

## **From a regulated duopoly to a private monopoly: The deregulation of the Norwegian airline industry**

Frode Steen and Lars Sørsgard\*

### **Summary**

■ We explain the economics of deregulation in the Norwegian airline market, observing a transition from a regulated duopoly prior to 1994 to a monopolised airline market in 2001. Thus, we explain how eight years of deregulation and competition led to this outcome. In particular, we discuss and model a feature of the Norwegian airline market that was one of the main factors behind the merger; competition for large customer contracts. We explain how these contracts led to Bertrand-like competition for large customers and a prisoner's dilemma situation for the airline companies. These operated costly excess capacity, did not price discriminate correctly according to the demand elasticities, and lost revenue from fierce competition for the large customers. The merger solved all these problems.

Then, we discuss some measures we believe may create future domestic competition within the present competitive situation, which resembles the situation in most European countries with one large dominating flag-carrier. We focus on the anticompetitive effect of frequent flyer programs, but also discuss issues like airport charges, airport handling and predatory behaviour. Finally, we briefly comment upon the future situation and the European low-cost-no-frills "revolution". ■

**JEL classification:** L11, L43, L93.

**Keywords:** Deregulation, airlines, monopolization.

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# From a regulated duopoly to a private monopoly: The deregulation of the Norwegian airline industry

Frode Steen and Lars Sørøgard\*

The Norwegian airline market was deregulated eight years ago. Prior to the deregulation, we had a regulated duopoly where Scandinavian Airlines (SAS) and Braathens (BU) divided the market between themselves. It was predicted that a deregulation would trigger competition on prices. However, it did not, at least not in the business segment. Business fares remained high, and even increased considerably in the last couple of years.<sup>1</sup> Moreover, we did not experience increased flexibility in departure times, but rather a clustering of flights. There was a considerable increase in capacity, and planes were half empty. By May 2001, Braathens was almost bankrupt, and six months later, SAS was allowed to acquire Braathens. Deregulation had led to a monopolised Norwegian airline market. What had happened? What went wrong? And, in particular—are there any lessons to be learnt from the Norwegian experience?

In this article, we will try to explain the economics of deregulation in the Norwegian market. In particular, we will discuss and model a particular feature of the Norwegian airline market which was one of the main factors behind the merger; competition for large customer contracts.<sup>2</sup> Then, within the present competitive situation, which re-

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<sup>1</sup> Only part of this increase in price could be explained by the increased Norwegian airline charges or the increased fuel prices over this period (Steen and Sørøgard, 2001).

<sup>2</sup> This article gives an overview of the development in the airline industry in Norway in the last year. Several of the qualitative conclusions presented have been qualified in econometric work in other studies. One of these, Steen and Sørøgard (2001), was undertaken for the Norwegian competition authorities and is confidential. They explore firm- and route level data on capacity, prices and costs for 11 of the major routes in Norway for the period January 1996 to May 2001, both for Braathens and SAS. These data are of course not presented here.

sembles the situation in most European countries with one large dominating flag-carrier, we discuss some measures we believe may create future domestic competition. We will focus on the anticompetitive effect of frequent flyer programs, but also discuss issues like airport charges, airport handling and predatory behaviour. Finally, we will briefly comment upon the future situation and the European low-cost-no-frills “revolution”.

## **1. The first four years of deregulation—from a regulated duopoly to peaceful co-existence**

### **1.1. Prices**

After April 1994, all national carriers were free to enter all of the main city-pairs in Norway. However, there were no new entrants, and only SAS and BU continued to operate on these routes. Although we observed some competition on prices in the leisure segment—a larger number of and, to some extent, lower prices on restricted tickets—we did not observe any price changes on the flexible tickets offered for the business segment.<sup>3</sup>

Why did not we observe price competition in the business segment? First, there is a potential for collusive behaviour in this particular industry. There are only two active firms, and until April 1997, foreign firms were not permitted to serve domestic routes in Norway. Price changes are either to be announced in the press or through the Amadeus computer booking system, which in both cases will quickly be observed by the rival. Hence, both firms can quickly respond to the rival's price changes.

Second, for those routes where both firms did have flights, there exists a system for co-ordinating prices—so-called interlining. The firms are permitted to consult each other concerning price setting. To allow for late changes of flight schedules for normal (no discount) tickets from one airline to another, the airlines have “transferable”

<sup>3</sup>This is e.g. shown in Lian (1996). He finds that the share of discount tickets increased with 2.5 percentage points from 1992 to 1994-95. According to Lian (1996), this is no dramatic change: “...a 2-3 percentage-point increase in discount tickets in two-three years is in line with a long-term trend and implies no sudden change in this trend” (p. 15, authors' translation). The increase in the share of discount tickets are larger in the “leisure” segment than in the business segment (see Lian, 1996, table 4.4).

prices. In order to implement such a policy, the firms are permitted to meet regularly to inform each other about future prices. Hence, there exists an institutional pre-play communication system where each firm can inform its rival about its future prices on normal tickets.

Third, the two firms initially had almost equal market shares in the domestic market. Thus, it was natural to continue with the initial market sharing in the deregulated system. In fact, there were only rather minor changes in the market shares on each route as well as in the total market shares, after the deregulation. ~~In fact,~~ the initial monopoly carrier continued to be a monopolist on 24 out of the 32 city-pair routes. For the remaining eight routes, the pre-deregulation dominant firm continued to have a dominant position. On average, the dominant firm had a 13 percentage point reduction in its market share on these eight routes, and it had no less than a 60 per cent market share on any of the routes in the deregulated regime.<sup>4</sup>

Fourth, the firms have signalled an aggressive response to any move by their rival. In particular, each firm matches the rival's offer. For example, prior to the deregulation, Braathens introduced a discount ticket named Billy to match SAS' discount ticket Jackpot and set a price NOK five below the Jackpot price. SAS immediately responded by reducing its Jackpot price by NOK five. A statement by a representative for Braathens suggests that this is a deliberate policy for the firms in question: "We will match any offer by SAS within an hour, and we cannot accept that SAS has cheaper discount tickets than we have".<sup>5</sup> Such apparently aggressive behaviour is analogous to the introduction of a meet-competition clause. An explanation of this principle, that may also serve as an illustration of the companies' strategy, was provided by Audun Tjomsland, the public relations manager for Braathens: "The two Norwegian firms on Norwegian routes, Braathens and SAS, are of equal size and can follow each other during a price war. The firm that starts a price war will quickly be followed by the rival firm, so that the firm starting a war will only have an advantage for a day or two. Accordingly, the firms are reluctant to trigger a price war."<sup>6</sup>

<sup>4</sup>The exception is the route Bodø-Tromsø, where each airline had two non-stop flights both before and after April 1994.

<sup>5</sup>C. Fougli to Dagens Næringsliv, January 20, 1994 (authors' translation).

<sup>6</sup>Bergens Tidende, July 31, 1995 (authors' translation).

## 1.2. Clustering of departure times

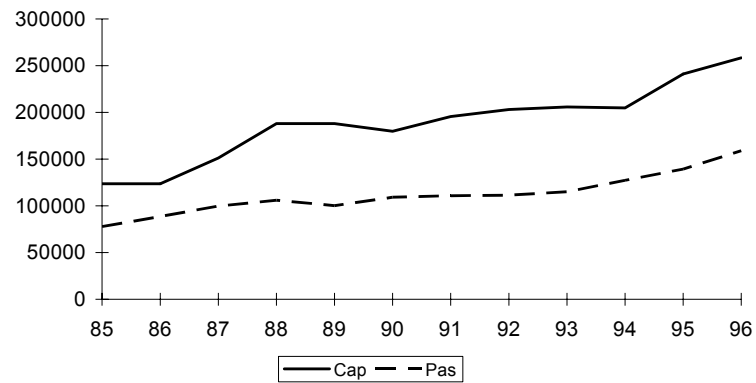
After the deregulation, we saw a clustering on flights. The companies competed on the location of flights on routes where both carriers were present. On these routes, we saw a clear pattern of parallel flights, where both companies had flights very close in time. This pattern has been econometrically shown to be systematic on the competition routes (Salvanes et al., 2000a). The clustering was particularly strong in the morning and afternoon hours when most of the travellers are business travellers. This is reasonable all the time the indication of collusion on prices was most evident in the full price segment (Steen and Sørøgard, 2001). In this segment, the companies did not fear that the clustering of departure times would intensify the price competition. Therefore, they could concentrate on maximizing their market shares by locating close to their rival. The study also indicates that it is the entrant that clusters, i.e., locates close to its rival. This competition on flight departures has also been shown in other markets, like the US market for example (Borenstein and Netz, 1999).

## 1.3. Capacity

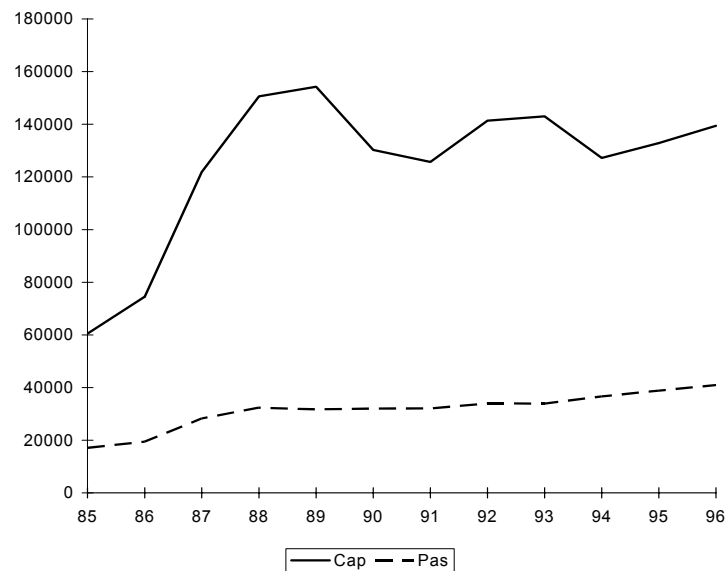
On the duopoly routes, both carriers increased their capacity significantly after the deregulation, which is illustrated in Figure 1. On the monopoly routes, where the other carrier did not enter, we saw an increase in capacity after the deregulation as well (see Oslo-Ålesund and Trondheim-Ålesund in Figure 1). However, on the duopoly routes, the capacity increased more than the growth in number of passengers, particularly on the largest route (see Oslo-Stavanger in Figure 1). This was found to be a systematic pattern when using econometric tests across the major routes in Norway (Salvanes et al., 2000b). The increase in capacity can be seen as an intensified battle for market shares between the two companies, in particular in the business segment, where the frequency of flights is an important determinant of market shares. However, since both companies increased their capacity, the market shares did not change. The result was lower capacity utilisation (lower cabin factor), higher costs and a prisoner's dilemma situation. Hence, at this point, the deregulation had not resulted in lower prices, but a larger capacity that was costly to both companies.

**Figure 1. Development in capacity and passengers in the period 1985 to 1997**

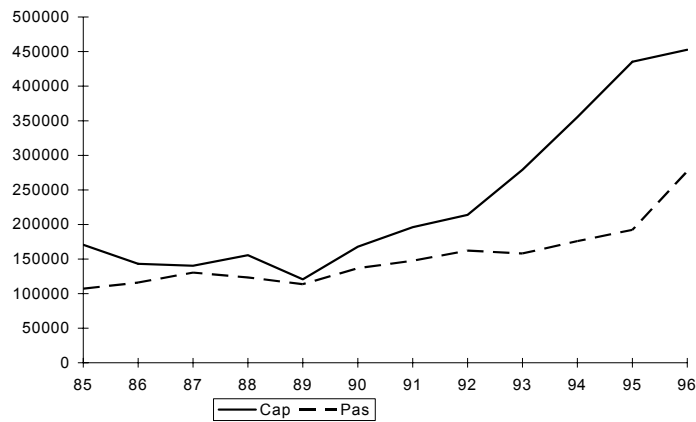
**a. FBU-AES (Monopoly, 6 daily flights in 1995)**



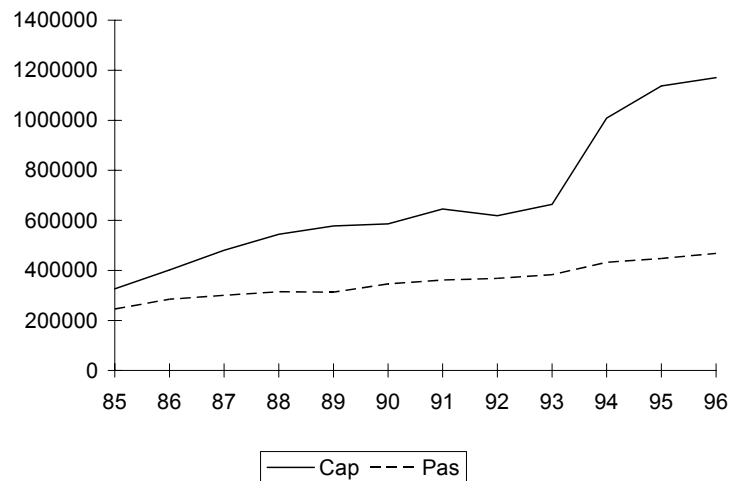
**b. TRD-AES (Monopoly, 4 daily flights in 1995)**



**c. FBU-TOS (Duopoly, 9 daily flights in 1995)**



**d. FBU-STV (Duopoly, 24 daily flights in 1995)**



*Notes:* The four city-pair acronyms denote respectively, FBU-AES (Oslo - Ålesund), TRD-AES (Trondheim - Ålesund), FBU-TOS (Oslo - Tromsø) and FBU-STV (Oslo - Stavanger).

*Source:* Salvanes et al. (2000b).



This pattern is also reflected in the companies' operating profits. In 1994 and 1995, both companies had large surpluses, but by the first quarter of 1996, the financial results had aggravated: "Braathens explains this [poor result] with increased competition. The firm has increased its capacity, but this has not helped much. The growth results in an increase in employment and other costs of production".<sup>7</sup> SAS also tried to deal with the new situation: "Among the initiatives are recruitment on the ground and in the cabin, adjustments of the time-scheduling of flights, an increase in capacity amounting to 400,000 seats annually, better food in business class between Norway and other countries,..."<sup>8</sup> Hence, also the companies themselves seemed to describe their situation as a prisoner's dilemma. Note that neither mentions price cutting as an alternative.

Although we saw little evidence of a fierce price competition in the business travellers' segment following the deregulation, casual observations suggest that the increased capacity led to more price competition in the leisure segment, where the firms offered discounted tickets.<sup>9</sup> As mentioned above, the two firms competed on price with identical kinds of offers like Billy and Jackpot. These were discounted tickets with restrictions unattractive for business travellers. There are numerous other examples of discount tickets with restrictions, where one of the two firms matched the other firm's offer. For example, in the summer of 1996, SAS and Braathens both introduced 50<sup>th</sup> anniversary tickets, which were also discount tickets with restrictions. These types of tickets were new, and designed to be very restrictive in order to prevent a cannibalisation of the business segment.

## **2. The last four years of deregulation: New airport, new slots, new entrant and new competition**

In 1998, several important events changed the competitive environment. A new entrant arrived, and a new main airport in Oslo,

<sup>7</sup> Dagens Næringsliv, May 10, 1996 (authors' translation).

<sup>8</sup> Bergens Tidende, March 09, 1996 (authors' translation).

<sup>9</sup> In Steen and Sjørgard (2001), we undertake an econometric price study where we analyse the prices both in the business and the leisure segment on the major 11 routes in Norway. We found some indication of some price reduction in the leisure segment for the period when Color Air operated, whereas in the business segment, the price increased proportionally more than the costs. Hence, not even the strong increase in Norwegian airline charges and fuel could sustain the increases observed in prices on business tickets.

Gardermoen, was inaugurated. The slot capacity at Gardermoen allowed for both expansion and new entry.

## 2.1. Color Air

The new entrant, Color Air, started its operation in the summer of 1998, but it was not until the opening of Gardermoen in October that year, that Color Air launched its full capacity on the Norwegian market. Even though Color Air was a low-cost-no-frills concept, Braathens and SAS did not primarily meet the new competition with lower prices. Instead, they continued to increase their capacity.<sup>10</sup> Hence, the competitive picture did not change, it only escalated. We got more capacity, more empty seats and somewhat more price competition in the leisure segment. In total, ten new airplanes entered the Norwegian market after the opening of Gardermoen, only three of which were operated by Color Air.<sup>11</sup> It is interesting to note that SAS was most aggressive in its capacity expansion. Several statements from that company indicate that this might have been part of a strategy to squeeze Color Air out of the market. The managing director of SAS, Jan Stenberg, said in May 1999: “SAS has no intention to reduce its excess capacity in the domestic market. The plan is to aim for more aggressive price advertising campaigns in the Norwegian market. ... I think it is only a question of about a few months before Color Air exits the market.”<sup>12</sup> The very same day, the deputy managing director of SAS, Vagn Sørensen, stated: “This is a question of who is going to give in first, and SAS is very persevering. Our aim is to gain market shares in the Norwegian domestic market—which we will do.”<sup>13</sup> This implies that SAS was willing to suffer financial losses for a period of time—which they themselves verified to be doing in this period—to reduce future competition. This can at least look like predatory behaviour.

Four months later, SAS’ prophecies were fulfilled—Color Air was bankrupt. Now, it seemed as if Braathens and SAS used media to undertake a coordinated reduction in capacity. Just after the bankruptcy

<sup>10</sup> This is shown in Steen and Sørøgard (2001), but also in the study of Aasheim and Askim (2000) using a shorter dataset.

<sup>11</sup> One airplane can be used for a maximum of 16 hours a day in the Norwegian network. Hence, ten new airplanes on the market were a considerable increase in capacity, in particular, since we already had excess capacity on several routes.

<sup>12</sup> NTB-press release May 7, 1999 (authors’ translation).

<sup>13</sup> Dagbladet, May 7, 1999 (authors’ translation).

we could read: “SAS has on several occasions announced that it will reduce its capacity if Braathens starts reducing its [capacity].”<sup>14</sup> Braathens answers and makes reductions in its capacity: “Braathens reduces its capacity to save money and increase profitability. ...The capacity will be reduced by 7 per cent.”<sup>15</sup> We could now observe a “ping pong” game:

- “SAS made it public that, starting November 15, it would reduce its capacity...”
- “From November 2, Braathens will reduce its capacity by 16 flights per day.”
- “SAS is downsizing—three daily roundtrips between Oslo and Bergen, Trondheim and Stavanger are removed.”<sup>16</sup>

Already in the spring of 2000, seven out of the ten new airplanes that entered in October 1998 had been removed from the market. On the route between Oslo and Bergen alone, 600,000 seats had been removed, corresponding to 46 per cent of the passengers travelling this route in 1998. This indicates that by May 2000, the capacity utilization had returned to the level we had before the opening of Gardermoen. This can also be seen from the numbers when undertaking systematic econometric tests on several routes (Steen and Sørgaard, 2001). We still had capacity competition, but it was not as aggressive as when Color Air was in the market. Then, there is evidence suggesting that there was still a capacity coordination incentive to merge, because a monopoly would not be forced to live with this high capacity.

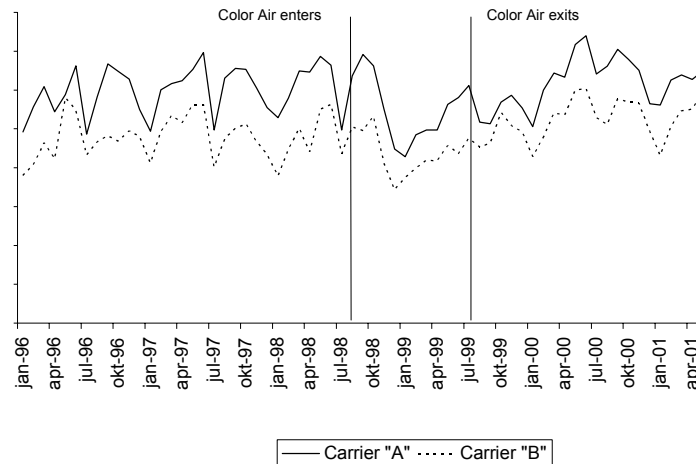
In Figure 2, the development in capacity utilisation (load factor) in the period January 1996 to May 2000 is shown for a representative Norwegian duopoly route. As can be seen from the figure, the load factor had returned to the 1996 level during the spring of 2000. This pattern was parallel for both carriers. Actually, the load factor increased even more during the next 12 months.

<sup>14</sup> Bergens Tidende, November 12, 1999 (authors’ translation).

<sup>15</sup> NTB, October 27, 1999 (authors’ translation).

<sup>16</sup> Nettavisen, Bergens Tidende, November 19, (authors’ translation).

**Figure 2 The development of capacity utilisation (load factor) in the period January 1996 to May 2000 on a representative Norwegian duopoly route.**



## 2.2. New competition—large customer contracts

In these last four years of deregulation, we saw another important feature of the competitive situation emerge, the effect of an increasing number of large customer contracts. A large customer contract is a contract between a large customer and one of the carriers, where all employees from this firm will travel with this carrier at a contracted price. The contract will specify a percentage reduction of the full (C) price ticket. The typical contract will be a combination of discounts on different routes and a discount according to the customer's total travel volume in the domestic network. The latter implies that the company only has a contract with one of the two carriers. The contracts are secret and contain strict conditions, which makes the secrecy conditions mandatory for both parties.

This kind of contract can lead to very intense rivalry on prices. It is an “all-or-nothing” competition. If the carrier loses one large customer to the other carrier it loses considerable passenger volume, and since the price cost margin is positive, considerable profits. Hence,

each carrier faces a very high own price elasticity of demand in this large customer market. This gives strong incentives to undercut your rival's price, and might lead to a price very close to the marginal costs (Bertrand-like competition).

These contracts were available already in 1994, but not until 1998 did they gain importance, both in terms of number of contracts, and in terms of discount size. There are several explanations for this gradual increase. The slot capacity at the old airport Fornebu was exhausted. When Gardermoen opened, both companies had the possibility to increase their capacity on all routes, also the smaller ones, and both could thereby offer a full domestic network. This led to more competition on large customer contracts, since all large customers were now potential large customers for both carriers. Due to the slot restrictions, the companies had less of a problem with excess capacity in the first deregulation period, and were therefore less tempted to act aggressively in this market.

Furthermore, we know from other markets with this kind of secret large customer contracts—in particular the Swedish diesel and petrol market—that there is often an escalation of discounts and number of contracts over time. One possible reason for such a development follows from the intertemporal nature of these contracts. A contract will be renegotiated after a period of time, and due to the competition between the two carriers and the secrecy of these contracts, discounts tend to increase over time. In 2000, the carriers had around 300 contracts, more than a doubling from 1998, and the discounts had become substantial: “According to information obtained by Dagens Næringsliv, some of the large customer discounts are in the order of 50 per cent on certain routes. Normally the discounts are in the range of 5-50 per cent relative to the C-price.”<sup>17</sup> This escalation of discounts was the outcome of an intense rivalry between Braathens and SAS. The responsible for large customer contracts at SAS, Stein Bemer, stated: “We hope to reduce the discount level... it is evident that a possible merger [with Braathens] would make it possible to achieve this goal, ... When the competitive picture changes, some of our large customers will not have the same bargaining power to obtain as large discounts as they used to have.”<sup>18</sup>

<sup>17</sup> Dagens Næringsliv September 12, 2001 (authors' translation).

<sup>18</sup> Dagens Næringsliv September 12, 2001 (authors' translation).

The discounts also differed considerably according to the competitive situation on the different routes. The largest discounts could be observed on routes where there was a large asymmetry between the carriers' market shares. The smallest carrier was typically willing to give very large discounts to gain market shares on these routes. Accordingly, on monopoly routes, the discounts were smaller (Steen and Sjørgard, 2001)

*A simple large customer contracts price model*

We now turn to a more subtle effect of these large customer contracts, namely the level of the full price ticket (C-price). For this purpose, we introduce a simple model. We assume that the carriers were able to collude on price, via the interline prices, and therefore act as a de facto price cartel.<sup>19</sup> To simplify further, let us assume that large customers only buy C-price tickets. Demand is given by  $X = A - P$ , where  $P$  is the price before any discounts and  $A$  measures the customers' maximum willingness to pay. Furthermore, let  $s$  be the share of the consumers that have a large customer contract, and let  $r$  denote the average discount (in absolute terms) in the large customer contract. The two carriers will have the following profit function:<sup>20</sup>

$$\Pi = (P-c)(A-P)[1-s] + (P-c-r)(A-P+r)s.$$

The optimal gross (non-discounted) C-price will then be:

$$P^* = \frac{A + c + 2rs}{2}.$$

Not surprisingly, the optimal price increases in costs ( $c$ ) and willingness to pay ( $A$ ). More interesting is the effect of the large customer contracts. The higher the number of large customer contracts ( $s$ ) the

<sup>19</sup> This assumption is supported in several of the earlier studies, e.g. Salvenes et al. (2000a,b) and Steen and Sjørgard (2001). In Salvenes et al. (2000b), for instance, the empirical results are consistent with the regime that assumes collusion on prices.

<sup>20</sup> An alternative would be to assume that the discount was a percentage discount rather than an absolute discount. It is straightforward to show that a percentage discount has the same qualitative effects as an absolute discount. It can also be shown that if large customers only act according to the full non-discounted price rather than the net-discounted price, the large customer contracts will have less effect on the level of the C-price.

higher is the  $C$ -price, and the higher the discounts are ( $r$ ), the higher is the optimal price.<sup>21</sup> The reason for this is quite straightforward. Through an increase in the ordinary  $C$ -price, the companies can regain some of the discount given in the large customer contracts. The larger the discounts are and the more large customer contracts the carriers sign, the stronger is the incentive to increase prices. The problem with this strategy is that customers without large customer contracts will face too high prices. Actually, the price will be even higher than the ordinary monopoly price for  $C$ -class tickets.

In Table 1, we have shown how the large customer contracts will affect the gross (non-discounted) price for different combinations of discount level and share of large customer contracts. The large customer discounts have a significant effect on the gross price. For instance, if the discount amounts to  $\frac{3}{4}$  of the original price-cost margin, the gross price will increase by 20 per cent if 40 per cent of the full-price customers have large customer contracts. This seems to be a quite reasonable scenario. Observed discounts were in the order of 50 per cent of the  $C$ -price for several large customer contracts, and we know that nearly half of the business travellers had some sort of large customer contracts.

**Table 1 The effects of large customer contracts on the gross (non-discount) price ( =  $P_0$ ) predicted from our theoretical model (in percent)**

		<b>s</b>			
		<b>0.1</b>	<b>0.2</b>	<b>0.4</b>	<b>0.6</b>
$r/(P_0 - c)$	<b>0.25</b>	2	3	7	10
	<b>0.50</b>	3	7	13	20
	<b>0.75</b>	5	10	20	27
	<b>1.00</b>	7	13	27	40

According to our simple model, the increased importance of large customer contracts in the last part of the deregulation period led to higher  $C$ -prices. This is also what we observe when we look at the development of the  $C$ -price. The  $C$ -price has increased considerably.

<sup>21</sup>In this set-up,  $r$  is exogenously given. This is of course a simplification, since  $r$  is determined through negotiations between the large customer and the airline company. However, these negotiations are undertaken *ex ante*. The decision about how much to travel is undertaken *ex post*. Hence, it is reasonable to assume  $r$  to be exogenously determined here.

In Figure 3, we show the development in the C-price on some routes. This increase is quite probably correlated to the increased importance of large customer contracts.

In the period from 1998 to May 2001, when Braathens and SAS announced their merger (see below), prices increased by an average of more than 27 per cent. Compared to the development in the general CPI or other transport forms such as car, boat or train, the price increase for these groups has been in the order of 10-20 per cent. We find that the large customer contracts partly explain this extraordinary price increase in the airline industry.<sup>22</sup>

A reasonable conclusion is that the discounts in these contracts are the outcome of competition rather than deliberate price discrimination. As is well known from the theory of third-degree price discrimination, a firm would find it profitable to set a high price in a segment with price inelastic demand, and a low price in a segment with price elastic demand. However, we observed the opposite in the Norwegian airline industry. Large discounts were given to firms that typically buy flexible tickets. Such a firm's demand is typically price inelastic.<sup>23</sup>

As we heard from the responsible for larger customer contracts at SAS, Stein Bemer, a merger will "reduce the discount level". A reasonable benchmark is Sweden. Here, SAS has approximately 90 per cent of the market and the Swedish large customer discounts are in the range of 10-15 per cent. If we look at the losses attributed to the Norwegian large customer discounts in 1999 and 2000, they amounted to between 5-10 per cent of the revenue from the Norwegian routes.<sup>24</sup> These losses will disappear after a merger.

<sup>22</sup>Using monthly data for ten Norwegian routes over the period January 1996 to May 2001, we find that when including variables such as the number of large customer contracts or the total revenue that accrues to these contracts in a dynamic price model, we find that these variables have a positive and significant effect on the C-price level (Steen and Sjørgard, 2001).

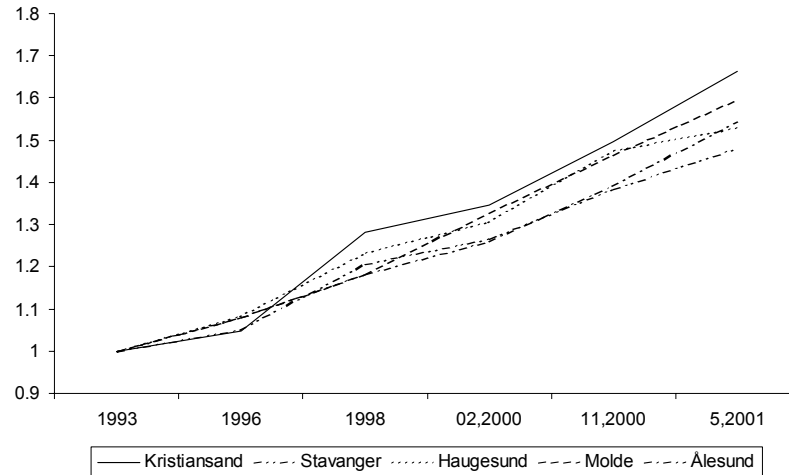
<sup>23</sup>An alternative interpretation is of course that the largest customers receive a quantity discount and the pricing is described by second-degree price discrimination. However, this can still not explain the large discounts given to large customers. In particular, such a quantity discount should lead to a clear pattern with lower prices, the larger is the travel volume of a firm. Actually, when we look at the figures this is not the case, several large customers had very favourable contracts with large discounts, but their travel volume was exceeded by that of other firms with significantly less favourable large customer contracts.

<sup>24</sup> Here, we have attributed all revenue loss due to discounts as losses. Clearly, a higher large customer price would have led to a smaller passenger volume but still,

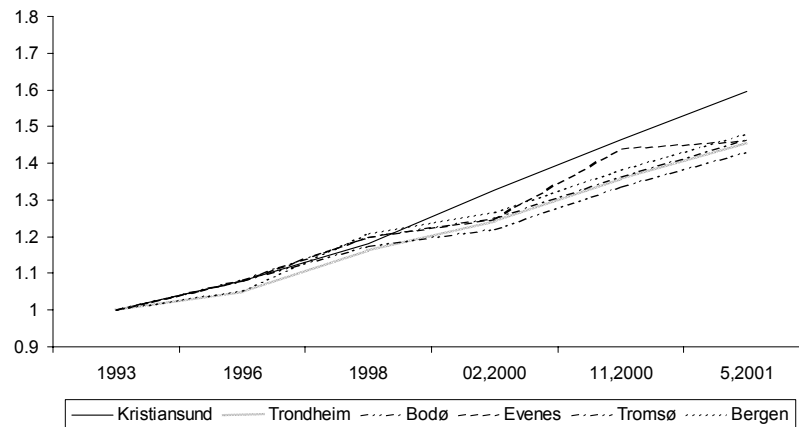


**Figure 3. Normalised nominal development in prices on 11  
Oslo routes in the period 1993 to May 2001**

**a**



**b.**



*Source* : Norwegian travel agents, C-prices net of taxes.

the numbers presented show that these figures represent dramatic losses to the carriers.

Not only are prices affected by the large customer contracts, capacity is also indirectly dependent on these contracts. To be able to compete on the contracts, both carriers had to sustain a large parallel network. Hence, not only did they compete on market shares by sustaining too high a capacity level in general on the large routes, the large customer contracts made the carriers sustain unprofitable parallel flights also on smaller routes. In sum: Excess capacity was inevitable.

### **3. Why did SAS acquire Braathens?**

On May 21, 2001 it was publicly announced that SAS had made an offer to acquire Braathens. The competition authorities in Norway spent several months analysing the situation and on October 23, they announced that they would allow the merger. The competition authorities were sceptical to the merger, since a monopolisation of the Norwegian market was clearly bad for competition. However, according to the competition authorities, Braathens became a failing firm during the fall of 2001. For this reason, the Norwegian competition authorities permitted the acquisition, since a bankruptcy was considered a worse alternative. The decision was then evaluated by the The Norwegian Ministry of Labour and Government Administration, but they also found that an acquisition would be the best alternative, and in 2002, the new Norwegian airline monopoly was a reality.

When looking at the history up to 2002, we have observed competition after the deregulation, but the problem for the Norwegian customers has been that the carriers competed along the wrong dimensions. The lack of price competition in the business segment led to competition on location and capacity. Those who benefited were the passengers in the leisure segment, since the supply of low-price tickets increased. The most important segment, however, business travellers, could only use these tickets to a very small degree since discount tickets are restricted in use and do not comply with a business traveller's needs.

Business travellers within the large companies started to benefit from the large customer discounts towards the end of the period studied, enjoying large discounts after 1998. Those without any large customer contracts received no discounts, however, and even had to pay an extra premium due to the unfortunate relationship between the large customer contracts and the C-price.

The carriers did not gain from the situation. They operated costly excess capacity, they did not price discriminate correctly according to the demand elasticities, and they lost considerable revenue from fierce competition for large customers. After years of competition and several strategic mistakes, Braathens was close to bankruptcy in 2001. It had tried to fight against SAS in Sweden and had lost, it struggled to sustain its market shares in Norway, and its new “back-best” concept had been a failure.<sup>25,26</sup> SAS had shown both economic strength and a willingness to “bleed” in the battle against Color Air. Braathens might have felt that it would be the next victim in this “war”. At the same time, a merger would solve all the described problems for the carriers: they could reduce their capacity and divide the market, and they could eliminate the competition for large customers. By the end of 2001, the acquisition was approved, and the Norwegian airline market became dominated by one monopoly flag carrier, as is the case in most European domestic markets.

#### **4. What can be done to achieve future competition?**

We will focus on four different measures that can be used to ensure future competition. The most important feature is the frequent flyer programs. However, we will also look into airport charges, handling and predatory behaviour.

##### **4.1. Frequent flyer programs**

Frequent flyer programs can be regarded as a quantity discount: by purchasing a certain amount of a good, one unit of the good is received for free. In this Section, we analyse the welfare effect of such a particular price discrimination scheme. We start out by analysing monopoly, and then discuss how our conclusions may change when we have a competitive setting.<sup>27</sup>

<sup>25</sup>Braathens introduced the “curtain” also on domestic flights. Full price passengers were given better service and were seated in the front of the plane. M-class passengers were not served any food and had to sit behind the curtain. This concept was not well received by Norwegian passengers, and in 2001 Braathens removed the curtain again. In 2002, SAS removed the curtain on inter-Scandinavian flights (Scandinavian Direct concept).

<sup>26</sup>The losses in Sweden were primarily a result of the purchase of Malmö Aviation and losses from the route between Oslo and Stockholm.

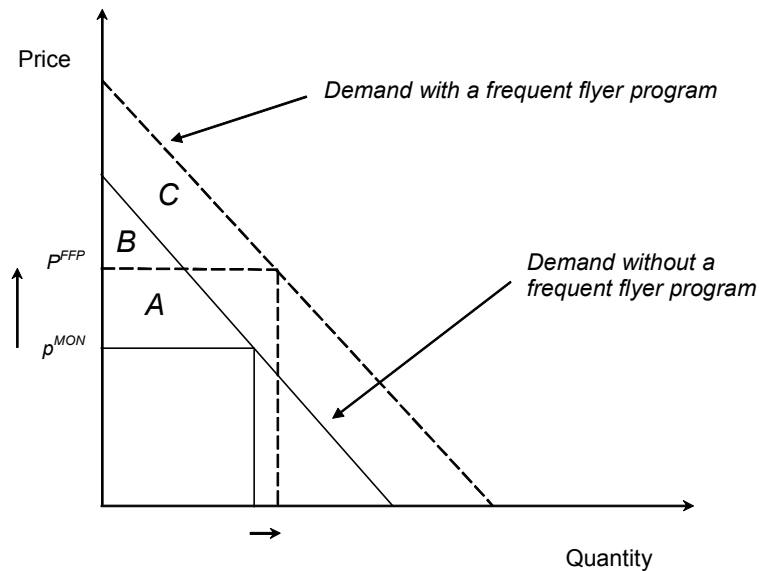
<sup>27</sup>The analysis we present here draws heavily on Steen and Sjørgard (2002).

*Frequent flyer programs in a monopolized market*

The effects for the consumer in a monopolized market are illustrated in Figure 4. The solid line is the demand if there is no frequent flyer program. If we introduce a frequent flyer program, then demand expands from the solid to the dotted line in Figure 4. One way of seeing this is to consider the consumers' willingness to pay. For a given quantity, the consumers will have a higher willingness to pay since they now receive an additional amount or, more precisely, an option on an additional amount of the good in the future. Therefore, the demand curve shifts upward.

An increase in the willingness to pay is of importance for the firm's price setting. It can extract part of the increase in the consumer surplus by increasing the price. This is illustrated in Figure 4 by the price increase from  $p^{MON}$  to  $p^{FFP}$ .

**Figure 4. The welfare effects of a frequent flyer program with monopoly**



What are the effects for the consumers of the introduction of a frequent flyer program? With no frequent flyer program, the consumer surplus is  $A + B$  in Figure 4. From the Figure, we see that after the introduction of the frequent flyer program, the consumer surplus

is  $B + C$ . Then, we see that the effect for the consumers of the introduction of a frequent flyer program is ambiguous. On the one hand, she/he has a higher willingness to pay for the good, since it includes an option for a free unit in the future. On the other hand, the consumer is hurt by the price increase triggered by the introduction of the frequent flyer program. We see from Figure 4 that the consumers are worse off after the introduction of the frequent flyer program if  $A > C$ .

The introduction of a frequent flyer program is analogous to an increase in quality for the good in question. As shown in Spence (1975), a quality increase has an ambiguous effect on the consumer surplus. The basic reason is that consumers care about how a quality change affects the total willingness to pay, while the firm cares about how quality affects the marginal willingness to pay. There is no mechanism that can ensure that these two effects coincide. Hence, there is no reason to expect that the market outcome will lead to the quality level the consumers would prefer.

The above analysis shows that from a consumer point of view, the frequent flyer program has an ambiguous effect in monopoly. However, there are two important aspects that have been left out of the analysis so far. First, the incentive structure for consumers. In the airline industry, we often observe that the person buying the product is actually not paying for it. An employee buys the air ticket, while the employer pays for it. However, the frequent flyer program is an individual program. It implies that the employee buys an air ticket, receives the frequent flyer bonus, and the employer pays for the ticket. Obviously, there are some potential incentive problems in such a system. The employee has no strong incentives to make a cost efficient decisions concerning travelling. On the contrary, each employee can receive larger bonuses from the frequent flyer program if s/he travels more and travels more expensively than what s/he would otherwise have chosen to do. This is an argument saying that such a system may lead to excess consumption of this particular good, and thereby an excess cost burden for firms and society at large.

#### *Frequent flyer programs and competition or potential competition*

So far, we have assumed monopoly. If there is more than one active firm, or one active and one potential firm, it is important to discuss how a frequent flyer program affects competition. In the literature, it

is pointed out that frequent flyer programs are loyalty programs.<sup>28</sup> Consumers become loyal to one firm, in order to accumulate a frequent flyer bonus from this particular firm. One might say that ex ante homogenous goods (an airline flight from A to B) become differentiated ex post. This leads to consumer lock-in. On the other hand, firms compete more aggressively to attract new consumers that can become loyal. Although the net effect is ambiguous in theory, Klemperer (1995) concludes in his survey 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” (p. 536).

According to his conclusion, frequent flyer programs are expected to have anticompetitive effects. In particular, there is reason to be aware of the possible effect in a setting with one (or a few) established firm(s) and a potential entrant. If established firms have many members in their frequent flyer programs, an entrant can find it difficult to capture those consumers that are more or less loyal to the established firms. According to Farrell and Klemperer (2002), switching costs (as the frequent flyer programs increase) seem more likely to lower than raise efficiency, so when firms favour switching costs, the reason is often that they enhance monopoly or oligopoly power by directly raising prices or inhibiting new entry.

A related problem is the network effect. If the dominating firm has a larger network, and since most customers travel on different destinations, the frequent flyer program of the dominant carrier will always be more attractive, since the non-linearities in membership benefits (e.g., gold-member benefits versus silver-member benefits) make it more attractive to travel with the carrier operating the largest network (Carns and Galbraith, 1990).

*Should we ban frequent flyer programs domestically?*

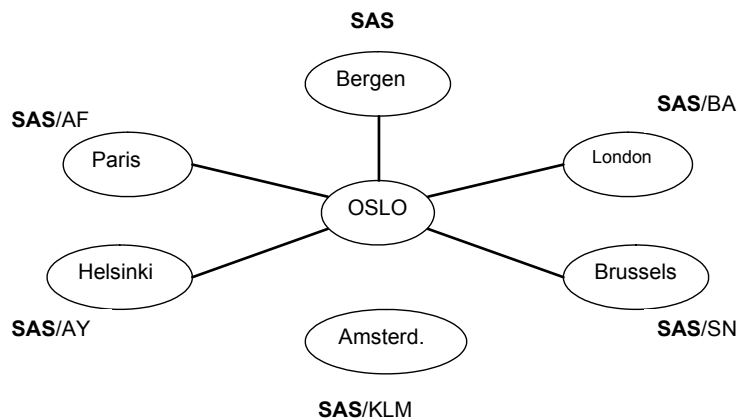
Several countries are becoming aware of the anti-competitive effects of frequent flyer programs. In Sweden, frequent flyer programs have been banned on competition routes. In Germany, the established frequent flyer programs have been opened for new entrants, and in Norway, the competition authorities have banned the earnings of frequent flyer points on all domestic routes. There are arguments in fa-

<sup>28</sup>See, for example, Klemperer (1984, 1995) and Carns and Galbraith (1990).

four of all of these three solutions. The Swedish regulation accounts for the disadvantageous effects of frequent flyer programs on single routes. However, the network effect might make most customers loyal to the dominant firm, SAS, regardless of the regulation on the route level. The German regulation solves the network problem, but has some inherent problems when it comes to implementation. If the entrant is a small independent carrier, the opening of Lufthansa's frequent flyer program (Eurobonus) is unproblematic. However, if the entrant is connected to another large alliance as for instance One World, it is not unproblematic to combine this with the earning of points in the Star alliance of which Lufthansa is part. The proposed Norwegian solution also solves this problem, but might be more problematic in the sense of reducing the relative competitiveness of SAS as compared to other European carriers that are allowed to have domestic frequent flyer programs.

However, even the most restrictive regulation scheme proposed by Norway will not remove all the loyalty of the Norwegian customers. Due to the international network operated by SAS from Scandinavia, there will still be consumer-lock-in effects. This is illustrated in Figure 5.

**Figure 5 Domestic frequent flyer programs and consumer-lock-in effects on international destinations**



A customer living in Oslo will have several options when travelling internationally. For instance, if s/he wants to go to London, s/he can

either use SAS or British Airways, or to Amsterdam s/he can choose between KLM and SAS. Apparently, s/he is free to choose something else than SAS. However, as long as s/he is travelling more than two routes in the illustrated network, s/he will always go by SAS. SAS is the only carrier that will take the customer to several international destinations.<sup>29</sup> Hence, even without any domestic frequent flyer program, the Norwegian consumers will be locked into SAS.

Given that the frequent flyer programs are important entry barriers and are probably detrimental to welfare, one could argue that these should be banned. If we also consider the costs of these programs, we find an additional argument against frequent flyer programs. The Swedish competition authorities have calculated the frequent flyer programs to increase prices by 10 per cent. Hence, we will argue that these programs should be banned in the domestic markets on a European level.

A possible worry will be whether imposing a disadvantageous regulation on the European airlines will worsen their competitive situation as compared to the North American and Asian competitors on international flights. As long as all flag carriers dominate the international routes out of their home markets (see Figure 5), domestic consumers will still be loyal towards their local flag carriers to a certain degree.

#### 4.2. Charges

Airline charges are regulated by the International Civil Aviation Organization (ICAO). In general, only charges that can be verified from infrastructure costs of the airports are accepted. However, several countries like Norway have implemented environmentally motivated charges that are more like taxes according to the ICAO rules. This has increased the financial burden of the airlines, and might increase the entry barriers in this market.

In Figure 6, we show the numbers for two representative routes in Norway. We see that all charges and tax account for around 15 per cent of the revenue. The charges increase over the period and by 1999, they increase by nearly ten percentage points. In Figure 7, we decompose charges and taxes. Interestingly enough, aviation charges

<sup>29</sup> A customer can of course choose to go via KLM's hub in Amsterdam to London, or via British Airways' hub in London to Amsterdam, but these alternatives are both inferior to a direct connection.

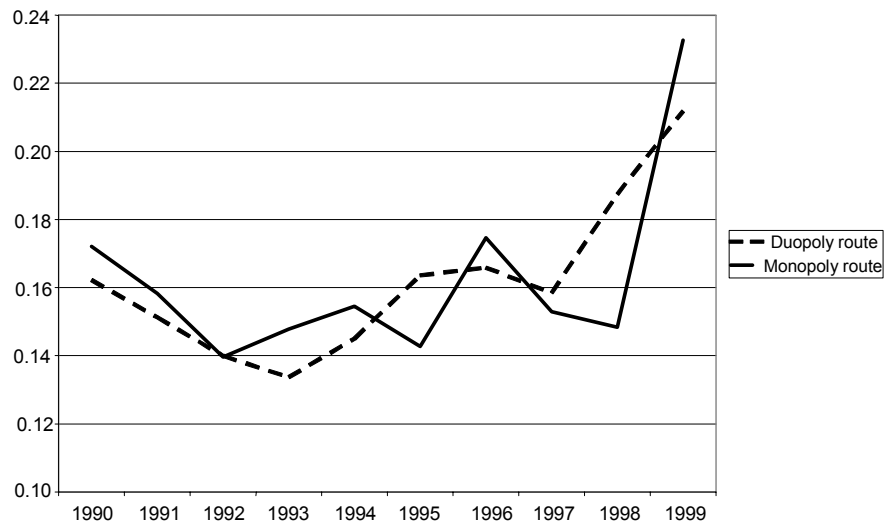


have a constant or even decreasing share over the period. However, the fiscal seat tax and the lump sum aviation tax have increased from nothing to account for nearly as much as the charges. Hence, the increase in aviation fees is basically solely explained by taxes.

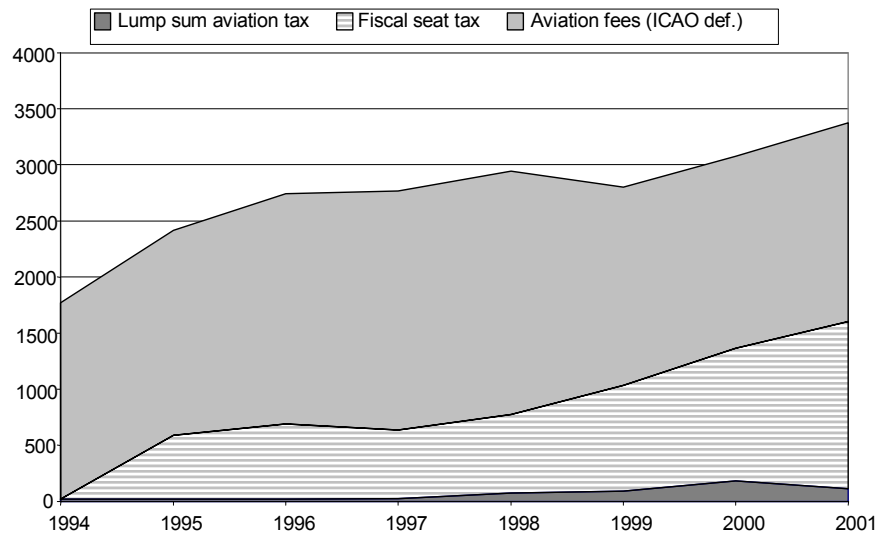
In Norway, the government removed the fiscal seat tax after April 1, 2002. The argument is that this will ease entry. This is good, but also very convenient for the monopolist SAS. A monopoly could, of course, sustain a higher financial burden than a competitive regime. One solution is to make charges dynamic in the sense that they are reduced with entry, or even asymmetric in size to induce entry.

Another issue is how these charges are determined. Today, most airports do not differentiate their charges according to the service level. The new low-cost-no-frills carriers are not interested in the full service offered by these airports. They accept a lower service level for their passengers in order to save costs. Hence, to induce entry, one possibility is to differentiate on charges to induce more low-cost entry in the European market.

**Figure 6. Airline charges and taxes as a share of total revenue on two representative routes (monopoly and duopoly route) in Norway during the period 1990 to 1999**



**Figure 7. Decomposition of Norwegian aviation charges and tax over the period 1994 to 2001.**



#### 4.3. Handling

At most airports, the airline companies handle their own aircrafts. Only at the largest airports do the EU competition rules enforce an independent handling firm. Since an entrant must buy its handling services from its competitor(s), this might increase the cost and work as an entry barrier. For instance, when Color Air entered the Norwegian market, it used SAS to handle its aircrafts. This implied that SAS knew everything about Color Air, it knew how many passengers Color Air had on each route, and thereby its load factor. This was probably advantageous to SAS. For instance, this way, it could measure the effect of its own actions, i.e., how large was the effect of increased SAS capacity on Color Air's load factor, etc.

Another issue is the price the entering carrier has to pay. In Norway, there are now three companies that handle aircrafts, all owned by SAS.<sup>30</sup> Hence, the following announcement from the regional airline

<sup>30</sup>SAS and Braathens both have their own handling companies. The only other firm that can handle aircrafts on Norwegian airports is the regional carrier Widerøe. However, Widerøe was recently bought by SAS, and thereby SAS controls all handling (except on Gardermoen) in Norway after the merger with Braathens. At

Widerøe seems a bit strange: “Widerøe won the KLM contract (handling in Bergen) in fierce competition with SAS and Braathens”.<sup>31</sup> Is it likely that SAS will allow its companies to be in fierce internal competition? Or, alternatively, what is the “going rate” for handling for a competing entrant?

We believe it is important that handling is independent of the carriers. This way, entrants have a real possibility of obtaining competitive prices on their handling.<sup>32</sup>

#### 4.4. Predatory Behaviour

A problem we have seen in several cases in airlines is predatory behaviour. Often, the established carrier meets an entrant with very aggressive behaviour. The SAS capacity build-up when Color Air entered the Norwegian market is only one example. In Sweden, SAS reduced its prices on competition routes in the 1990s, and increased them again as its competitors were either bought by SAS or left the market. On the routes between Australia and New Zealand, a low cost firm called Kiwi was forced out of the market by Qantas and Air New Zealand (Hazledine, Green and Haugh, 2001). In Germany, Lufthansa reduced its prices substantially to compete with Go-Fly and Deutsche BA on the routes between Munich-London/Stansted and Munich-Frankfurt. As soon as the rival companies abandoned the routes, Lufthansa increased its prices again.

This is a problem in airlines as well as other industries. The problem is twofold. First, it is difficult to prove predatory pricing. Second, if proven, the rival firm is by then very often bankrupt or has left the market for other reasons. Hence, the likelihood of an ex post penalty is not enough to discipline the established firms.

In Germany, we now have a more present case where the competition authorities have regulated Lufthansa’s prices to protect an entrant from possible predatory pricing. Here, a small low-cost firm, Germania, started operating scheduled flight services between Berlin (Tegel) and Frankfurt (Main) on November 12, 2001. The company offered

Gardermoen there exists a fourth independent handling firm due to the ICAO regulations which state that on airports of a certain size, an independent handling firm should be present.

<sup>31</sup> Press release January 24, 2002 (authors’ translation).

<sup>32</sup>There might also be some advantages for the carriers. Recently, SAS announced that they would outsource their handling to save costs. The incentives to be cost efficient in a monopoly are not very strong.

tickets at EUR 99 for a one-way fully-flexible and re-bookable flight. The conditions essentially correspond to DHL's economy tariffs suitable for business travellers. Lufthansa reacted to this by also introducing a fully-flexible economy tariff at EUR 200 for a return ticket. Compared to the old tariff, the price fell from EUR 486 to EUR 200, an almost 60 per cent decrease in price. Since Lufthansa is including services not provided by Germania, like catering, frequent flyer points and three times as many flights, the new EUR 200 price is clearly undercutting Germania's price of EUR 99.

On February 18, 2002, the Bundeskartellamt in Germany decided that Lufthansa must charge at least EUR 35 more than Germania on a one-way ticket for the next two years.<sup>33</sup> This is to prevent predatory behaviour. The EUR 35 are meant to cover the extra services provided by Lufthansa. Here, we have a case where the competition authorities react quickly to what they believe is predatory pricing, and impose more or less an ex ante rule. We believe that there are lessons to be learnt from this case. First, reactions need to be enforced quickly. Second, ex ante regulation might be more efficient than ex post regulation.<sup>34</sup> However, the ruling is challenged by Lufthansa. It is still an open question whether the court will accept the definition of predatory pricing that is proposed in this particular case.

## **5. Future competition in Europe: Low-cost no frills?**

Above, we saw how the competition in Norway led to a monopolised market. In particular, we saw how the effects of the large customer contracts forced the companies to merge to get out of a prisoner's dilemma situation with too much capacity and a screwed price structure. The Norwegian market now resembles most European markets with one large dominating flag-carrier. The question is therefore how to promote new competition—and from where this new competition will emerge?

In 1994, less than three million passengers used low-cost-no-frills carriers in Europe. In 1999, the number had increased to 17.5 million (Doganis, 2001). Ryanair transported most of these passengers. The low-cost-no-frills carriers have experienced higher growth rates than

<sup>33</sup> Announcement from Bundeskartellamt, Bonn, February 19, 2002: "Bundeskartellamt prohibits Lufthansa from hindering its rival Germania".

<sup>34</sup> See, for instance, Farrell and Katz (2001) for a discussion of predation in network markets.

all the traditional flag carriers, and they increase in popularity among passengers. A questionnaire from 1999 concluded strongly in favour of the low-cost carriers: 19,000 passengers in the UK would rather recommend low-cost-no-frills carriers than British Airways.

Ryanair is copying the Southwest model from the US. Southwest was the first low-cost-no-frills company, and in the last 35 years, it has grown to become the fifth largest carrier in the US in terms of passengers. It has had the highest growth rate, and has been profitable in every year of operation. During this period, all of the larger US airlines recorded substantial losses for several years. Southwest and Ryanair are aiming for the leisure market, operating on smaller airports often located at a considerable distance from the cities they serve. Only in very few cases do they traffic hubs. Their frequency is often low, with relatively few daily flights. Other successful companies like Easy Jet are also aiming for the business segment. They are operating on the main airports and with higher flight frequencies, both important aspects in the business segment. The common factor for all of these low-cost-no-frills companies is that they operate at cost levels which are 25-40 per cent below those of their major competitors.

The low-cost-no-frills are specializing in the short and medium haul routes. The long haul routes are predominantly operated by traditional carriers. This is not a problem within Europe, however; most of the “domestic” routes are short or medium haul.

Although increasing, the total market share of the low-cost-no-frills was only around 5 per cent in Europe in 2001. In the UK and also between the UK and Europe where Ryanair has its “home market”, the low-cost-no-frills market share is in the order of 20 per cent.<sup>35</sup> The question is therefore whether we can anticipate these figures also outside the UK. This depends on several factors, but is related to all four factors discussed above: frequent flyer programs, airport charges, handling and possible predatory behaviour, of which charges have been the main focus of the low-cost-no-frills carriers. They lobby for lower absolute charges, and service differentiated charges.

An additional factor is the possibility of interlining with the flag-carriers, but not with the low-cost-no-frills carriers. If you want to go from Oslo to New York you might like to go by Ryanair to London

<sup>35</sup> These numbers were presented by Andrew Sentance, chief economist at British Airways at CEPR’s roundtable conference in Barcelona, May 3, 2002.

and then use British Airways from London to New York. The problem is that today you will be charged for two independent tickets. This raises the combined price, so you might end up with British Airways also between Oslo and London, a problem which can be solved by enforcing the flag carriers to accept competitive transfer prices also for the low-cost-no-frills carriers.

As long as future competition seems to be closely connected to the destiny of the low-cost-no-frills carriers, it is important to focus on those issues that are important to achieve entry from these carriers. We believe that in particular frequent flyer programs and charges are important to consider to obtain more competition.

It is interesting to note the recent development in the airline market in Norway. A small airline company that has so far been operating the commuter traffic for Braathens, Norwegian Air Shuttle (NAS), entered on the four largest Norwegian routes on September 1, 2002, in competition with SAS. NAS claims that the ban on frequent flyer programs domestically and the lowering of airline charges were the two most important factors when considering entry. To solve the problem of lack of independent handling, NAS has negotiated agreements with new independent handling firms (former Braathens employees) that will set up operations on airports such as Bergen. Hence, it seems as if the policy chosen to induce new entry in Norway has worked already. However, the next year will tell us whether the NAS entry will be a success or not. To maintain a level playing ground, it is therefore important that the Norwegian Competition Authority keeps a close eye on possible predatory behaviour from SAS.

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