Serie Research Memoranda

IMPACT OF EUROPEAN AIRLINE DEREGULATION

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Research Memorandum 1995-41

vrije Universiteit amsterdam
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A Benchmark and Scenario Analysis of Olympic Airways

Reinoud Hilhorst       Peter Nijkamp
1. Introduction

There is a growing competition in the European aviation market, especially because of the liberalization of the European market in 1993 and the growing possibilities for other (notably American and Asian) airlines to serve the market. Airlines have to assess what the effects are on the performance of their company, how they are able to resist these challenges and - if possible - how they can manage to take advantage of the new deregulated situation (Barrett 1992, 1993; Button 1991; Dodgson 1994; Doganis 1994; Reynolds-Feighan and Berechman 1996; Wheatcroft and Lipman 1990; and De Wit 1994). Olympic Airways is one such European airline. The company has in the past 10 years incurred big losses, and it is absolutely unclear whether Olympic Airways can continue its operations this way, and whether the E.C. will allow new aid from the Greek government for Olympic Airways.

The main question addressed here is: what is the impact of major restructuring factors at the European scale - notably deregulation and competition - on European airlines in general and Olympic Airways in particular? In our analysis we will only focus on the European passenger market, but use the American aviation sector as a frame of reference.

After a consideration of recent developments in the aviation sector, in both the USA and Europe, we will present some empirical evidence on the performance of Olympic Airways by means of a benchmark analysis, using KLM and Southwest Airlines as benchmarks. This analysis will be complemented with a SWOT (strength-weakness, opportunity-threat) analysis. Finally, we will use a strategic scenario analysis, based on the so-called tarantula model, in order to depict the future (expected and/or desirable) position of Olympic Airways as a basis for strategic policy.

The paper is organized as follows. Section 2 will offer some information on recent developments in the US aviation sector. Next, in Section 3 we will briefly describe recent policy initiatives in Europe, with a particular view on Olympic Airways. We will then analyze the competitive (dis-)advantages of Olympic Airways by means of a benchmark analysis (Section 4), while finally we will undertake a more strategic analysis based on structured scenario experiments.

2. Deregulation in US Aviation

In the USA the Civil Aeronautics Board came in the 1970s gradually to believe that the market place would be more effective than the Board in organizing the aviation sector and the pricing structures. The idea was that the airline industry was by and large a contestable market and, consequently, Congress introduced the Airline Deregulation Act in 1978 which stated that:

- airlines were free to set prices
- airlines were allowed to merge and make acquisitions
- airlines were free to start services on any route

The reason to support the airline deregulation of 1978 was the belief that the contestability theory was true, relying on some studies that showed the effect of potential competition (Bailey et al. 1985; Caves et al. 1983, 1985, 1987; Kahn 1988; Kasper 1988; Meyer and Oster 1981, 1984; Morrison and Winston 1986; OECD 1988;
Reynolds-Feighan 1992; Shaw 1982; and White 1979). In this period it was argued that an airline can enter a new market quickly and with low sunk costs (the costs one incurs when one leaves the market), particularly if the entrant already serves one of the both endpoints of the route (Borenstein 1992). Unfortunately, potential competition appears to be no substitute for actual competition (Baumol 1982; and Baumol et al. 1988). The contestability theory presupposes the idea that a market is contestable in the situation that entry and exit costs are about zero, so that no transition costs are involved. Then, even a natural monopolist has to set prices at a zero percent marginal profit level. The contestability theory suggests that the degree of actual competition is not decisive for prices, but the threat of new entrants. Many studies though, have found that the number of airlines actually competing on a route has a significant effect on the price level (Bailey et al. 1985). In 1990 prices on routes with two active competitors were on average about 8 percent lower than on monopoly routes. A third active player appeared to be in general mainly responsible for another 8 percent price drop. These effects cannot be attributed to economies of density, because the volume per airline is on average smaller on routes with more competitors (Doganiis 1992; 1994). Stiglitz (1987) explained why it is possible in the airline market to set profitable prices. If sunk costs are non-trivial, and an incumbent firm can respond as quickly as a new competitor can enter, then the incumbent has little or no incentive to respond in advance of actual entry. So there is no reason to react in advance on potential competition.

After nine years of deregulation in the USA, Levine (1987) describes 10 developments on which the airlines try to move away from contestability. These developments are:

- The dominance of a hub and spoke system;
- A wave of mergers and consolidations;
- A higher than expected degree of vertical integration;
- The importance of controlling slots and gates;
- The high casualty rate of new entrant airlines;
- A much more complicated fare structure;
- The importance of a frequent flyer program;
- The increased importance of the travel agents;
- The dominant role of computer reservation systems;
- The persistence and success of predatory pricing.

In general, one may say that the American market is less contestable than it was thought to be before the deregulation (Button and Swann 1992; Dempsey 1990; Gialloreto 1989; Molloy 1985; Shearman 1992; and Williams 1993). It is more difficult to enter a new market, because of FFPs (frequent flyer programs), and CRS (computer reservation systems) ownership etc. The consumer does not have perfect market knowledge, because of the growing number of tariffs and the possibility of the incumbent airlines to influence the attitude of the travel agent to different airlines, by offering TACOs (travel agent commission overrides) which are progressive with the number of passengers. And finally, the airlines try to favor product differentiation through quality, frequency, market coverage etc.
3. The European Airline Market

Since the Paris Convention in 1919 accepted that states have sovereign rights in the airspace above their territory, direct government intervention in air transport became inevitable. As a result of this, the free trade laissez faire approach during the first years of aviation was gradually replaced by an incomplete pattern of bilateral agreements between countries to or through which those airlines wished to fly (Button and Swann 1991; Comité des Sages 1994; and Reynolds-Feighan 1995).

Countries can give airlines from other countries a freedom of air that was created on the Chicago Convention of 1944. These freedoms of air are (European Air Law 1994):

- 1st freedom: the right to fly over the territory of a contracting state without landing;
- 2nd freedom: The right to land on the territory of a contracting state for non-commercial (technical) reasons;
- 3rd freedom: The right to transport passengers, cargo and mail from the state of registration of the aircraft to another contracting state;
- 4th freedom: The right to take on board passengers, cargo and mail in another contracting state, and to transport them to the state of registration of the aircraft;
- 5th freedom: The right to transport passengers, cargo and mail between two other states as a continuation of, or a preliminary to, the operation of the 3rd and 4th freedom rights;
- 6th freedom: The right to take passengers, cargo and mail in one state, and to transport them to a third state after a stop over in the aircraft’s state of registration and vice versa;
- 7th freedom: The right to transport passengers, cargo and mail between two other states on a service which does not touch the aircraft’s state of registration;
- 8th freedom: The right to transport passengers, cargo and mail within another state between the airports of that state (cabotage).

There were two conflicting approaches at the Chicago Convention. The United States had after World War II larger and better equipped aircrafts than anyone else. They wanted no control on tariffs or capacity and the maximum exchange of traffic rights, including 5th freedom rights. This open skies policy through the whole world was supported by the Netherlands and Sweden whose aviation would have to depend on 5th freedom rights, because their home bases were too small. On the other hand, the United Kingdom and most European countries were more protectionist, a view which is conceivable, since their civil airlines were largely destroyed in the war. They supported tight controls on tariffs and capacity, and the limitation of 5th freedom rights. These conflicting views could not be reconciled, and no multilateral agreement was reached on the three key issues of traffic rights, traffic control and capacity (Doganis 1992). The participants at Chicago did only manage to agree on the technical freedoms (the first two freedoms).

The countries made bilateral agreements to allow airlines from other countries. The oldest European bilateral was rather strict and full of regulations on route access, sharing of capacity and fares (see Table 1).

3
<table>
<thead>
<tr>
<th>AIRLINES</th>
<th>One per route from each state: in most cases this was the national carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTES</td>
<td>Only to points specified in the bilateral agreement</td>
</tr>
<tr>
<td>CAPACITY</td>
<td>Shared 50 - 50 between airlines or two states</td>
</tr>
<tr>
<td>FARES</td>
<td>Approval of both governments needed - but negotiated through IATA</td>
</tr>
</tbody>
</table>

Table 1. Traditional bilateral agreements
(Source: Doganis 1991)

The increasing competition from the leisure aviation market and the increasing penetration of non-European airlines on European markets (caused inter alia by a non-coordinated European aviation policy; see Table 2) led to a change in the protected European aviation sector.

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>France</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>European 3rd/4th freedom</td>
<td>25 US points</td>
<td>9 US points now served</td>
<td>11 points in USA</td>
</tr>
<tr>
<td>European 5th freedom</td>
<td>Unrestricted</td>
<td>Very limited</td>
<td>Substantial</td>
</tr>
<tr>
<td>US 3rd/4th freedom</td>
<td>Unrestricted</td>
<td>From 15 US points</td>
<td>6 US points to Madrid and Barcelona</td>
</tr>
<tr>
<td>US 5th freedom</td>
<td>Unrestricted</td>
<td>Frozen: limited</td>
<td>Substantial</td>
</tr>
<tr>
<td>Designation</td>
<td>Unrestricted</td>
<td>Frozen</td>
<td>Single</td>
</tr>
<tr>
<td>Capacity</td>
<td>Restrictions on US capacity</td>
<td>Restricted</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Fare approval</td>
<td>Country of origin</td>
<td>Double approval</td>
<td>Double approval</td>
</tr>
<tr>
<td>Code-sharing rights</td>
<td>Specified number per year</td>
<td>None</td>
<td>To 15 points in the USA</td>
</tr>
</tbody>
</table>

Table 2. Comparison of bilateral agreements
(Source: Lobbenberg 1994)

This has led to an official European policy to deregulate and liberalize the European airline sector in a stepwise way via a series of packages (see Berechman and Reynolds-Feighan 1996). At present, the third package is prevailing which means that there are no capacity restrictions anymore and that there is 3rd, 4th, 5th, 6th and 7th freedom in the EU. The 8th freedom (cabotage) will be liberalized in April 1997; only
the Greek islands and the Azores are no part of this agreement. Until April 1997, community airlines can fill a maximum of 50% of the capacity in a stopover in another member state.

Airlines are in the mean time developing all kind of new strategies to conquer a larger market share, e.g. through mergers, take-overs, participating strategies, strategic alliances etc.

Olympic Airways has not managed to take its share in the global and European development. The international scheduled traffic at Athens airport from Olympic Airways as a percentage of total scheduled international traffic has decreased in 6 years from 47% to 43%, while international traffic from Olympic Airways as a percentage of total international traffic has decreased from 36% to 33%. The total traffic (domestic and international) from Olympic Airways as a percentage of total traffic on Athens has also decreased, viz. from 61% to 55%.

Olympic Airways has been heavily subsidized by the Greek government. The E.C. allows state aid only if this is a part of a restructuring plan for weak airlines. This policy is somewhat strange, because state aid hinders free competition which is the E.C.'s ideal. The Commission will also accept state aid, if is for domestic services, and if it does not hinder competition between international airlines. This is especially possible for remote areas like the Greek islands and the Azores, which need some economic support. Many of these islands are too small for a profitable service from a commercial airline.

It is noteworthy that the USA has a system that another carrier at any time can take over unprofitable lines, if it wishes to serve the lines without subsidy. The US Department of Transport (DOT) determines the level of essential air service for every community. One carrier is then selected through DOT, based on several factors including fare structure, reliability of an airline, and the interlining and/or marketing arrangements with larger airlines at the hub airport that the applicant carrier proposes to use. Application of such a solution would also bring competition in the remote areas of the EU, and is better than the EU policy, which implies an anti-competitive blockade of cabotage to the Greek islands and the Azores until the year 2007.

4. A Benchmark Analysis for Olympic Airways

The economic performance in the aviation sector in Europe exhibits great differences. In order to identify the nature and the differences for Olympic Airways, a benchmark analysis will be carried out. Benchmarking is a basis of establishing rational goals through the search for industries best practices that will lead to superior performance (Camp 1989).

The American deregulation has shown that an important reason for having a good performance are low operational costs. The increasing competition in the liberalized European market will have a downwarding effect on the yield. That is the reason, why it makes sense to choose as a benchmark the airline with the best performance in operational costs, i.e. the airline with the lowest operational costs (see also Condom 1992; Hall 1989; Hilhorst 1995; Windle 1991; Windle and Dresner 1992). In 1991, KLM had rather low operational costs among of the main carriers in Europe. Southwest Airlines had the lowest operational cost of all major American airlines in 1990 (see Table 3; see also Bennett and Craun 1994).
<table>
<thead>
<tr>
<th>European airline</th>
<th>operating costs in 1991 ($ cents per atk)</th>
<th>American airline</th>
<th>costs in 1990 ($ per passenger mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLM</td>
<td>51</td>
<td>Southwest</td>
<td>0.111</td>
</tr>
<tr>
<td>B.A.</td>
<td>60</td>
<td>American</td>
<td>0.144</td>
</tr>
<tr>
<td>Air France</td>
<td>61</td>
<td>United</td>
<td>0.145</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>71</td>
<td>Continental</td>
<td>0.150</td>
</tr>
<tr>
<td>Iberia</td>
<td>71</td>
<td>Northwest</td>
<td>0.150</td>
</tr>
<tr>
<td>Swissair</td>
<td>87</td>
<td>TWA</td>
<td>0.151</td>
</tr>
<tr>
<td>Austrian</td>
<td>105</td>
<td>Delta</td>
<td>0.155</td>
</tr>
<tr>
<td>SAS</td>
<td>110</td>
<td>US Air</td>
<td>0.189</td>
</tr>
</tbody>
</table>

Table 3. Operational costs of different airlines
1 atk is available ton kilometers
(Source: Borenstein 1992 and Lobbenberg 1994)

Low cost performance can help airlines to survive, even if they do not have a good service. Olympic Airways has however, also a poor service, mainly because of a inferior punctuality. It is noteworthy to observe that also in recent years both KLM and Southwest Airlines increased their market share, while also the ownership conditions of these two airlines are entirely different from the state-owned Olympic Airways.

It is clear that there are several problems involved in a benchmark analysis for Olympic Airways, viz. data problems, institutional structure of the corporate organization and institutional environments of these companies (Stefanou 1994; and Syrmis 1994).

The financial position of the airlines differ very much from each other. Olympic Airways is already technically bankrupt. In 1992, it had a negative equity of 243 billion drachmas, about 1.2 billion dollars. The take-over of the 2 billion dollars debt in November 1994 by the Greek government was absolutely necessary for Olympic Airways to survive. The wages were frozen at the level of 1993 as a result of this agreement with the state. This has caused an enormous costs saving, if one imagines that the inflation in Greece is about 15% per year.

In 1992, Olympic Airways had a negative result of about 44 billion drachmas, approx. 230 million dollars. This is 26% of all assets and 25% of the revenues. One of the reasons for this high loss is of course the high interest costs of approx. 33 billion drachmas. The year 1991 was an absolute disaster with a loss of 512 million dollars, about 62% of the revenue from that year. This is due to extraordinary expenses and high interest costs. There is a popular view that Olympic Airways incurs the highest losses on the domestic routes, and that the company is using the international routes as a cross-subsidization (Doganis 1992). Table 4 shows that this is not true however, for the past seven years.

In contrast to Olympic Airways, KLM shows the last years better results, with in the year 1994-1995 a net income of 470 million guilders, about 300 million dollars. This positive result was achieved, despite a decline in yield, through strong traffic
<table>
<thead>
<tr>
<th>Year</th>
<th>domestic loss</th>
<th>domestic loss/ domestic revenue</th>
<th>total loss</th>
<th>total loss/ total revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>4821</td>
<td>28%</td>
<td>15825</td>
<td>21%</td>
</tr>
<tr>
<td>1987</td>
<td>1354</td>
<td>6%</td>
<td>2954</td>
<td>3%</td>
</tr>
<tr>
<td>1988</td>
<td>2320</td>
<td>9%</td>
<td>4466</td>
<td>4%</td>
</tr>
<tr>
<td>1989</td>
<td>8786</td>
<td>33%</td>
<td>16670</td>
<td>14%</td>
</tr>
<tr>
<td>1990</td>
<td>7338</td>
<td>22%</td>
<td>34695</td>
<td>25%</td>
</tr>
<tr>
<td>1991</td>
<td>8479</td>
<td>25%</td>
<td>12701</td>
<td>9%</td>
</tr>
<tr>
<td>1992</td>
<td>8582</td>
<td>29%</td>
<td>14760</td>
<td>9%</td>
</tr>
</tbody>
</table>

Table 4. Operational Losses Olympic Airways in mlns of drachmas
(Source: data from Syrnis 1994 and annual reports from 1987-1992 of Olympic Airways)

growth and therefore a better load factor and a strict cost control; an 8% capacity increase was accompanied by a 3% increase in operating expenses. KLM had in 1993-1994 a positive result of 103 million guilders, about 55 million dollars.

A 12% capacity increase was accompanied by a 1% increase in operating expenses. It has to be admitted that KLM did not have in every year a good result. It had in 1992-1993 a net loss of 562 million guilders, about 320 million dollars. The main reason for this negative result was that the Northwest Airlines' shares accounting for 388 million guilders, were written off from the fixed assets. The board of managing directors has defended this operation by claiming that this share would not make any profit anymore.

Next, Southwest Airlines is the most stable airline of the three. It had from 1983 through 1992 no negative results. In 1992, it had a net income of 97 million dollars. 1991 was also for Southwest Airlines a bad year, with only a profit of 26 million dollars, as it had a 28% increase in revenue versus a 20% increase in operating costs. Some performance results of these three airlines are compiled in Table 5.

<table>
<thead>
<tr>
<th>1992</th>
<th>OLYMPIC</th>
<th>KLM</th>
<th>SOUTHWEST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total passenger revenue</td>
<td>10.64</td>
<td>9.98</td>
</tr>
<tr>
<td></td>
<td>operational passenger costs¹</td>
<td>12.89</td>
<td>10.55</td>
</tr>
<tr>
<td></td>
<td>operating passenger result</td>
<td>-2.25</td>
<td>-0.57</td>
</tr>
</tbody>
</table>

Table 5. Costs, revenue and profit per rpk (revenue passenger kilometer) in $ cents
¹Interest expenses are included in the operational passenger costs
(Source: data from annual reports 1992 of Olympic Airways, KLM and Southwest Airlines)
Now we will compare the operational costs of Olympic Airways with two low

<table>
<thead>
<tr>
<th>Airline</th>
<th>Average distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympic Airways</td>
<td>1329 km</td>
</tr>
<tr>
<td>KLM</td>
<td>3796 km</td>
</tr>
<tr>
<td>Southwest Airlines</td>
<td>796 km</td>
</tr>
</tbody>
</table>

Table 6. Average distance of the three airlines investigated
(Source: data from AEA 1993 and Southwest Airlines, annual report 1992)

The results of a broader comparison between the three airlines can be seen in
Table 7 (excluding figures on freight costs). What is most surprising, is that the total
operational costs plus the financial expenses (they are not operational but included) of
the American carrier is 50% lower than those of the European airlines. The reason for
this is the already mentioned more competitive environment of Southwest Airlines.
Another reason is the fact that Southwest is a low service/low cost carrier. It will not
serve, for example, passenger meals on board. That is also the reason why the airline
did not show passenger meal costs separately.

<table>
<thead>
<tr>
<th></th>
<th>OLYMPIC</th>
<th>KLM</th>
<th>SOUTH</th>
<th>WEST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>costs/ ask(^1)</td>
<td>costs/ rpk(^2)</td>
<td>costs/ ask(^1)</td>
<td>costs/ rpk(^2)</td>
</tr>
<tr>
<td>salaries</td>
<td>3.13</td>
<td>5.16</td>
<td>2.06</td>
<td>2.89</td>
</tr>
<tr>
<td>fuel</td>
<td>0.67</td>
<td>1.10</td>
<td>0.71</td>
<td>0.99</td>
</tr>
<tr>
<td>meals</td>
<td>0.33</td>
<td>0.55</td>
<td>0.44</td>
<td>0.62</td>
</tr>
<tr>
<td>fin.expens.</td>
<td>1.27</td>
<td>2.09</td>
<td>0.62</td>
<td>0.87</td>
</tr>
<tr>
<td>other</td>
<td>2.42</td>
<td>3.99</td>
<td>3.69</td>
<td>5.19</td>
</tr>
<tr>
<td>total</td>
<td>7.81</td>
<td>12.89</td>
<td>7.51</td>
<td>10.55</td>
</tr>
</tbody>
</table>

Table 7. Cost components of airlines
\(^1\)ask is available seat kilometers, \(^2\)rpk is revenue passenger kilometers
(Source: data from annual reports 1992 of Olympic Airways, KLM and Southwest
Airlines).
Thus, our benchmark analysis leads to the conclusion that Olympic Airways has a low performance and that in a competitive (i.e., non-protected) European market it is bound to become a loser.

Based on the above observations and various background documents it is now possible to undertake a SWOT (strength-weakness opportunities-threat) analysis for Olympic Airways. A SWOT analysis aims to show the weak points of the organization, which need serious improvement; it also aims to show the strong points, which are the information the firm needs for choosing the best direction for its policy. The firm can try to identify new opportunities and to move away from threats, or it can try to eliminate the effects of these threats. Our SWOT analysis will especially use information gathered from our benchmark study. We will compare the Olympic Airways figures with KLM and AEA figures. The advantage of this combination is that this comparison will eliminate (or abstain from) general aviation trends. It will show, which airline used the market trends in the best way and had mainly from the years 1989 up to and including 1993 the best yield, revenue or load factor. The SWOT analysis for Olympic Airways leads to the following results.

**Strong points**

- Olympic Airways has its own computer reservation system (CRS), Galileo, shared with several other airlines;
- Olympic Airways has the revenue management system of Swissair for the international network;
- Olympic Airways has a strong position on its main airport, Athens, with more than 50% of all flights;
- Olympic Airways is the only airline, which is allowed to do ground handling at Athens airport;
- The European yield of Olympic Airways has increased in absolute points more than the average AEA yield;
- The domestic and long haul yields of Olympic Airways have increased in absolute points more than the average AEA yield;
- From 1991 up to and including 1993, Olympic Airways' North African yield in absolute points has been higher than the average AEA and KLM yield, because of a good fare mix and the shorter distance;
- In 1992, Olympic Airways had a 45% higher rpk than Southwest Airlines on all scheduled flights, mainly due to the competition on the American market;
- In 1992, Olympic Airways had a 6% higher revenue than KLM on all scheduled flights, due to the high share of short distance domestic flights of Olympic Airways.

**Weak points**

- Olympic Airways has had fixed prices on the domestic network for quite some period;
- In 1992, Olympic Airways has a weak financial position with a negative equity;
- Olympic Airways does not have a frequent flyer program (FFP);
- Olympic Airways does not 'grow with the market' and its position in the European market and its dominance on its hub airport Athens is declining;
- Olympic Airways has a poor service and punctuality, because of the congestion at
Athens airport and a poor air traffic control (ATC) system in Greece;
- The owner of Olympic Airways is the Greek State. This has led to a bureaucratic, non
market-oriented organization;
- The European yield of Olympic Airways has increased less in absolute points than the
yield of KLM;
- From 1989 up to and including 1991, the domestic and the long haul yields of
Olympic Airways have increased less in absolute points than the KLM yields;
- The European yield of Olympic Airways was about 50% lower than both the AEA
average and the KLM yield, due to a bad fare mix and the relatively long distance of
the main European traffic to other EU countries;
- The Middle East yield of Olympic Airways was about 85% of the AEA average yield,
due to a less favorable fare mix than the average AEA fare mix and despite the short
distance;
- The American yield of Olympic Airways was about 65% of the AEA average and the
KLM yield, due to an unfavorable fare mix;
- From 1989 up to and including 1991, the long haul yield of Olympic Airways was
about 60% of the AEA average and the KLM yield, due to a bad fare mix;
- The European and domestic load factors of Olympic Airways have decreased in
comparison with the average AEA load factors, from respectively about 12% over the
AEAs average load factor to 2% under the average AEA load factor;
- The European load factor of Olympic Airways has decreased by 11%, while the KLM
load factor remained stable;
- The North-African, Middle East and long haul load factor of Olympic Airways
remained stable on a 10% lower level than the AEA average load factor;
- The North-African, Middle East and long haul load factors of Olympic Airways have
remained stable at a 15% lower level than the KLM average load factors;
- The North-American load factor of Olympic Airways was decreased with 5%, while
the KLM and AEA average load factor remained stable;
- The European, Middle East, North-American and long haul rpk and carried passengers
of Olympic Airways remained stable, while the KLM and AEA average rpk and carried
passengers increased by about 10%;
- The domestic rpk and carried passengers of Olympic Airways have decreased with
around 25%, while the AEA average rpk and carried passengers slightly increased;
- In 1992, Olympic Airways' operational costs per rpk were 22% and 83% higher than
KLM and Southwest Airlines, respectively;
- In 1992, Olympic Airways' salaries per rpk were 79% and 129% higher than KLM and
Southwest Airlines, respectively;
- In 1992, Olympic Airways' financial costs per rpk were 140% and 674% higher than
KLM and Southwest Airlines, respectively;
- The total passenger volume has declined from 6.5 million until 5.5 million, while the
KLM and AEA passenger volumes have increased from respectively 6.5 and 147 million
until 10 and 172 million, respectively.

Opportunities

- The airline market is a strongly growing industry with between the period 1987-1994
an 8.6% growth per year in Europe.
- A new airport is probably going to be built in the Athens area. This will reduce the
congestion;
- Greek airlines are the only ones allowed to fly domestically on Greek islands;
- The island structure of Greece will force time-oriented passengers, like businessmen,
to use the plane for domestic transportation;
- The geographical position of Greece between Europe and the fast growing markets of
the Middle East and the Far East will give Olympic Airways the possibility to become
a 6th freedom carrier.
- In 1994, the Greek State made a cash injection of 2 billion dollars to Olympic Airways. This would make new investments possible.

Threats

- Olympic Airways has much competition of low cost charters on the European market;
- Athens airport is highly congested;
- A increasingly strong competition with small domestic airlines, like Air Greece and
Apollo Airlines, is anticipated;
- The liberalization process, ending with the freedom of cabotage in 1997, will lead to
more competition with other European airlines having more capital and offering better
service;
- It is possible for low cost American and Asian airlines, through the liberalization, to
enter the European market (including Greece).

An overall judgement of the results of this SWOT analysis leads to the
conclusion that Olympic Airways has a weak position on the European airline market.
It is not certain that - with the upcoming final liberalization of the aviation sector - the
company will be able to survive in a fierce European competition. Search for partners
and strategic alliances might have to start soon in order to avoid painful operations in
the organization in the future.

5. Future Scenarios for Strategic Airline Policy

In this section we will present a scenario experiment for strategic decision
making in the airline sector - with particular emphasis on Olympic Airways - by using
some principles recently put forward for long-term transportation scenarios by Nijkamp
et al. (1995), which aimed to depict long range decisive factors for the achievement of
sustainable transport systems.

Based on their concept of the spider model, we will present here a so called
tarantula model in order to identify the relative position of the airline sector and of
Olympic Airways in particular in regard to major determinants of future developments
(see Hilhorst 1995). The tarantula model has 10 driving factors, which are important as
critical success factors for European airlines. The future of these airlines is dependent
on driving factors in five main dimensions: infrastructure, institutional, economic,
demand, and logistic. These dimensions are incorporated in the tarantula model (see
Figure 1). Each of the main dimensions can be represented by means of two qualitative
indicators from the one extreme side to the other extreme side on two corresponding
axes in the tarantula model.

Each of these five strategic dimensions can thus be depicted by two related
aspects on any pair of two axes as follows, where each of these 10 items reflects the
extremes starting from the origin of the tarantula to its envelope.

a. **Institutional**
   1. state control vs. liberalization
   2. public vs. private ownership

b. **Demand**
   3. equity vs. economic growth
   4. national market interest vs. economic integration

c. **Economic**
   5. public support for aviation vs. private sector initiatives
   6. dispersed network structure vs. hub and spoke structure

d. **Logistic**
   7. centralized vs. multi-party groundhandling
   8. absence vs. presence of CRS ownership

e. **Infrastructure**
   9. inferior vs. superior hardware
   10. inferior vs. superior ATC

An airline’s position can now be represented by a combination of 10 points on the axes of the tarantula model. This is a meaningful representation of the main characteristics and driving forces of such a system, as a confrontation of different models (concerned with different driving forces) will immediately pinpoint the most important underlying factors. It should be recognized that the size of the area formed by linking the 10 points on all axes has no meaning, since:

1. the information on the axes has only a qualitative (and not a cardinal) meaning;
2. the size of the resulting area is also dependent on the order in which the axes are positioned in the tarantula.

It is now possible to compose compound scenarios for airline companies, by taking a point on each of the 10 axes. In this way a great many scenarios can, in theory, be built for each airline company. The first scenarios which can be constructed are the two extremes in the tarantula model: the market-oriented scenario (outer circle) and the regulatory scenario (inner circle, see also Figure 2). We may also distinguish an expected scenario and a desired scenario, for both the European national flag carriers and Olympic Airways (see Figures 3 and 4).

Thus, various systematic scenarios can be constructed, viz. market-oriented, regulatory, expected for European airlines, expected for Olympic Airways, desired for European airlines, and desired for Olympic Airways. It goes without saying that the scenarios in Figures 3 and 4 are mainly indicative, based on expert opinion and interviews with Olympic Airways staff members and other interest parties.

The comparison of the two expected and the two desired scenarios clarifies that Greece is in almost every aspect more regulatory-oriented in air traffic than other European countries. The two institutional axes show that the Greek government will not
change its almost anti-liberal attitude towards aviation significantly, which is conceivable if one recognizes the poor competitive position of Olympic Airways, due to low punctuality and inferior - not passenger-oriented - scheduling. A move towards a more flexible market-orientation is essential in the long run for the survival of Olympic Airways.

In Europe, the economic integration will be very high in the future, because of E.U. regulations. This will have a positive effect on the passenger demand for Olympic Airways, but also for other European airlines. The experts think that the Greek economic growth will be lower than the average European growth, due to a less favourable competition.

It seems plausible that in the future, Olympic Airways would need even more state support than other European airlines, due to the bad financial position of Olympic Airways. A consideration of a subsidy system comparable to the US Department of Transport may then be advisable (see Section 3). However, such a policy is at all odds with European regulatory schemes, so that one may expect that Olympic Airways will face major difficulties in the future, if it does not increase its efficiency. Furthermore, the European airlines (including Olympic Airways) will not change their hub and spoke structure in the future, because the past has shown that the hub and spoke system is a supporting protection for their market.

The two logistic axes also exhibit the lower market-oriented attitude of Greece in comparison to other European states. Olympic Airways has only a 1% shareholdership in Galileo, which means that it does not have much influence in this CRS company. Olympic Airways has however a monopoly in groundhandling at Greek airports, and it would have a negative effect on the results, if it would lose this monopoly. On the other hand, the E.U. has plans to prohibit groundhandling monopolies for airports with more than 2 million passengers (for example, Athens), because groundhandling is more expensive on airports with a monopoly.

In retrospect, it has been for Greece in the past fairly difficult to invest in infrastructure like new airports or better ATC equipment. This means that in the future it is much more necessary to invest in new infrastructure, because of the growing air traffic. It seems likely, that this will still be difficult in the short term future.

Olympic Airways has - and probably also will have - due to its inferior position on all five strategic dimensions, a much weaker economic performance and an inferior service-level, leading to a negative impact on its market share. The expected scenarios however, will - once they would become reality - probably cause severe continuity problems for Olympic Airways.

6. Concluding remarks

The liberalization of the European aviation market and the subsequent increase in competition will have far reaching consequences for the future of the large number of - often national flag - carriers in Europe. The low airfares - a first result of more competition on certain routes - will lead to a higher cost awareness from the side of the carriers. Carriers which are unable to economize on their operational costs are bound to become losers, even though the general rise in mobility may obscure temporarily their relatively weak position. In this context, it is foreseeable that Olympic Airways - an example of a loss making, inefficient and low quality airline - will face great difficulties in the new European situation. The SWOT analysis has demonstrated - in combination
with the economic information collected in the benchmark analysis - that Olympic's position is vulnerable, a conclusion also subtracted by our tarantula model. Improvements of the quality of service against lower costs seems to be the only survival strategy for Olympic Airways.
Figure 1. The tarantula model

Figure 2. The tarantula model with a market-oriented scenario and a regulatory scenario
Figure 3. The tarantula model with an expected scenario for Olympic Airways and an expected scenario for European airlines

Figure 4. The tarantula model with a desired scenario for Olympic Airways and a desired scenario for European airlines
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