa (see Section 7.7).

7.2 Airline mergers and alliances

More extensive networks are more attractive to customers and offer larger economies of scope to the carrier. Airline carriers therefore form alliances in order to exploit each other's networks and to strengthen the competitive positions of all alliance partners. Establishing an alliance with an «adjacent» carrier may also be an efficient way for competitors to divide the market between them.

Bilateral aviation treaties often assure the affected national flag carriers more or less exclusive traffic rights between the two countries. These rights might be forfeited if the flag carrier is merged with a foreign airline – whence the widespread practice of forming alliances rather than full-fledged mergers between European airlines. In an opinion delivered by the Advocate General to the European Court of Justice on January 31, 2002, it is proposed that individual member states no longer be allowed to entertain such individual aviation treaties with non-EU countries. To the extent that this view is upheld by the Court, it may be foreseen that the associated change in the regulatory regime will spark a development towards massive consolidation within European aviation.

Faced with this scenario, it is essential that European competition and aviation authorities consider carefully all measures susceptible of opening the air travel markets and enhancing competition. While in terms of competition and efficient resource allocation, full-fledged mergers may well be preferable to looser alliances, it is paramount to the protection of consumers

and other air travel customers that the resulting number of European aviation concerns or alliances not become too low. The consolidation process must therefore be followed carefully by the relevant competition authorities. Alliances should be treated with the same rigour as traditional mergers.

It would, of course, not make sense to prohibit just about every possible airline merger or new alliance. There is therefore a pressing need for a long term Community level strategy providing guidelines as to what merger and alliance agreements cannot be concluded without causing unacceptable damage to competition.

7.3 Community and EEA Law

Articles 81 and 82 of the EC Treaty set out general prohibitions on anti-competitive agreements and abuse of dominant position. Generally speaking, these articles obviously also apply to the aviation industry, forming the basis of Danish, Finnish, and Swedish competition policy in relation to the air travel market.

Although Norway is not an EU member, the same articles have been implemented in Norwegian Law, in the form of Articles 53 and 54 of the European Economic Area (EEA) Agreement. Norwegian Law is, however, as of 2002¹³⁷ not fully harmonised with Community Law. Being based on an intervention principle rather than on a prohibition principle, Norwegian Law does not in general require proof that an act of conduct constitutes abuse of dominant position, in order for the Norwegian Competition Authority (NCA) to be able to take action against the practice. According to Section 3-10 of the Norwegian Competition Act, it is sufficient for the NCA to show that an action is *liable* to restrict competition, contrary to the purpose of efficient resource utilisation, in order for the NCA to intervene. It may thus appear that Norwegian competition authorities have a somewhat more powerful provision to intervene, compared to

137 As of May 2002, the Norwegian Competition Act is under revision.

the other Nordic countries. This may partly explain the apparent differences in competition policy between the respective countries, especially, perhaps, in relation to frequent flyer programmes (see Section 7.6 below).

The competitive situation of the European airline industry is affected, not only by the general Community competition law, but also by a number of special regulations, decisions, and agreements, the presumably most important of which are the following:

1. Council Regulation (EEC) No. 2408/92 on access for Community air carriers to intra-Community air routes (see Section 7.4 below).
2. Council Regulation (EEC) No. 2409/92 on fares and rates for air services (see Section 7.4).
3. Council Regulation (EEC) No. 95/93 on common rules for the allocation of slots at Community airports, commonly known as the «Slots Regulation» (see Section 7.5).
4. Commission Regulation (EEC) No. 1617/93 granting the airlines within the European Union a block exemption for consultation on passenger tariffs, as well as on consultation on slot allocation and airport scheduling. The regulation has been amended by Commission Regulations No. 1324/2001, No. 1083/99, and No. 1523/96, prolonging the exemption for consultation on passenger tariffs to 30 June 2002 and the exemption for consultation on slot allocation and airport scheduling to 30 June 2004. As of May 2002, it appears that both exemptions will be prolonged until 30 June 2005 (see Sections 7.5-7.6).
5. Commission Decision of 16 January 1996 in case IV/35.545 on the Lufthansa/SAS cooperation, establishing conditions concerning, *inter alia*, the access of third carriers to the Lufthansa/SAS frequent flyer programmes, and the divestiture of slots at the Frankfurt, Düsseldorf, Stockholm, and Oslo airports (see Section 7.7).

6. Court Rulings in the Hoffmann-La Roche and Michelin cases, of 13 February 1979 and 9 November 1983, respectively, on the use of *loyalty discounts* (see Sections 7.7, 7.8, and 7.11).
7. Council Regulation (EEC) No. 2299/89 on a code of conduct for *computer reservation systems* (CRSs), amended by Council Regulation No 323/99 (see Section 7.9).
8. Commission Decision of 14 July 1999 (2000/74/EC) in the Virgin/British Airways case concerning *travel agent agreements* (see Section 7.11).
9. Council Directive 96/67/EC on access to the *ground handling* market at Community airports (see Section 7.13).
10. Numerous *bilateral aviation agreements* between individual EU member states and non-EU nations. Some are Open Skies agreements, others – like the Bermuda II agreement between the UK and the USA – are much more restrictive. In the near future, these agreements may be challenged by the European Court of Justice (see Section 7.2 above).

7.4 Contestability and predation

Prior to and shortly after the deregulation of the US aviation market in 1978, it was generally thought that air travel markets would in general be highly contestable, as it would be easy for any carrier to relocate aircraft and personnel so as to service a new route. In practice, it has turned out that the barriers to entry are much more important than previously believed. Incumbent airlines can lower their fares and/or increase their capacity practically overnight, so as to raise the cost and/or reduce the revenue of rival new entrants. Any potential new entrant would, of course, be aware of this, and hesitate to challenge the incumbent carrier even if the latter may be making a considerable profit in the current (monopolised) situation.

To increase contestability it might be desirable to constrain the incumbent carriers' ability to abuse their dominant position by dumping their

fares and/or boosting their capacity in response to rival new entrants. National and Community competition authorities should keep a keen eye on predatory pricing practices and prepare contingency plans to act against them at short notice. The recent intervention by Germany's Bundeskartellamt, requiring Lufthansa to keep a € 35 fare differential with respect to Germania on the Berlin-Frankfurt route, is an example, the benefits and possible pitfalls of which would be interesting to assess.

Given the special characteristics of the aviation market, interventions against excess *capacity* might be appropriate in order to ensure competition, in the event of a dominant carrier's predatory behaviour. However, Council Regulation (EEC) No 2408/92, which guarantees free access for EEA air carriers to intra-EEA air routes, might be interpreted to preclude such intervention from Community or national competition authorities. There is thus a need to clarify the legal provisions available to competition authorities in this area, and possibly to improve them.

Similar arguments apply, with even greater force, to Council Regulation (EEC) No 2409/92, which deals with *fares and rates* for air services. In the opinion of the Task Force, this regulation ought not restrain the competence of national competition authorities in relation to interventions against predatory pricing. To the extent that this view is seen as contentious, we suggest that the issue be examined further at the European Community level.

7.5 Scarcity of slots

The airport capacity constraints and the *slot allocation* regimes and practices, allowable on account of Council Regulation (EEC) No. 95/93 and the block exemption currently in effect in the EEA, constitute major barriers to entry and hence to competition and economic efficiency.

Incumbent airlines throughout European airports benefit from so-called «grandfather rights», by which they are entitled to the renewal of all slots for which the degree of utilisation during the previous period exceeds

80 per cent. In congested airports, this regime makes it quite difficult for potential new entrants to obtain a sufficient amount of attractive slots. To add to the problem, incumbent airlines may have an incentive to «babysit» some of their slots, i. e. to make use of them for the sole purpose of not having to relinquish them to a competitor. While commercially expedient, such practices are obviously not compatible with an economically efficient resource utilisation.

There is thus a pressing need for an improved and less discriminatory slot allocation procedure in all congested airports, which would facilitate market entry for smaller airlines and other non-incumbent carriers.

At present, the legal ownership to slots and the rights attached to such ownership are matters of ambiguity. A prerequisite for arriving at a more efficient slot allocation is to determine unequivocally who owns the slots – the airline, the airport, or the government. The initiative taken by the European Commission to clarify these questions is commendable.

Creating an open market for slots may seem like an obvious solution to the economic efficiency problem. There may, however, be cases where open trading would not ensure equitable access to the aviation market for all carriers. Dominant airlines may be able to derive profit from holding a slot that would otherwise become available to a competitor. They may therefore be willing to bid up the price of certain slots to a level that will deter potential new entrants.

One way to ease such a situation might be to use so-called *blind bidding* in periodic auctions. Here, the bidders' identities are kept secret, so as to conceal whether the bids are made by new entrants or incumbent airlines. In such a case, a strategy of buying up slots for less valuable uses in order to preclude entry would become rather more expensive, and hence less common.

The traditional economic solution to congestion problems is marginal cost (peak load) pricing. Another way to bring market forces to

bear on the slot allocation system could therefore be to apply this principle and allow airport charges to vary over the day (between peak and off-peak).

As a minimum requirement for efficient and non-discriminatory airport slot allocation, whatever formal or informal connection might exist between the slot coordinator institute and the local flag carrier company should be severed. Slot coordinators need to be unquestionably neutral with respect to all of their incumbent or potential client airlines.

While most of the larger European airports are slot constrained, there are a number of secondary airports with ample slot capacity. By offering inexpensive services, less busy airports might be able to attract substantial volumes of traffic and thereby realise considerable economies of scale and enhanced consumer satisfaction. Low cost airlines have started to exploit this opportunity, challenging the traditional carriers and their hubs by offering point-to-point services between smaller airports.

The promise of this development is, however, limited by the relative shortage of commercially independent airports. In many cases, all or most of a country's airports are owned and operated through one (government) agency. To enhance competition, it might be desirable for European governments to pave the ground for behaviourally independent airports. Ideally, two adjacent and hence potentially competing airports should not have the same owner. In this way, a certain amount of market pressure might be brought to bear on the presently inefficient slot allocation procedures.

7.6 Interlining and tariff consultations

The aim of the block exemption for consultation on passenger tariffs has been to facilitate interlining. There are hardly grounds to question that interlining provides important efficiency gains to carriers and passengers.

Airlines tend to argue that the IATA tariff consultations, in which airlines agree on a common set of fares for fully flexible tickets, form an inextricable part of the interlining

system. There is, however, reason to think that a system of *posted prices* for wholesale (inter-airline) purposes might be sufficient to maintain the interlining system without the price collaboration. Such a system would mean less transparency of fares between airlines and hence probably more intense competition, without jeopardising the efficiency gains connected with interlining.

7.7 Frequent flyer programmes

Almost all major airlines offer their travellers a carefully designed frequent flyer programme (FFP). Most FFPs have the following characteristics in common:

- «Discounts» are granted not in the form of money, but in the form of free services, not necessarily of the same type as purchased. The frequent flyer points are no ordinary rebate.
- To obtain free flights to more or less distant destinations, the customer needs to surpass certain thresholds in terms of travel purchases. The customer thus has an incentive to concentrate her purchases to one or a few providers. The closer the customer gets to a threshold, the stronger is her incentive to buy another flight from that particular airline or alliance.
- The «discount» is given to the traveller, who – in the case of business travel – tends to differ from the purchaser. This gives rise to a pronounced principal-agent problem, by which the decision maker (agent) is faced with a quite different set of incentives from those of her superior (principal). This may lead to a distorted (inefficient) resource allocation.
- Although in principle taxable in many countries, the private use of frequent flyer points earned by an employee is in practice rarely taxed, for lack of information on the part of the government. This tax loophole is likely to aggravate the inefficiency due to the principal-agent problem.

- Alliance airlines join their FFPs to offer attractive, extended networks to bonus point travellers. Smaller airlines or alliances have a distinct competitive disadvantage. The FFPs are thus liable to strengthen any dominant position and to reinforce the anti-competitive effects of hub-and-spoke networks.

Professional economists have been fairly unanimous in concluding that frequent flyer programmes are – as intended – loyalty inducing, giving rise to artificial economies of scope and switching costs. As such, they have welfare decreasing and anti-competitive effects, and are clearly at variance with the spirit of competition law in most countries.

In particular, there is reason to be aware of the anti-competitive effects in a setting with one (or a few) established firm(s) and a potential entrant. If incumbent carriers have been able to recruit a large part of the potential clientele into their frequent flyer programmes, a new entrant may find it exceedingly difficult to capture an economically viable market share.

The European Court has dealt with loyalty rebates on a few occasions. FFPs do not formally presuppose exclusivity in the same way as the fidelity rebates in the *Hoffmann-La Roche Case*. The effect of the FFPs is more similar to the target rebate system in the *Michelin Case*.

So far, no case concerning airline FFPs has been tried by the European Court. To use the case law from the *Michelin Case*, one would have to claim that the concerned airline holds a dominant position in the relevant market.

The European Commission has dealt with FFPs in four cases concerning cooperation between airline companies (cooperation in alliance programmes). As part of the alliance agreements, the airline companies allowed the alliance partner's clients to collect and use accumulated points in each other's FFPs. In SAS/Lufthansa, the Commission stated that the cooperation between the two companies on FFPs was likely to be a not inconsiderable bar-

rier to market entry, and therefore a breach of Article 81(1). The Commission's condition for approval under Article 81(3) was that any other airline which provided or wished to provide services on the routes in question, and which did not have a FFP applicable at the international level, should be afforded the opportunity of participating in the programme.

In Scandinavia, the attitude towards FFPs is critical.

In its ruling of 27 February 2001, the Swedish Market Court ordered the SAS not to apply its FFP in such a way that passengers earning points were able to redeem them as bonus awards or the equivalent when using certain air travel services. The practice was deemed to be an abuse of SAS's dominant position in breach of Section 19 of the Competition Act. The ruling applies to *domestic* air travel in Sweden between cities where SAS, or airlines cooperating with SAS on the scheme, encounter competition through existing or newly established scheduled air passenger traffic.

On 18 March 2000, the Norwegian Competition Authority ordered the SAS air carrier group to stop awarding frequent flyer points on domestic Norwegian routes. Unlike the Swedish ruling, the prohibition in Norway applies on *all* domestic routes, competitive or not. It becomes effective on 1 August 2002. The complaint filed by SAS has been turned down by the Norwegian Ministry of Labour and Government Administration.

To become maximally effective, restrictions on the use of FFPs should be multilateral rather than unilateral, i. e. applicable to all (European) carriers and routes rather than to a few designated air travel sectors. The Task Force therefore would like to urge the European Commission to open up for a thorough investigation of the FFPs under the Article 81 and Article 82 provisions. In parallel, national European competition authorities may want to consider critically the anti-competitive effects of FFPs on domestic routes.

7.8 Corporate discount schemes

Corporate discount schemes are agreements by which large airline customers have been able to negotiate lower (net) fares on all of or on certain parts of an airline's network. Discounts of 30 to 50 per cent are not uncommon on business class tickets.

Corporate discount schemes have ambiguous effects on welfare. On the one hand, they reflect a certain transfer of market power from the seller to the buyer. Large private and public customers may be able to exploit buying power by triggering competition between the producers for an exclusive contract involving large discounts. By allowing for such price discrimination, one may actually trigger intense price rivalry, resulting in enhanced welfare in the affected segment.

However, many of the corporate discount schemes take forms that engender important lock-in effects, as when the rebate is somehow progressive. Often, the structure of the agreement or the development of negotiations provide the airline customers with an incentive to concentrate their demand to one or a few carriers. If so, larger carriers will obtain an inherent advantage compared to smaller ones.

Unlike the differentiation between business class and economy class tickets, corporate discount schemes usually discriminate between customers not on the basis of price elasticity, but on the basis of buying power. Thus there is no guarantee that the more price elastic segment receives the lower price – indeed, the opposite may seem more likely. This increases the risk that the welfare gain among large customers will be more than outweighed by the loss affecting all other clients.

Discounts may tend to be large in segments with quite inelastic demand. This is not an optimal way for the airlines to cover their fixed costs. Moreover, intense price rivalry between suppliers may therefore lead to exits from the market, because not all the airlines are able to cover their fixed costs. In a similar manner, potential entrants might be deterred, knowing that the incumbent airline is able to meet any

challenger by offering selective discounts to large, attractive clients. Since these discounts may be directed exclusively to a small set of customers, without affecting market prices in general, such price discrimination serves to make predation much less expensive to the dominant supplier, and hence a more credible threat to potential entrants.

This suggests that corporate discount schemes are anti-competitive, especially in a setting with a dominant, incumbent carrier and smaller potential entrants.

7.9 Computerised reservation systems

The computerised reservation systems (CRSs) are essential facilities in the marketing of air travel services. In some cases, airlines are vertically integrated with or cooperating closely with travel agencies and with the providers of CRSs. In such cases, the airline should be prevented from using its dominant position to restrict or prevent competition, by having, e.g., the CRS display its own flights more prominently than those of its competitors.

EU Council Regulation 2299/89 stipulates a code of conduct for these systems, meant to ensure fair and non-discriminatory service. Informal information nevertheless suggests that, in many travel agencies, these systems are operated in ways that do leave something to be desired in terms of neutrality and non-discrimination. A closer control with the way these systems are set up and operated may seem appropriate. It is, e.g., essential that all airline carriers enjoy equal opportunities for presentation and sale to a client, and that no airline carrier be able to access all the information stored in a travel agent's data base and use it for its own marketing purposes.

7.10 Corporate cards and electronic ticketing

Airlines have devised cards that allow corporate staff to travel without a hard-copy flight ticket. Such corporate cards can be pre-loaded with a certain number of trips or an unlimited number of trips for a predefined period of time for a particular route. Discounts are generally

granted compared to the fare charged for conventional tickets. The size of the discount may depend on the number of trips purchased at any one time. From the point of view of competition and economic efficiency, the acceptability of these rebate schemes may hinge on whether they are linked to corresponding cost savings. To the extent that customers are rewarded for concentrating their demand, the corporate cards are loyalty inducing and harmful to competition.

A corporate card facilitates corporate travel administration and offers savings both to the companies and to the airlines. Such electronic ticketing (e-ticketing) is growing relative to conventional travel with paper tickets. This may have far-reaching implications for travel agencies and their profitability and, in turn, lead to accelerating centralisation. To the extent that by-passing one intermediary in the supply chain improves efficiency and reduces production costs, the implications for customers may be beneficial despite increasing concentration.

To the extent, however, that e-ticketing is not based on open standards, but requires the traveller to hold an electronic card specific to a particular carrier or alliance, such a ticketing system may be liable to restrict competition between airlines. This is particularly so if e-ticketing is integrated with the airline's frequent flyer programme, by making use, e. g., of the FFP membership card.

7.11 Travel agent agreements

Travel agent agreements sometimes provide incentives for an agent to concentrate his sales to one or a few larger airlines. Such contracts may be anti-competitive and in disagreement with the principles laid down by the EU Commission in the Virgin/BA case on 14 July 1999.

There is reason to question whether all carrier-agent agreements and practices have yet been brought in accordance with these principles. Competition authorities may want to direct attention to this problem and exert a more vigorous control.

7.12 Taxes, subsidies, and public procurement.

Some airline carriers have continued to receive substantial amounts of direct or indirect aid from the national government. Such transfers may destroy the level playing field between airlines and should be minimised.

In many countries, the public administration is itself a major airline client. Governments may want to use their negotiating power to enhance competition, by adhering to the following principles in public procurement agreements:

- (i) Public purchases should, if possible, be tendered in small portions, e. g. route by route, so that small size companies may bid.
- (ii) Preference clauses, if present, should admit that, notwithstanding the public procurement deal, the government is always free to make use of a cheaper and/or higher quality service that may be offered by someone else.
- (iii) Fixed fares (over a certain time lapse) are preferable to percentage discounts off the nominal fare. This is so because percentage discount agreements tend to bid up the fare for all those clients who do not have a comparable agreement.

Tax rules applicable to the aviation industry and its related activities should be neutral with respect to, *inter alia*, in-house production in a vertical chain compared to outsourcing (confer Section 7.13).

7.13 Ground handling

Council Directive 96/67/EC ensures minimum standards of access to ground handling at all airports with at least two million passengers annually. In the Nordic countries, numerous airports do not surpass this threshold and are hence not affected by the Directive. This is liable to restrict competition, not only in the ground handling market, but even in the air travel market, because, as a consequence, smaller carriers may have no option but to buy ground handling services from their dominant competitor. In certain cases, this setting may act as a barrier to entry. Moreover, even for the larger airports, the Directive does not ensure free and unimpeded access to any interested

supplier; it only prescribes that the number of third party providers not be fewer than two, of which at most one may be controlled by an incumbent airline. Thus, there may be reason for national competition and transport authorities to impose more demanding regulations on airports than what follows from the Directive.

Another possible competitive restriction concerning ground handling services relates to the taxation system. To the extent that providers integrated with or controlled by an airline participate in ground handling, it is important that the tax rules not favour such own-account modes of operation compared to outsourcing. If, e. g., independent ground handling providers are subject to output value added tax (VAT), without the airline companies being able to deduct the corresponding input VAT, then larger carriers having their own catering firm or department will have a distinct cost advantage compared to smaller carriers that need to buy these services in the market. In fact, such a setting will make it quite difficult for independent ground handling firms to survive at all.

7.14 The Nordic aviation market

The air travel market within and between the Nordic countries is surprisingly large, as seen in relation to the countries' relatively modest population. Among about 24 million inhabitants, 29 million (one-way) air trips are made every year within or between Denmark, Finland, Norway, and Sweden. Another 28 million trips per annum are made between the Nordic countries and the rest of the European Economic Area (EEA).

Some Nordic routes are quite dense. Oslo-Trondheim, Oslo-Bergen, and Stockholm-Gothenburg all exhibited more than 1.3 million passengers in 2000. The Stockholm-Malmö route carried close to 1.2 million travellers, while the Oslo-Stavanger, Copenhagen-Stockholm, and Copenhagen-Oslo routes all

had close to one million passengers over the year. Between 700 and 900 thousand passengers were carried on each of the routes Stockholm-Luleå, Oslo-Tromsø, Stockholm-Oslo, Stockholm-Helsinki, Stockholm-Umeå, and Bergen-Stavanger.

The densest routes out of the Nordic area are Stockholm-London, Copenhagen-London, and Oslo-London, with about 1.1, 0.9, and 0.7 million passengers in 2000, respectively.

Traditionally, the Nordic aviation markets have been more or less dominated by the two flag carriers SAS and Finnair. The former carrier is owned approximately 3/14 by the Swedish state, 2/14 by the Danish state, and 2/14 by the Norwegian state, the remaining half being privately owned. Since the SAS-Braathens merger in December 2001, there are very few examples of effective airline competition within the Nordic networks.

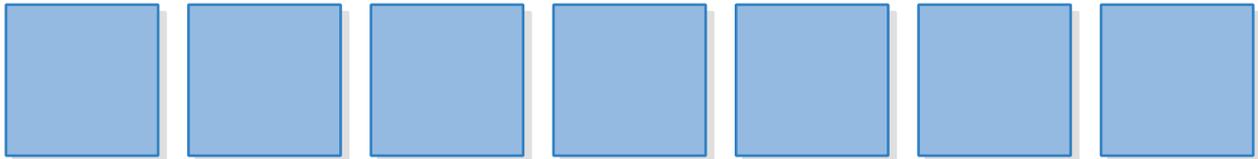
This situation is a matter of deep concern to the Nordic competition authorities. On account of the size of the respective city pair markets, there is reason to think that numerous Nordic routes may provide sufficient room for competition between carriers operating above the minimum viable scale of production. Such competition is likely to enhance economic efficiency and welfare.

More generally, the Nordic competition authorities are concerned by the many restrictions affecting airline competition at the Community, pan-European, and global level. Despite the fact that the Community air travel markets have been gradually deregulated, a number of market imperfections persist, preventing an economically optimal resource utilisation. There is reason to fear that, without a more vigorous competition policy at the national and Community levels, the welfare losses stemming from an insufficient competitive pressure on airlines are due to increase rather than diminish over time.

LITERATURE

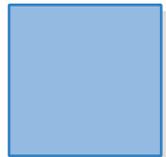
- AEA (1998): Airline alliances and competition in transatlantic airline markets. The Association of European Airlines.
- Baltagi B H, Griffin J M, and Rich D P (1995): Airline deregulation: The cost pieces of the puzzle. *International Economic Review* **36**:245-258.
- Barla P and Perelman S (1989): Technical efficiency and airlines under regulated and deregulated environment. *Annals and Public and Cooperative Economics* **60**:103-124.
- Bauer P (1990): Recent developments in the econometric estimation of frontiers. *Journal of Econometrics* **46**:39-56.
- Borenstein S (1985): Price discrimination in free entry markets. *RAND Journal of Economics* **16**: 380-397.
- Borenstein S (1992): The evolution of U.S. airline competition. *Journal of Economic Perspectives* **6**: 45-73.
- Borenstein S and Rose N L (1994): Competition and price dispersion in the U.S. airline industry. *Journal of Political Economy* **102**: 653-683.
- Bruning E R (1991): Market liberalization and operation efficiency in the international aviation industry. *International Journal of Transport Economics* **28**:259-274.
- CAA (1998): The single European aviation market: the first five years. CAP 685, Civil Aviation Authority, London.
- Carns R D and Galbraith J W (1990): Artificial compatibility, barriers to entry, and frequent flyer programs. *Canadian Journal of Economics* **23**:807-16
- Caves R E (1962): *Air Transport and its Regulators: an Industry study*. Harvard University Press, Cambridge, Mass.
- Caves D W, Christensen L R, and Diewert W E (1982): Multilateral comparisons of output, input and productivity using superlative index numbers. *Economic Journal* **92**:73-86.
- Caves D W, Christensen L R, and Tretheway M W (1981): U.S. Trunk airlines 1972-1977: A multilateral comparison of total factor productivity. In: Cowing T G and Stevenson RE (eds): *Productivity Measurement in Regulated Industries*. Academic Press, New York.
- Caves D W, Christensen L R, and Tretheway M W (1984): Economies of density versus economies of scale: Why trunk and local airline services differ. *Rand Journal of Economics* **15**:471-89.
- Cowi Consult (1998): Conditions for air transport in Scandinavia. Copenhagen.
- Dahlin N-O and Sjögren S (1997): Utredning om den svenska flygbränslemarknaden. Luftfartsverket, Stockholm.
- Economic-Plus Limited GRA, Inc. (2000): An economic assessment of the IATA interline system.
- Eriksen K S, Markussen T E, and Pütz K (1999): *Marginale kostnader ved transportvirksomhet*. Report 464, Institute of Transport Economics, Oslo.
- Erlich I, Gallais-Hamonno G, Liu Z, and Lutter R (1994): Productivity growth and firm ownership: An analytical and empirical investigation. *Journal of Political Economy* **102**:1006-1038.
- European Commission (1996): Towards fair and efficient pricing in transport. COM(95)691.
- European Commission (1999): The European Airline Industry: From Single Market to World-Wide Challenges.
- European Commission (2001): Updating and developments of economic and fares data regarding the European Air Travel Industry, 2000 Annual Report. Available at http://www.europa.eu.int/comm/transport/themes/air/english/at_13_en.html.
- Fjell K, Hagen K P, and Johansen G M (2000): *Krysssubsidiering – operasjonaliserbar definisjon og samfunnsøkonomisk ønskelige tiltak*. Report 19/00, SNF, Bergen.
- Gillen DW, Oum T H, and Tretheway M W (1985): *Airline Costs and Performance. Implications for Public and Industry Policies*. Centre for Transport Studies, University of British Columbia, Vancouver.
- Gillen DW, Oum T H, and Tretheway M W (1990): Airline cost structure and policy implications. *Journal of Transport Economics and Policy* **24**:9-34.
- Good D H and Rhodes E L (1991): Productive efficiency, technological change and the competitiveness of U.S. airlines in the Pacific Rim. *Journal of the Transportation Research Forum* **31**:347-358
- Good D H, Nadiri M I, Röller L H, and Sickles R C (1993): Efficiency and productivity growth comparisons of European and U.S. Airlines: A first look at the data. *The Journal of Productivity Analysis* **4**:115-125
- Hanlon J P (1999): *Global airlines: competition in a transnational industry*. 2nd edition, Butterworth-Heinemann, Oxford.,
- Hendricks K, Piccione M, and Tan G (1995): The economics of hubs: the case of monopoly. *Review of Economic Studies* **62**:83-99.
- Jha R and Sahni B S (1992): Towards measuring airline technical inefficiency: The case of the Canadian airlines industry. *International Journal of Transport Economics* **19**:45-59.
- Klemperer P (1984): Collusion via switching costs: How frequent flyer programs, trading stamps, and technology choices aid collusion. Research paper 786, Stanford Graduate School of Business, Palo Alto.

- Klemperer P (1995): Competition when consumers have switching costs: An overview with applications to industrial organization, macroeconomics, and international trade. *Review of Economic Studies* **62**:515-539
- Lijesen M G, Rietfeld P, and Nijkamp P (2000): Do European carriers dominate their hubs? Discussion Paper 00-071/3, Tinbergen Institute, Amsterdam/Rotterdam.
- Ljung B (1995): *Ekonomiska kalkyler*. Liber, ed. 3:1, Malmö.
- Luftfartsverket (2001): Utredningsrapport. Linköping
- Maibach M, Banfi S, Doll C, Rothengatter W, Schenkel P, Sieber N and Zuber J (2000): External costs of transport. INFRAS/IWW, Zürich/Karlsruhe. Available at <http://infras.domainserver.ch/htdocs/downloads/z-620e.pdf>
- McGovan F and Seabright P (1989): Deregulating European airlines. *Economic Policy* **9**:284-344.
- Mohring H. (1972): Optimisation and scale economics in urban bus transportation, *American Economic Review, Papers and Proceedings*, 1972.
- Morrison W and Winston C (1986): *The economic effects of airline deregulation*. The Brookings Institution, Washington DC.
- Nako S (1992): Frequent Flyer Programs and Business Travellers: An Empirical Investigation. *Logistics and Transportation Review* **28**:395-414.
- Nero G (1999): A note on the competitive advantage of large hub-and-spoke network. *Transportation Research E* **35**:225-239
- Neven D and Röller L H (1996): Rent sharing in the European airline industry. *European Economic Review* **40**:933-940.
- Ng CK and Seabright P (2001): Competition, privatisation and productive efficiency: Evidence from the airline industry. *The Economic Journal* **111**:591-619.
- OECD (1998): Competition policy and international airport services. DAFPE/CLP/(98)3.
- OECD (2001): Airline mergers and alliances. DAFPE/CLP(2001)1.
- Olsson J and Skärvad P-H (1997): *Företagsekonomi 99*. Liber Ekonomi, ed. 8:2, Malmö.
- Oum T H and Yu C (1998a): *Winning airlines. Productivity and cost competitiveness of the world airlines*. Kluwer Academic Publishers, Boston.
- Oum T H and Yu C (1998b): Cost competitiveness of the major airlines: An international comparison. *Transportation Research* **32**:407-422.
- Pricewaterhouse Cooper (2000): Study of Certain Aspects of Council Regulation 95/93 on Common Rules for the Allocation of Slots at Community Airports. Final Report 20 May 2000.
- Prousaloglou K and Koppelman F (1995): Air carrier demand – an analysis of market share determinants. *Transportation* **22**:371-388.
- Röller L-H and Sickles R C (1994): *Competition, market niches, and efficiency: A structural model of the European airline industry*. Discussion paper no. 926, CEPR.
- SAS (1999): SAS Annual Report 1999. www.sas.dk.
- SAS (2000): SAS Annual Report 2000. www.sas.dk.
- SCA (1998): Deregulated markets in Sweden – a follow-up study. Report 1998:3, Swedish Competition Authority, Stockholm.
- SCA (2000): The development of competition in Sweden in the 1990s – An executive summary of the report 2000:1. Swedish Competition Authority, Stockholm.
- SCA (2001): Annual report 2000. Swedish Competition Authority, Stockholm.
- SCAA (2001): Marketing Prospects: Measures for Improving Competition. Swedish Civil Aviation Administration, Stockholm
- Shapiro C and Varian H (1998): *Information Rules. A Strategic Guide to the Network Economy*. Harvard Business School Press, Cambridge, Mass.
- Shy O (2001): *The economics of network industries*. Cambridge University Press, Cambridge.
- Steen F and Strandenes S P (2002): Productivity, cost structure and network economies in airlines industries. Report submitted to the Nordic competition authorities. Norwegian School of Economics and Business Administration (NHH), Bergen.
- Steen F and Sjørgard L (2001): Konkurransen versus monopol i norsk luftfart (Competition versus monopoly in the Norwegian airline industry – in Norwegian). Confidential report submitted to the Norwegian Competition Authority. Norwegian School of Economics and Business Administration (NHH), Bergen.
- Steen F and Sjørgard L (2002): Price discrimination in the airline industry. Report submitted to the Nordic competition authorities. Norwegian School of Economics and Business Administration (NHH), Bergen.
- Strazheim M (1969): *The international airline industry*. The Brookings institution, Washington DC.
- Tirole J (1988): *The Theory of Industrial Organization*. MIT Press, Cambridge, Mass.
- Varian H (1989): Price Discrimination. Chapter 10 in Schmalensee R and Willig R D (eds.): *Handbook of Industrial Organization*. North-Holland, Amsterdam.
- Varian H (1996): Differential Pricing and Efficiency. *First Monday* **1**(2), August 5, 1996. Available at <http://www.firstmonday.dk/issues/issue2/different/index.html>.
- White L J (1979): Economies of scale and the question of natural monopoly in the airline industry, *Journal of Air Law and Commerce* **44**:545-73.
- Windle R J (1991): The world airlines: A Cost and productivity comparison. *Journal of Transport Economics and Policy* **25**:31-49.



Konkurrencestyrelsen

Nørregade 49, 1165 Copenhagen, Denmark
Telephone: +45 3317 7000
Telefax: +45 3332 6144
www.ks.dk



Konkurrensverket
103 85 Stockholm, Sweden
Telephone +46 8 700 1600
Telefax: +46 8 24 55 43
www.kkv.se



Konkurransetilsynet
Postbox 8132 Dep, 0033 Oslo, Norway
Telephone: +47 22 40 09 00
Telefax: +47 22 40 09 99
www.konkurransetilsynet.no



Samkeppnisstofnun
Postbox 5120, 125 Reykjavik, Iceland
Telephone: +354 552 7422
Telefax: +354 562 7442
www.samkeppni.is



Kilpailuvirasto/Konkurrensverket
Postbox 332, 00531 Helsinki, Finland
Telephone: +358 9 73 141
Telefax: +358 9 7314 3405
<http://www.kilpailuvirasto.fi/>

