THE ECONOMIC IMPACTS OF AN OPEN AVIATION AREA BETWEEN THE EU AND THE US

Final Report

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by

Booz | Allen | Hamilton

Booz Allen Hamilton Ltd
7 Savoy Court, Strand
London WC2R 0JP

in association with

CAMPBELL HILL AVIATION GROUP

700 North Fairfax Street
Suite 300
Alexandria, VA 22314

and

Mr Erwin von den Steinen
Dr Ingomar Joerss
Dr Pablo Mendes de Leon

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SUMMARY

OVERVIEW

Potential Benefits

This report provides an analysis of the potential economic benefits from establishing an Open Aviation Area (OAA) between the European Union and the United States. An OAA would remove the constraints imposed by the system of historic bilateral air services agreements that have included restrictions on the numbers of airlines and flights as well as the destinations that may be served between two countries, or between them and third countries. Restrictions on services within countries and on investment have prevented the establishment of wider networks and subsidiaries – a situation peculiar to the airline industry.

These restrictions have held back growth in the world’s most important international market, the North Atlantic. Their removal should result in new routes and new market entrants, generating 26 million additional passengers over five years. Economic benefits from the removal of the output constraints, quantified in the form of a consumer surplus, will be worth between €6.4 and €12 billion over the five year period.

Additional demand will require additional resources: we calculate that 72,000 jobs across the EU and US over the five year period will be generated.

The cargo market would also be stimulated, which should produce an increase of between 100,000 and 170,000 tonnes of freight, equivalent to 1-2% of the existing market. This in turn should create five to nine thousand new jobs.

Airlines operating on EU-US services will face additional competition and pressure on costs. Moreover, the ability to restructure across national borders, and to organise deeper cooperative alliances, gives the potential for significant gains in productivity and resulting cost savings. These factors are also expected to lead to lower fares, increased traffic, additional jobs and further economic benefits.

Improved airline cooperation enabled by an OAA, for example, is predicted to result in €160 to €340 million per year in consumer benefits, and the pressure on airline costs that an OAA is expected to generate may provide as much as €3.8 billion in a consumer surplus in any one year.

An Open Aviation Area

The Open Aviation Area concept extends full freedoms of the air to both parties, removes restrictions on investment by foreign entities and permits wet leasing of aircraft under non-discriminatory, transparent conditions. Importantly, it embodies a general commitment to regulatory convergence and to harmonisation of air transport standards (at a high common level) in safety, security and the environment. An OAA is intended therefore to provide a holistic framework that goes beyond the familiar, but basic, Open Skies model of the United States.

An OAA contributes to the “normalisation” of the air transport industry by exposing it to competitive forces usual in other sectors. It will offer consumer benefits while promoting stable industry growth through a cooperative approach to the implementation of stringent quality controls by regulators and the industry.
Under an OAA transatlantic competition will increase, resulting in lower fares, stimulating demand, causing traffic to grow with all the associated economic benefits gained in both the EU and US.

**Market Context**

In the case of the EU and the US these benefits will be felt in the two largest air transport markets in the world. The US air transport industry carried over 712 million passengers in 2004. Of these, 67 million (9%) travelled on international services. The EU air transport industry carried 650 million air passengers, 34% of whom were travelling on extra-EU flights. Together, these markets account for well over half of global scheduled passenger traffic.

![Figure 1: World Traffic Flows % of Total Scheduled Passengers](image)

When charter traffic and passengers carried by the new generation “low cost carriers” are included, IATA’s figures shown here are likely to be an underestimate of the size of the market.

**Passenger traffic**

The traffic between the US and the EU is, unsurprisingly, a significant volume in itself, being 47.4 million passengers in 2004. However, the last five years have been a turbulent time for the civil aviation industry. Indeed, the market was smaller in 2005 than it was in 2000.
Transatlantic traffic is only now recovering from the effects of the September 11th attacks in 2001 – the year 2000 saw a peak of 48.7 million and the most recent figures show traffic at 47.4 million almost returning to its former strength. An OAA offers the opportunity to strengthen the industry at a time of recovery and, by extending beyond simple market access benefits of other arrangements provides for stable growth.

**Air Cargo**

An EU-US OAA would also incorporate some of the largest and more advanced air cargo activities in the world accounting for about 25% of the world market in 2003. The operators providing these services also act as leaders in other continental markets. A striking indication of its importance is that in 2004 the combined US and EU freighter fleet accounted for 71.7% of the world total.

<table>
<thead>
<tr>
<th>Region</th>
<th>Aircraft</th>
<th>Share of World Fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>968</td>
<td>61.0%</td>
</tr>
<tr>
<td>EU</td>
<td>171</td>
<td>10.7%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>448</td>
<td>28.2%</td>
</tr>
</tbody>
</table>

Service expansion and enhancement by air cargo airlines in recent years have played a crucial role in facilitating worldwide trade and economic development. Air trade now accounts for almost half of the total merchandise trade by value between the EU and US, and also plays a critical role in intra-US and intra-EU trade, as well as connecting both markets to the rapidly expanding traffic to and from Asia. Market liberalisation has been a critical catalyst for air cargo service growth, particularly for the integrated carriers and their multi-market networks.

An OAA that combines the two largest world markets offers a template for the rest of the world and provides a critical mass that could generate similar reforms in other markets.

**Genesis of this report**

At the request of the European Commission, this document forms an update and extension to a previous analysis published by the Brattle Group in 2002. That comprehensive report established an approach to the economic analysis of the impacts of an OAA which, for the
purposes of consistency and comparability, is largely followed here. This report provides similar quantitative analysis but also examines the implications of an OAA in terms of labour and social policy, as well as covering implications for the cargo industry in some detail.

**SUMMARY IMPACTS**

This update, in keeping with the original Brattle analysis, asserts that an OAA resulting in the systematic liberalisation of the North Atlantic air transport market would provide significant economic benefits for the EU and the US by:

1. removing output constraints (due to existing bilateral air services agreements)
2. facilitating improved cooperation between airlines through deeper alliances
3. reducing airline costs due to the increased pressure of competition.

Both passenger and cargo markets are expected to benefit. In line with the original report, the impacts from these three opportunities are described in terms of a consumer surplus, employment and cost impacts (note that the economic impacts from the different sources given here are not additive\(^1\), and presenting aggregate totals for traffic and for economic benefits would give a misleading picture of the likely outcomes).\(^2\)

**Benefits from Removing Remaining Restrictions on Output**

The transatlantic market retains some major restrictions on market access that constrain output. An OAA that removed these constraints should result in increased supply, resulting in downward pressure on prices and thus demand stimulation.

Our analysis indicates that liberalising air transport markets has a positive effect in the five years following the signing of an Open Skies agreement. Our approach is to apply this effect to EU markets that do not currently benefit from an Open Skies arrangement with the US\(^3\). Over the period of five years that the effect is discernable, the total increase in passenger numbers generated by an OAA is estimated at 26 million. In the fifth year, these markets are effectively 34% bigger with an OAA than they would be without it. In the first year a modest increase in traffic of 1.4 million passengers is observed; in the fifth year 9.6 million additional passengers travel\(^4\). The chart below illustrates this impact.

---

\(^1\)In this analysis, due to the complex nature of the issues involved, we have not attempted to predict how the different competitive factors will interact with one another. For instance, greater airline alliances may cause fares to decrease by x, increased competition on its own may reduce fares by y, both these factors acting simultaneously will reduce fares by some function \(f(x,y)\), which may be less or greater than \(x+y\), and this will then impact on demand and consumer surplus. Therefore, to err on the side of caution, results from each factor have merely been stated separately.

\(^2\)All benefits are presented with the caveat that due to the nature of applied statistical analysis, there is an inherent degree of uncertainty associated with the results. The figures provided here should be interpreted as indicative.

\(^3\)UK, Ireland, Greece, Spain, Hungary

\(^4\)Due to the cyclical nature of air traffic, it is not expected that the benefits will necessarily grow at the steady rate postulated but, ceteris paribus, the aggregate effect over five years should be in line with predictions.
Additional traffic has a positive impact on society’s welfare. Airline fares would fall, new jobs would be created to serve the new passengers, there is greater consumer choice for airports and airlines, and economic growth is stimulated. Over the course of the five years these effects generate a consumer surplus of between €6.4 and €12 billion depending on price elasticities of demand\(^5\). These benefits increase year on year, due to the superior traffic growth rate post liberalisation.

\[
\begin{array}{|c|c|c|}
\hline
\text{Year} & \text{Price elasticity = 1} & \text{Price elasticity = 2.5} \\
\hline
1 & 1,000 & 410 \\
2 & 2,000 & 850 \\
3 & 2,800 & 1,300 \\
4 & 3,200 & 1,700 \\
5 & 3,400 & 2,100 \\
\hline
\text{Total} & 12,000 & 6,400 \\
\hline
\end{array}
\]

Table 2: Increase in Consumer Surplus due to Removal of Bilateral Restrictions (€ millions)\(^6\)

**Benefits from Improved Airline Cooperation**

The Brattle Group in their original report identified a significant benefit in the ability of airlines to cooperate more closely. We maintain this approach in the interests of providing an update. An OAA is expected to generate considerable extra competition among airlines. Such greater competition should reduce the relative market power of existing operators. Since existing and new airlines will have a less dominant position in the market, regulators may find it easier to agree to deeper alliances than would otherwise be permissible under the law. Closer alliances that do not undermine the competitiveness of markets would allow airlines to coordinate prices and schedules in order to reduce costs and thus reduce fares.

\(^5\) The analysis here follows the Brattle analysis modelling economic impacts under two scenarios, one using a price elasticity of 1 and the other of 2.5.

\(^6\) Note that throughout this report, calculated values will, in general, be given to two significant figures, therefore the totals given in tables may not exactly equal the sum of the figures given.
Our analysis suggests that such co-operation could increase consumer surplus by between €160 million and €340 million each year.\(^7\)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Lower bound scenario</th>
<th>Upper bound scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic increase (thousands) annual</td>
<td>240,000</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Gain in consumer surplus (€ millions)</td>
<td>160</td>
<td>340</td>
</tr>
</tbody>
</table>

*Table 3: Impact of Price Decreases due to Improved Interlining*

The development of international airlines alliances is sometimes regarded as having been a second-best alternative to mergers. An OAA includes the removal of investment constraints between the parties and so leads to the possibility of airline mergers and acquisitions within and between the EU and US.

The recent merger of Air France and KLM provides an indication of the potential benefits of EU carrier consolidation - although it does not replicate the transatlantic element and clearly represents a particular case. In its first year as a joint operation, the company reported revenue growth of 10%. The group forecasts annual growth of some 5% to 2010 on the basis of its multi-hub operation and cost and revenue synergies. One analyst has recently estimated the merger synergies for Air France/KLM to be worth €610 million in cost savings by 2009. It may be anticipated that airlines of a similar size merging across the Atlantic would produce similar levels of benefit.

**Reductions in Individual Airline Costs**

An OAA provides additional flexibility in operations and allows for increased competition. More open market structures would incentivise airlines to lower costs by finding greater efficiencies in order to remain competitive. Because of the network nature of the industry, this downward pressure on costs will go beyond the transatlantic market and impact on the EU and US regional markets. The analysis assumes that through this opportunity some airlines will achieve modest reductions of between 1% and 3% of overall operating costs in the short term.\(^8\) Delivered in regional and transatlantic markets this provides a total, indicative, saving of over €2 billion.

<table>
<thead>
<tr>
<th>Flight territory</th>
<th>Operational expenses €m</th>
<th>Estimated % saving</th>
<th>Total Saving €m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transatlantic</td>
<td>18,000</td>
<td>2.00%</td>
<td>360</td>
</tr>
<tr>
<td>Intra-EU</td>
<td>42,000</td>
<td>3.00%</td>
<td>1,300</td>
</tr>
<tr>
<td>US domestic</td>
<td>51,000</td>
<td>1.00%</td>
<td>510</td>
</tr>
<tr>
<td>Total</td>
<td>111,000</td>
<td></td>
<td>2,100</td>
</tr>
</tbody>
</table>

*Table 4: Estimated savings*

Lower fares, enabled by lower costs would lead to further demand stimulation. We estimate that this could lead to an increase in passengers of between 15 and 39 million and provide an economic benefit in the form of a consumer surplus of around €3.8 billion each year.

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\(^7\) We take a more conservative estimate of the numbers affected compared with Brattle’s report, but apply the same values for elasticities and price reductions.

\(^8\) Our approach diverges from the Brattle Group here mainly due to the lack of a centralised database on airline costs which was available at the time.
Cargo Impacts

An OAA will have differing impacts on the cargo sector depending on the type of market as defined by geography and type of service. Integrated express carriers stand to gain through an enhanced ability to expand their global networks unconstrained by traffic rights; investment rights which would enable them to replace outsourced capacity with their own services in key national markets. All cargo operators would benefit from less restricted use of wet leasing and new route opportunities, which would provide cost and service efficiencies.

While it is difficult to correlate mostly passenger-based rights agreements with trends in air cargo activity for specific OAA market segments, the degree of liberalisation for particular EU markets has had a measurable effect on direct air trade with the US. Patterns of growth for EU-US air trade of both high-value “express” commodities and higher-volume “freight” commodities from 2000 to 2005 show a clear advantage to “open” versus “non-open” markets. The efficiency of access to air express services has been shown to be a critical factor to industrial location and expansion, and any disadvantage relative to competing markets results in lower growth for existing companies and an inability to attract new companies.

Combining all market segments, cargo liberalisation is estimated to stimulate an additional 103,000 to 170,000 tonnes of cargo, equivalent to 1-2% of the total EU-US all-cargo market.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Transatlantic</th>
<th>Intra-EU</th>
<th>US domestic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic increase (thousands)</td>
<td>460-1,200</td>
<td>8,400-22,000</td>
<td>6,500-16,000</td>
<td>15,000-39,000</td>
</tr>
<tr>
<td>Gain in consumer surplus (€ m)</td>
<td>340-340</td>
<td>2,200-2,300</td>
<td>1,200-1,200</td>
<td>3,700-3,800</td>
</tr>
</tbody>
</table>

Table 5: Impact of price decreases due to increased competition

Employment Impacts

Additional air traffic not only brings consumer benefits but also requires additional resources to handle the greater demand. This generates employment both in the aviation industry and, due to the multiplier effect of aviation, in supporting industries which form part of the supply chain. Indirect employment is likely to be several times larger than the direct employment. Our analysis does not include the catalytic effect that the increased employment has on the economy.
We estimate that the enhanced level of traffic due to the removal of output constraints would lead to the creation of 72,000 new jobs (at current levels of productivity) by the end of the five year period.

<table>
<thead>
<tr>
<th>Year</th>
<th>US Direct jobs</th>
<th>US Indirect jobs</th>
<th>Total</th>
<th>EU Direct jobs</th>
<th>EU Indirect jobs</th>
<th>Total</th>
<th>(EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,500</td>
<td>3,600</td>
<td>5,100</td>
<td>1,800</td>
<td>3,700</td>
<td>5,500</td>
<td>11,000</td>
</tr>
<tr>
<td>2</td>
<td>3,200</td>
<td>7,800</td>
<td>11,000</td>
<td>3,800</td>
<td>8,000</td>
<td>12,000</td>
<td>23,000</td>
</tr>
<tr>
<td>3</td>
<td>5,200</td>
<td>13,000</td>
<td>18,000</td>
<td>6,200</td>
<td>13,000</td>
<td>19,000</td>
<td>37,000</td>
</tr>
<tr>
<td>4</td>
<td>7,500</td>
<td>18,000</td>
<td>26,000</td>
<td>8,900</td>
<td>19,000</td>
<td>28,000</td>
<td>54,000</td>
</tr>
<tr>
<td>5</td>
<td>10,000</td>
<td>25,000</td>
<td>35,000</td>
<td>12,000</td>
<td>25,000</td>
<td>38,000</td>
<td>72,000</td>
</tr>
</tbody>
</table>

Table 7: Estimated increase in employment due to removal of output constraints

An additional 1,800 to 10,000 new jobs may be created per annum due to airline coordination efficiencies.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>US Jobs</th>
<th>EU Jobs</th>
<th>(EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect</td>
<td>Total</td>
</tr>
<tr>
<td>Lower bound</td>
<td>250</td>
<td>610</td>
<td>860</td>
</tr>
<tr>
<td>Upper bound</td>
<td>1,500</td>
<td>3,500</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Table 8: Employment created in Europe and US due to pricing synergies

Increased cargo services are expected to create approximately five to nine thousand new jobs:

<table>
<thead>
<tr>
<th>Type of carrier</th>
<th>Scenario</th>
<th>US Jobs</th>
<th>EU Jobs</th>
<th>(EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect</td>
<td>Total</td>
<td>Direct</td>
</tr>
<tr>
<td>Integrated</td>
<td>Lower</td>
<td>700</td>
<td>1800</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td>1400</td>
<td>3500</td>
<td>4900</td>
</tr>
<tr>
<td>All Cargo</td>
<td>Lower</td>
<td>70</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td>800</td>
<td>1900</td>
<td>2700</td>
</tr>
<tr>
<td>Total</td>
<td>Lower</td>
<td>1500</td>
<td>3600</td>
<td>5100</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Employment created in Europe and the US

The third source of benefits, that of cost savings in the industry, will also generate employment increases as it generates additional traffic. Such cost saving activity may well include job reductions which must be offset against the potential increases. Therefore, a straight analysis as with the other sources of benefits is not appropriate. Quantification of job cuts is dependent on many factors and, in order to be meaningful, requires the development of scenarios that consider factors such as relative costs of employees and the strategies of individual airlines. Due to the number of variables to be considered this impact has not been quantified.

Other impacts of an OAA

Social and Employment Factors

A significant additional element of this report over the original Brattle Group study is the consideration of employment, social protection and labour mobility in the air transport industry in the United States and the European Union. Creating an OAA presents opportunities and challenges for employees as well as for shareholders, management and governments.
Our analysis focuses on rules and practices as they relate to mobile workers, i.e. flight and cabin crew, working on international routes as well as in services within the US and the EU. It is important to make clear that labour and immigration regulation in the European Community differs in structure compared to the United States. The principal difference is that in the US primarily federal laws govern airline labour relations, whereas in the EU only a limited number of labour-related areas are harmonised by way of Directives at the Community level. These establish minimum standards, which Member States must meet or exceed in formulating national legislation.9

Such a difference means the systems cannot be easily described using identical analytical formats. However, we provide a comparison of relevant areas including the chief legislation affecting airline labour and, in light of the cabotage and wet leasing questions, rules governing employment of non-resident aliens (relevant immigration law).

The table below is intended to provide a broad overview of how certain key questions are dealt with in the EU and the US respectively.

<table>
<thead>
<tr>
<th>Area</th>
<th>EU</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right to organise guaranteed by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Airline industry organised by crafts unions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Employee rights separately protected by Works Councils or like institutions</td>
<td>Yes</td>
<td>Not as a matter of federal law</td>
</tr>
<tr>
<td>Management power to terminate contracts or employment without cause</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Prevented by labour relations laws</td>
<td>Partially</td>
<td>Yes</td>
</tr>
<tr>
<td>Prevented by employee tenure rights</td>
<td>Partially</td>
<td>No</td>
</tr>
<tr>
<td>Conditioned by collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Government ability to impose mediation</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Licensing requirements for mobile workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flight Crew</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cabin Crew</td>
<td>Qualifications must be certified</td>
<td>Qualifications must be certified</td>
</tr>
<tr>
<td>Hours &amp; Working Conditions fixed in law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Modified by collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Social Insurance Coverage Required by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Company Pension plans also available</td>
<td>Generally yes</td>
<td>Generally yes</td>
</tr>
<tr>
<td>Regulated/Protected by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Agreed in collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Health Insurance coverage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Required by law</td>
<td>Mostly</td>
<td>No</td>
</tr>
<tr>
<td>Established by contracts</td>
<td>Often</td>
<td>Mostly (collective bargaining)</td>
</tr>
<tr>
<td>Employee choice options</td>
<td>In some cases</td>
<td>In some cases</td>
</tr>
<tr>
<td>Non-resident alien crew members:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visa-Free entry to</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Temporary employability in</td>
<td>Yes (limited)</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 10: EU/US comparison of employee rights & social conditions in the Air Transport Sector

We suggest that, as this overview table indicates, different regulatory contexts can still produce like results, especially in economies governed by similar commitments to consumer interest and competition. This is particularly true for the airline industry whose technical

9 Article 137 EC Treaty, for example, provides that directives “shall not prevent any Member State from maintaining or introducing more stringent protective measures compatible with this Treaty.”
standards and commercial service priorities have been strongly influenced by international standards and criteria as well as national thinking.

Ultimately it is not possible to make a judgement that either American or European airline employees enjoy a more favourable position under law and regulation. Rather, the evidence suggests overwhelmingly that it will be differences in performance of individual companies rather than divergences in levels of social protection that more decisively shape prospects and welfare of employees of US and Community airlines.

In a highly competitive market, any conduct motivated by protectionism, whether European or American, would be self-defeating. Static national market shares are in any case disappearing; they cannot be retained much less restored by ownership restrictions in markets where designation, route and capacity restrictions no longer exist.

**Investment Rights and Cabotage**

A full OAA would extend cabotage and investment rights within the US to EU carriers and within EU Member States to US carriers. Such rights would address a common problem of market access to national (domestic) markets. It is essential, however, to realise that they are fundamentally different in key respects: investment is not a traffic right, it is a right of capital. Its fundamental objective is “national treatment” or the right of a foreign investor to be treated no better or no worse than the national investor and to be subjected to the same rules and privileges.

The foreign investor brings money and ideas to a new market – the cabotage operator brings outside equipment and people to the new market whose licensing and performance standards are governed by its national rules. The cabotage operation therefore raises different questions under law and policy and its acceptance arguably depends substantially on progress towards regulatory convergence.

The EU is a single market in air transport that is of a comparable scale to the US (650 million and 712 million passengers respectively). Because most of the significant EU routes cross Member State borders and US carriers with unrestricted 5th freedom rights can access these routes, stakeholders on the European side perceive an asymmetry of access: they are denied the ability to establish feeder networks in the US if they lack cabotage rights and/or the right to establish subsidiary operations through investment.

Although we have found little appetite for consecutive cabotage operations due to the operating economics of wide body aircraft, this is not to say that a new airline entrant offering new routes would not generate additional traffic and justify such a service. In the cargo field, moreover, there may be significant advantages for express and general freighter operators in cabotage rights within EU Member States and within the US.

Currently UPS and Federal Express benefit from a number of 5th and 7th freedom rights within the EU and can run hub operations within the EU (with some support from contracted Community carriers). By contrast, DHL and TNT do not have the ability to establish a hub in the US - using their own airlines. The requirement to use third party capacity and facilities can introduce additional costs.

Public sources of data allow us to estimate that DHL, for example, is currently spending around €515 million ($624 m) per annum on outsourced capacity for its US domestic air operations. Operating its own cabotage services may allow fleet efficiencies and economies of scale. Should the company reduce its costs in this way its greater competitiveness and potentially lower rates represent an economic as well as commercial benefit.
Despite lack of interest in cabotage services in the US, EU airlines are interested in creating networks in the US and vice versa as part of the global service their customers expect. While the more fragmented combination airlines have continued to struggle financially, the integrated cargo carriers (through their ability to enjoy national treatment investment rights at least in the non-flying aspects of their business) are clearly on their way to establishing global leadership. Fully removing investment constraints under an OAA provides a major step toward global enterprise leadership for cargo and passenger carriers for the EU and US.

**Impacts on Freighter Wet Leasing Market**

Opening up the market for wet leasing of OAA-based freighter aircraft by EU and US cargo airlines will affect both the service and costs of the lessor carrier, as well as the ACMI operating carrier. EU-based airlines could then lease to US operators in the international market (currently estimated at under €390m per year) and provide intra-US services; similarly US airlines could compete in the intra-EU wet leasing market. An OAA would offer the potential for the increased efficiency through consolidation of companies and fleets.

**Benefits for Airline Financing**

The removal of investment constraints allows airlines additional flexibility in their financing and access to a wider market of investors including other airlines. This could result in potentially lowering the cost of capital by introducing a wider shareholder base and enabling airlines to launch International Public Offerings (IPOs) and issue shares in specific markets on an opportunistic basis. EU airlines will benefit from access to the world’s largest capital markets in the US, and US airlines from access to more strategic investors, including EU airlines. It is not possible to say definitively whether the cost of raising capital may be higher in the EU or in the US under an OAA, but the fact that the cost is different means that airlines without restrictions on ownership would be able to take advantage of the lower value.

**Access to “Fly America” traffic**

Under the Fly America Act, US government funded air travel by employees and contractors must use US carriers when reasonable service is available. The Act effectively precludes non-US carriers from competing for US government air travel spending (code-shares on non-US airlines being an exception). We may envisage that an OAA which allows fair competition between EU and the US carriers for air travel within its boundaries would extend such arrangements so that EU carriers may be able to compete for US government business worth an estimated $63 million (€52m) in 2005 on US-Europe services and around $700 million (€578 m) per year within the US. Increased competition from EU carriers could provide a benefit in the US to the extent that it results in lower contract rates.

**Concluding Remarks**

The overall results of this report support the contention that an OAA would generate significant economic benefits for the EU and the US. Our research also shows that while there are some important differences in market conditions and regulatory approach there are just as many – or in fact more – similarities.

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10 ACMI (Aircraft, Crew, Maintenance and Insurance) carriers operate freighter aircraft for other airlines
11 To be distinguished from Initial Public Offerings
12 The “Fly America Act” refers to the provisions enacted by section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 as amended.
The development of an OAA will not be a linear process. It requires more than the peeling away layers of restriction. Stakeholders must work together to confront new challenges and to manage, if not avoid, new restrictions.

The potential traffic growth is significant. It raises questions as to the ability of the air transport infrastructure to cope with the new levels of demand: sufficient airport capacity will be required, in the right place and at available at the right time. Access to airports at night is essential for effective cargo service, and aircraft operations at all times generate unwelcome emissions and noise.

It is likely that new technology and institutional organisations to advance environmental protection will be required. Here action is being taken, including the European Commission’ proposals for emissions trading, and the programmes pursued by ICAO. The on-going impact of heightened security represents another key challenge to the way we expect to travel. Requirements for secure cockpit doors, or more rigorous airport procedures add cost to airline operations and absorb human and financial resources across the industry. Further review and update will be required to treat all of these points effectively. As is necessary for the realisation of the economic benefits under an OAA, these issues must also be addressed by cooperative action at regulatory and industry levels – and between them.
INTRODUCTION

1.1 GENERAL

This document forms the final report on a study to assess the economic impacts of an Open Aviation Area agreement between the European Union (EU) and the United States. It has been compiled by Booz Allen Hamilton Ltd of London and its subcontractors Campbell Hill Aviation Group Inc. of Alexandria VA, Mr Erwin von den Steinen, Dr Ingomar Joerss and Dr Pablo Mendes de Leon, under Contract No. TREN/05/MD/S07.52650.

1.2 OBJECTIVES OF THE STUDY

1.2.1 Overall Aim

The European Commission has engaged the Project Team to provide an update of the report produced by the Brattle Group in December 2002 for the Directorate-General for Energy and Transport on The Economic Impact of an EU-US Open Aviation Area (OAA). This study determined that a systematic liberalisation of the North Atlantic market would produce significant economic benefits for the economies of the United States and the European Union.

The overall aim of this report is to update the analysis of the economic benefits which could be expected to accrue from the agreement of an OAA between the EU (as it now stands with 25 Member States) and the US.

This report must also take account of changes in the air transport industry since the Brattle Group reported (see below). This report is also broader scope than the original report in that the project team have been asked to cover issues of labour relations and legislation and to include the cargo sector. Both of these areas are, therefore, covered in detail in this study.

1.2.2 Developments since the Brattle Group Report

Since the Brattle Group reported, there have been important developments in the air transport, geopolitical and macro-economic environment in addition to significant progress made in formal EU-US negotiations launched in 2003. In assessing economic impacts, the current study will take account of ongoing implications of significant changes in the market and regulatory environment.

1.2.2.1 Market Environment Developments

Market developments which must be considered include:

- shifts in the structure of airline competition in Europe and in the US as new airlines in domestic and regional markets have emerged, or strengthened their existing positions considerably, while traditional airlines have shifted their emphasis toward international and long haul services
- increased pressure on airline costs due to on-going security threats – with particular impact on traditional airlines dependent on hubbing efficiency – and the accompanying insurance requirements (which have also inhibited discretionary demand)
the growing relative importance of all-cargo air transport services as an inherent element of the globalisation of high speed transport and logistics systems. We note that the ability to invest across borders in freight forwarding has been an important benefit for the so-called integrators, who have been able to establish and maintain profitable growth in otherwise difficult times for air transport services.

the explosion in the oil prices to reach over $60 per barrel in the second half of 2005\textsuperscript{13} from a fluctuating but fairly steady level of between $20 and $35 per barrel between 2000 and 2002.\textsuperscript{14}

The impacts of these factors have been felt to different degrees on both sides of the Atlantic: major European airlines have made a strong recovery relative to the legacy US network carriers who have not yet re-established profitability and face continuing reorganisation pressures.

In addition, the labour cost advantages that – at the time of the Brattle Study – may have been enjoyed by some Community carriers over their US counterparts appear to have been reduced, if not been eliminated, as a consequence of movements in the Euro-US dollar exchange rate, as well as by downward pressures on average compensation levels in the US industry.

1.2.2.2 Regulatory Environment Developments

Regulatory developments must also be addressed including:

the November 2002 decision of the European Court of Justice (ECJ) that eliminated historic rights to exclusive designation under traditional bilateral air services agreements of Member State carriers on their national routes to third countries. The ECJ Decision created a legal imperative to include Community designation of airlines in air services agreements. When implemented internationally and combined with modern ownership and control provisions, Community airlines and their investors will be able to establish efficient and coherently organised global services.

the central and expanding role of policy formation at the European level in the development of the European aviation system led and guided by the Commission, as exemplified, \textit{inter alia}, by: the establishment of EASA competence in key areas of safety quality controls; development of environmental standards; adoption of rules for the implementation of the Single European Sky; and leadership in the development and coordination of security procedures; as well as exercising new Council mandates to establish new air transport market conditions, notably in the relationship with the United States (as granted by the Council in 2003).

the enlargement of the EU’s aviation market due to the accession in 2004 of ten new Member States and the prospective accession in 2007 of two additional states; the continued close association for air transport market purposes of Norway, Switzerland and Iceland with the EU, and possible future members of the

\textsuperscript{13} Figure given is average of six months July-December 2005 for a barrel of West Texas Intermediate.

\textsuperscript{14} Results of analysis and data in general are given in Euros where possible throughout this report, with conversions provided for key figures in dollars. Where, however, it is common industry practice to use other currencies, in particular the US dollar, or where original data sources are predominantly in other currencies or dollars – for example if sourced from US government departments – then dollar values are given with conversions for key figures into Euros. The oil price falls into the category of common industry practice and is therefore quoted in US dollars. Where values are quoted on an annual basis the exchange rate applied is the average over the course of the year in question.
European Common Aviation Area (ECAA) who accept entirely Community rules on competition, openness and of markets and convergence leading to adherence to safety, security, environmental and consumer protection standards.

The major development since 2002 in the regulatory field is, however, the finalisation in November 2005 of the text of a first-stage “Air Transport Agreement” between the United States and the European Union. This agreement would create very significant but not complete liberalisation. Thus the parties have agreed to return to the table for further negotiations within 60 days of the date of its application to renew discussion on an important set of open issues whose analysis is an essential element of the economic impacts analysis discussed below.

1.2.3 Economic Impacts Analysis

1.2.3.1 Economic Analysis and Additional Aspects

The central task assigned to this Study is to update the analysis undertaken by the Brattle Group. Thus, the primary objective of this study is to provide a quantitative analysis of the economic benefits that are expected to accrue from the agreement of an OAA between the EU and the US. In terms of economic impacts the current study includes:

- an updated quantification from 2000 to as near to the present as possible on the basis of available data (retrospective examination of the industry before 2000 is only described where it is necessary for deriving a baseline for analysis)
- re-assessment of the potential benefits from the standpoint of EU Enlargement
- the impacts of an OAA which includes an enlarged European Union with ten new the Member States, as well as the members of the European Free Trade Association, i.e. Switzerland, Norway, Iceland and Liechtenstein
- a consideration of the benefits of removing trade barriers such as the Fly America Act
- an assessment of the economic benefits deriving from impacts on the air cargo market (largely not covered in the earlier study)
- a review of the benefits of a fully open investment regime
- a consideration of cabotage and wet leasing issues
- an examination of the implications for employment and labour.

The assessment of economic impacts identifies potential benefits relative to the current status of liberalisation and therefore differs from the original study where liberalisation has occurred in the intervening period.

1.2.3.2 Note on Impacts of External Factors

The scope of the analysis required for this study, which includes consideration of social and labour issues and matters related to wider aviation regulation, means that a full and exhaustive analysis of, for example, fare movements or the tracking of traffic development in individual liberalised markets compared with those under remaining restrictions, is not possible within the time frame and resources available.
The period of analysis for this update study also covers the air transport market at a time when it was suffering from the greatest shock in its history. The terrorist attacks of September 11th 2001 brought in a new approach to security with operational constraints and additional costs. This also acted as a catalyst for a commercial crisis shedding a bright light on the state of legacy carriers’ performance as they responded to competition from new entrants with lower cost bases and simplified operating models.

Since 2001 major US airlines have entered and recovered from bankruptcy and some European flag carriers have failed or transformed into new entities. The on-going consequences of those events as well as of new forms of service continue to affect the structure both of individual carriers and the shape of the market as a whole. This makes analysis to isolate previous impacts of liberalisation and predict the future growth and shape of the market under new regulatory arrangements more complex and difficult than normal.

1.2.4 Areas of Relevance Outside the Scope of this Report

The original Brattle Group report included analyses of the potential impacts of an OAA on two areas of policy concern which are beyond the scope of this report. These are:

- the US Civil Reserve Air Fleet (CRAF) program
- airline safety.

The relevant issues connected with these two important areas of concern have not changed in the intervening period and the analysis provided in the original report is extensive.

Two significant areas of policy that are impacting on aviation today are also outside the scope of this study:

- the security implications of an OAA
- the negative impacts of aviation on the environment in terms of noise and gaseous emissions.

The choice of market liberalisation policies will not determine the issues governments must face in these areas of regulation. This said, the regulatory convergence objectives sought by the EU as part of its fundamental approach to an Open Aviation Area (see also Chapter 2 below) cannot help but contribute to the type of cooperative regulatory atmosphere that can best protect security, safety and public health in air transport system.

1.3 STRUCTURE OF THIS REPORT

The report is presented in the following sections:

- Section 2 provides the conceptual background to an OAA, including a comparison between the historic EU and US approaches to the regulation of international air transport, looks at recent developments in this area and, finally, distinguishes between the basic elements of an OAA and existing Open Skies agreements
- Section 3 tracks the development of the EU-US passenger transport since 2000
- Section 4 examines the cargo sector in detail and the potential benefits of an OAA by considering the effects on different types of industry player (integrated express carriers, all cargo airlines and passenger combination operators)
Section 5 provides an analytical review of the respective legal and policy positions on social and labour rights in the air transport industry, including particular focus on regulations governing the ability to employ or not employ non-resident aliens in mobile worker positions.

Section 6 analyses the importance of air transport to international trade and introduces the source of economic benefits expected to derive from an OAA.

Section 7 examines the anticipated economic benefits from the removal of remaining restrictions arising from the historic system of bi-lateral agreements.

Section 8 provides an analysis of the potential economic benefits from the kind of deeper airline alliances that could be facilitated by an EU-US OAA.

Section 9 considers potential for, in particular, airline cost savings, including developments in flight and cabin crew salaries in recent years.

Section 10 considers a range of issues, including the opportunities available under cabotage rights, wet-leasing, and finishes with a consideration of the “Fly America” rules.

Section 11 focuses on airline financing.

Section 12 concludes the report with a summary of the quantified benefits.

A set of appendices provides information on economic methodology and other analyses.
2 AIR TRANSPORT POLICY CONTEXT

2.1 HISTORICAL BASIS OF THE REGULATION OF INTERNATIONAL AIR TRANSPORT

The Chicago Convention of 1944 established what has become a broad and resilient multilateral framework for creating and modernising technical norms and procedural standards that has shaped (to a considerable degree) the operation of air transport services at the global level. However, traffic (or economic) rights to do business have largely been regulated through bilateral air services agreements (ASAs).

To date ASAs remain the primary and dominant instrument for the allocation and regulation of international rights (that is, authority to provide commercial air services on all routes between sovereign states and/or between regionally-associated states and third countries). Reliance on the ASAs has also worked to separate the economic regulatory approach to air transport services from regulation of other forms of international trade in services. With very few exceptions applied in very limited areas (such as levels of fees or duties), ASAs do not make use of the Most-Favoured Nation (MFN) trade policy principle which can entitle third parties to benefits negotiated between two other states.

ASAs rely almost entirely on the trade policy principle of reciprocity and embody an exchange of rights and obligations between two parties. These exchanges not only do not include rights for third parties; they typically have worked to exclude them. Thus failure of an airline to prove that it is “substantially owned and effectively controlled” by the partner state and/or its nationals will (in the great bulk of the world’s ASAs) entitle the party receiving the designation to refuse or revoke that airline’s operating authority to perform services under the agreement.

The foregoing being the case, another trade policy principle (that applies to most other areas of the provision of goods and services) – that of “national treatment” of investors – has also, with limited exceptions, been so far excluded from trade in air transport services.\textsuperscript{15} National treatment means treating the foreign investor the same as the domestic investor; this means enjoying the same rights and being subject to the same obligations. Historically, transport was exempted from national treatment.

In addition to the ownership and control (O & C) nationality requirements for international designation under bilaterals, most states (as is the case with the US and in the EU) have statutes that establish various national ownership requirements (51% or more typically) as a condition for airline licensing. The implied theory underlying such provisions is that air transport possesses strategic importance and that it is the duty of the state to ensure its adequate supply through direct or indirect establishment of nationally controlled providers.\textsuperscript{16}

\textsuperscript{15} A limited number of supporting services associated with air transport have been covered under the General Agreement on Trade in Services (GATS), but there has been no multilateral agreement with respect to the air transport services themselves. A few states (examples are New Zealand and Australia) have authorised majority foreign investment in domestic airlines. However, in the cited cases such airlines are not eligible for designation to exercise international traffic rights held by New Zealand and Australia.

\textsuperscript{16} As used here direct establishment would imply state ownership. An act of indirect establishment might arguably occur if the state were to grant exclusive or special licenses to operate key routes or systems to private provider(s). Such licensing was a feature of the US system before 1978 and in Europe prior to Community reforms. Such licensing still occurs in the form of “Essential Air Service” awards in the US and “Public Service Obligations” in the EU under which airlines willing to serve marginally economic markets are granted public franchises to provide such service.
Particularly in aviation’s developmental years (before and following World War II and the later introduction of long range jet aircraft), state involvement in founding or supporting airlines was widespread throughout the world. All of today’s European larger network system carriers (British Airways, Lufthansa, Air France, KLM, Alitalia, Iberia) were, or still substantially are, owned by national governments. The persisting public sector role in other parts of the world, e.g. Asia, remains equally strong.

This perceived public interest in the air transport system can – but need not – lead to policies of economic protectionism. As we have determined through observation and analysis and confirmed in a series of recent studies for the Commission, the world’s bilateral air services agreements can be broadly divided into two categories: according priority either to producer interest or consumer interest. A small number, such as the original Bermuda I Agreement of 1946 between the US and the UK, sought to give some priority to each of these interests.17

**Producer-interest agreements** typically include:

- so-called pre-determination of capacity (in which governments must approve schedules in advance); enumeration of points that can be served rather than general grants of traffic freedom

- provisions for price and capacity coordination among national flag carriers whose number may be limited to one of each party (single designation) and complex controls on airline pricing (that in today’s markets have become utterly obsolete and whose procedures are rarely enforced).

Producer interest agreements, that in some cases expressly sanction cartel-type practices such as price-fixing and mandatory pooling of revenues, basically see competition as inefficient and wasteful if not harmful. The consumer is to benefit through stability of supply and quality of service of established carriers. An often substantially deregulated charter market is, moreover, seen as a safety-valve to serve leisure demand at affordable prices.

**Consumer interest agreements**, as originally pioneered by the United States but also as championed in recent years by a range of other states – and as systematically expanded in the Open Aviation Area concept of the EU (see below) – seek to establish discipline by the market by removing quantitative entry controls.18 The theory holds that this will lead to efficient producers as well as greater consumer choice, both qualitatively and quantitatively. The term “deregulation” has been applied with some (but not complete) accuracy to this process. While the Open Skies concept of the US has led to removal of a whole host of regulatory impediments to airline initiative, it has also, in its own way, maintained if not added structure and rules to the market (see below).

### 2.2 LIBERALISATION

We shall refer to the overall process of expanding market access as one of “liberalisation”. Liberalising implies progressive broadening and opening – movement along a continuum rather than a leap from one absolute state to another. It is and will remain an imperfect process.

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17 Of course proponents of either form of agreement will argue that it provides balanced representation of all relevant interests. While, particularly in its s-called Final Act, Bermuda I (in the capacity principles and the doctrine of “undue effect”) leaned toward producer interests, it did provide for multiple designation and freedom of airlines to offer capacity (subject to ex post facto review).

18 Airlines must continue to meet qualitative standards, e.g. in the safety, security and health areas.
While being “liberal” can have opposing political connotations in the US and Europe, the only political association we would make in applying “liberalisation” to the air transport policy process would be to underline the tangible, indeed fundamental connection between aviation and freedom to provide services, which has deep social meaning in the American experience and is at the same time a cornerstone of the treaties establishing the European Community.

Globally aviation has played a huge, indeed a formative, role in stimulating and enabling mobility – mobility of persons and goods in first instance, but also mobility of capital and information. The industry also stimulates the invention and perfection of technology and, as discussed in detail elsewhere in this Study, acts as a critical facilitator for general economic growth and development.

In short, liberalisation will be understood as a process of enhancing freedom of mobility and the prospects of economic growth.

2.2.1 United States

We shall not revisit the early history of US aviation regulation except to note that an underlying element of consistency has spanned US policy across the sharp transition in 1978 from the period of carefully regulated competition under the aegis of the Civil Aeronautics Board (CAB) to post-1978 deregulation. That element has been (and remains very strongly to the present day) a national consensus that the air transport system is a matter of public interest. A considerable body of US law, policy and federal institutional structure, including the social and labour legislation to be discussed below, reflects this consensus.

More than in most other regions of the world, the United States – not only as a continental country but also as a society placing highest priority on freedom of mobility – has been concerned that air transport be broadly available to the general population. Thus even in a period when the CAB was concerned about the risk that too much competition could destroy fledgling producers, there was equal official concern that the system provide safe, affordable and broadly available service to the American public.

In the post-1978 period, while policymakers have acted to substitute the discipline of market forces for the economic policy decision-making of a federal board, government involvement in and concern about the health of the aviation system has continued to be extensive. While quantitative restrictions on market entry have essentially been abolished, both the Federal Aviation Administration and its parent Department of Transportation act vigilantly and at times vigorously to enforce safety and health standards and to protect consumer interests as they monitor the fitness of airlines pursuant to Congressional mandate. Moreover, in the United States, government still plays a more active role (than in the EU for example) in the design and operation of aviation infrastructure not to speak of its significantly increased direct responsibilities in the provision of aviation security.

The broad point that we draw from this is: that as the US-EU dialogue moves forward in the discussion of the so-called “second stage” issues (such as the reform of laws that still exempt the airline business from national treatment rights for foreign investors – see below) it will be necessary to persuade institutions like the US Congress that such liberalisation is in the national and public interest. The Congress, as well as the White House and for that matter key executive agencies such as the Department of Defense as well as the DoT, the Department of Justice (DOJ) and the new Department for Homeland Security will remain concerned that a US registered airline with foreign owners will not only use rights but also meet obligations to the national system which its license may impose. Thus, as will be discussed in greater analytical detail below, the question of effective regulatory control (that
can rely on factors other than the colour of the owners’ passports) may in the end best characterise US concerns in the consideration of this issue.

2.2.1.1 Background and Liberalising Effect of the Open Skies Policy

US domestic deregulation in 1978 simultaneously ushered in a conscious negotiating effort to liberalise access to international markets as evidenced, for example, by the Benelux and Germany Protocols of 1978, that removed capacity and route controls for US carriers, liberalised pricing and substantially expanded access for the European partners. These first successes, however, were not met with a great deal of follow-up. On the one hand, the US carriers of the period were greatly concerned that their government not open the world’s largest market on an asymmetric basis to smaller countries in exchange for one or a handful of interesting service points (so-called hard rights vs. soft rights debate). On the other hand, foreign governments (even those with strong carriers inclined to accept broad opening of markets) were wary of granting US carriers unlimited access, even in exchange for a significant expansion of US service points, for fear that in future they would have nothing further to offer to gain new opportunities later.

As US domestic competition intensified during the 1980s, more US carriers exploited multiple designation opportunities available, for example in most Member State markets of the period, to extend their networks into international markets. North Atlantic capacity increased significantly. A certain regulatory reaction set in (which will not be detailed here) that effectively put the US Open Skies initiative into a stall-mode as major partners took actions to slow or rollback US carrier market entry.

By the early 1990s, beginning with the US-Netherlands Agreement of 1992, the Open Sky policy began to stage a dramatic recovery buttressed by two major new elements:

1) the US was now prepared to open the American market entirely and grant unrestricted 3rd, 4th, 5th, and 6th Freedom services; and

2) it was prepared to accept cooperation agreements between the host country carrier(s) and a US carrier if all other US carriers enjoyed free access rights and alliance arrangements seemed in the public interest.

Bolstered by further liberalisation with respect to charters and especially all-cargo and air express markets (for which the new US model now also offered exchange of 7th Freedom rights) the 1990’s saw a dramatic takeoff in Open Sky agreements. To date, the US has negotiated such agreements with some 77 partners in all parts of the world. As shown in Table 11 below (which we have borrowed from the Brattle Report19) such arrangements also covered 15 of the 20 current EU Member States with whom the US had an ASA and all three of EC associated states as of 2001.

The alliance networks we know today therefore relate very directly to the spread of the Open Sky policy, and they have contributed to considerable structural changes in service offer worldwide, including arguably the decrease in importance of extended linear route networks and 5th Freedom rights.

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19 The remaining markets, that is the 5 deemed restricted and the 5 without a current agreement will essentially be rendered open through application of the First Phase Agreement with a conditioned phase-in in the case of Ireland as agreed in the context of the current negotiation.
<table>
<thead>
<tr>
<th>State</th>
<th>Status</th>
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</tr>
<tr>
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<td>Open</td>
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<tr>
<td>Cyprus</td>
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</table>

Table 11: US Open Skies Agreements with EU and EFTA\(^{20}\) Member States

2.2.1.2  The Model Open Sky Agreement: Content Observations

While US negotiators have consistently emphasised the deregulatory and liberalising aspects of the Open Sky model, it would be misleading to regard its content as entirely deregulatory. First, as is well known (with the interesting exception of the APEC or MALIAT multilateral agreement in which the US and partner states of the Pacific Rim agreed to more liberal rules),\(^ {21}\) the US model has not heretofore departed from the bilateral O & C provision. Second, it has continued to contain language that expressly removes cabotage rights from the coverage of the air services agreement.

Third, and importantly, the US model establishes strong regulatory powers and obligations in the areas of safety and security just as it preserves the full ability to apply national laws. In short, the US model retains the right to control quality of operations. For the most part, however, it has not (until now) sought to regulate positively conditions of economic framework. That is, it has not, for example, contained provisions to prevent or control the use of state aids or agreed standards for dealing with problems of dominant position.\(^ {22}\) A

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\(^{20}\) European Free Trade Association

\(^{21}\) For information about MALIAT and the text of the Agreement see www.maliat.gov.nz

\(^{22}\) Illustratively the early Open Skies agreements provided for regulatory action in the event that airlines sold below cost (dumping) with predatory intent to drive a competitor out of the market. These provisions were later removed from the US model.
partial exception to the latter were complex rules to ensure fair access and competition of computer reservations systems that have been attached as Annexes to a number of US agreements.

2.2.2 European Union

While the Member States of the European Union remain sovereign actors under international law, through a series of far-reaching decisions and legislative acts they have created an internally open and common aviation market in which the European Commission has taken the lead in developing rules and making policy decisions covering the full range of market access and quality control issues. These include but are not limited to:

- air carrier licensing standards
- market access (traffic rights)
- fares and rates
- competition rules (including state aid)
- access to infrastructure (slots, ground handling)
- technical norms
- air traffic management (Single European Sky)
- safety, security and environmental standards
- air carrier liability and consumer protection
- labour and social rules
- immigration.

The so-called aviation “acquis” (that is, the body of Community law which Associating as well as Member States need to adopt and/or comply with) now numbers in excess of 40 legislative acts which either entirely or in part set rules for the conduct of air transportation.

2.2.2.1 The Evolution of EU Aviation Legislation Governing the Internal Community Market

Prior to the establishment of European Community rules, traffic rights among Member States had been heavily restricted by bilateral economic regulation. Drawing on official sources, we briefly summarise below the progressive and rapid liberalisation of the EU market in air transport introduced by Community regulation and deregulation.23

The air transport sector in the European Union was liberalised in three successive stages.

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23 See the following websites:
http://www.europa.eu.int/scadplus/leg/en/lvb/124084.htm,
http://www.europa.eu.int/scadplus/leg/en/lvb/124086.htm and
The first “package” of measures adopted in December 1987, started to relax the established rules. For example, it limited the right of governments to object to the introduction of new fares. Rules governing sharing of capacity in bilateral Member State markets were also relaxed. Until then, absolute parity had been the typical rule.

In June 1990 a second “package” of measures opened the market further, allowing greater freedom in the setting of fares and rights of carriers to add capacity. Moreover, the new provisions extended the right to fifth freedom operations and opened up the third and fourth freedoms to all Community carriers in general. These measures, which were initially limited to passenger services, were extended to freight by means of a decision taken in December 1990.

A third “package” of measures, which were adopted in July 1992 and applied as from January 1993 progressively introduced freedom to provide services within the European Union and culminated in April 1997 in the freedom to provide cabotage, i.e. the right for an airline of one Member State to operate a route within another Member State.

The main measures are as follows:

- **Community licensing liberalisation**: the market is open to all air carriers who have qualified for a Community air carriers licence (Council Regulation (EEC) No 2407/92). Issuance of licences may not be quantitatively limited. However, Member States may not grant operating licences unless air transport is the main activity of the undertaking concerned, it meets all safety and other fitness requirements (see below) and its registered office and principal place of business are located in the issuing Member State. It must be majority owned and effectively controlled by Community nationals or nationals of an associated State.24 Hence, whenever the State that issued the licence, or the Commission, so request, an air carrier must be able to demonstrate that it meets the above mentioned requirements. The carrier must further meet certain conditions with regard to start-up capital, business costs, financial obligations, civil liability insurance and must hold a valid air operator’s certificate (AOC) specifying the activities covered by the operating licence.

- **Freedom of access to the market** is laid down in Regulation (EEC) No 2408/92. This text opened up all cross-border air routes in the European Union to all companies which hold a Community licence without any restriction as from 1 January 1993. Since April 1997, unconditional access to all domestic markets has been granted to all airlines in the European Union. Hence, Community air carriers may exercise all traffic rights between airports within the Community where these are open to commercial air services. The Regulation covers access for air carriers to scheduled and non-scheduled intra-Community air services for the transport of passengers, cargo and/or mail for remuneration and/or hire.

- **Freedom with regard to fares and rates** was an essential part of the freedom of access to the Community market. Regulation (EEC) No 2409/92 stipulates that air carriers are no longer required to submit their fares to the national authorities for approval. All they must do is to inform them forty-eight hours

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24 By Treaty, nationals of Iceland, Liechtenstein, Norway and Switzerland enjoy the right to own a Community carrier established on EU territory. However, a carrier licensed in these states does not qualify as a European Community carrier for designation purposes in 3rd Country Markets. See also Regulation 847/2004.
before applying the new fare. The Regulation does, however, provide for control mechanisms to be reintroduced in exceptional circumstances.\textsuperscript{25}

The Commission may investigate on its own initiative whether an air fare conforms to the provisions of the Regulation.

\subsection*{2.2.2.2 Emerging Areas of EC Competence for Relations with Third Countries}

On November 5, 2002 the European Court of Justice, in a landmark decision, addressed concerns that had been developing for some time with respect to the ability of air services agreements such as the Open Sky agreements reached between individual member states and third countries (such as the US) to protect and advance the values and norms of EU policy and law. While it did not reject the rights of Member States to conclude bilateral air services agreements, the Court’s decision made the broad finding that all such agreements must be in conformity with Community law. More specifically it identified a number of areas in which the typical air services agreement would require amendment to meet this standard. The most important of these was the classical O & C provision that limited formal access in international markets to carriers owned and controlled by the designating Member State and/or its nationals.

As mentioned above, the classical ASA (including here the Open Sky agreements) foresaw no rights for airlines other than those of the signatories and did not entitle airlines of another Member State, even when legally established in the market of the signatory state, to compete for designations for international service. This situation was deemed to contravene the EC Treaty right of establishment and to create a discriminatory condition that demanded remedy.

To cure the situation, the Council of Ministers in June, 2003 specifically mandated the Commission (in its so-called “horizontal” mandate) to conduct negotiations with third countries in order to eliminate discriminatory designation conditions and otherwise conform bilaterals to Community law. It also established a framework, ultimately adopted as Regulation 847/2004, under which Member States could amend individual bilaterals directly. Member States were enjoined not to conclude other forms of amendments especially in formal and final form unless the other Party accepted what has come to be termed “Community designation.”

Community designation means that any Community carrier legally established in a Member State must henceforth be eligible to compete for all international designations available in that market on a non-discriminatory and transparent basis.\textsuperscript{26} For a suitably organised Community airline this implies the right to compete from any market within the EU to any third country on routes where designations are available. For the receiving country Community designation means that it faces at least theoretical competition from any carrier properly licensed in the EU.

Community designation, especially in markets where entry and scope for services growth are otherwise not restricted, has enormous potential implications for the future restructuring

\textsuperscript{25} Member States may not withhold approval of air fares and rates charged by Community carriers if the fares and rates are reasonably related to the applicant carrier’s total costs. If they withhold approval, Member States must also take into account other factors such as consumers’ needs, the competitive situation in the market and the need to prevent dumping. Air carriers may not charge fares or rates that are so excessively high as to disadvantage users or so low as to be unjustifiable.

\textsuperscript{26} The legal criteria that must be satisfied to create an establishment are not onerous and in effect any airline that creates the conditions for doing business reliably in a particular market can be said to have established itself. See also Booz Allen Hamilton study of The Allocation of Limited Traffic Rights” submitted to the European Commission in ___2004.
of services and the development of networks as well as new point-to-point competition. In the first instance, however, it pursues the narrower and specific goal of removing legal discrimination. To that end the Commission has developed model agreement language and negotiating strategies (formalised by regulation), which are designed to conform all third country relationships as expeditiously as possible.\(^{27}\)

The implications of Community designation are that industry and government should see the EU and its associated states as a single aviation market. Certain like-minded states, and others with ambitions to expand their aviation relationships in Europe, have expressed interest in negotiating with the Community as a whole. The Council for its part also recognised this potential and endorsed the idea of pursuing, at least on a selective or model basis, the negotiation of a full air services agreement by the Commission on behalf of the Member States. Accordingly, the June, 2003 Council also mandated the Commission to commence comprehensive negotiations with the United States (the so called “vertical mandate”).

### 2.3 OPEN AVIATION AREAS AND OPEN SKIES AGREEMENTS

The goal of the European side is (as was explored in the Brattle Report) to create an Open Aviation Area with the United States.

The Open Aviation Area concept is intended to deliver full market access. This takes the form of extending full freedoms of the air to both parties, removing restrictions on investment by foreign owners (within the members of the OAA), and allowing other activities such as wet leasing without restriction.\(^{28}\) In addition an OAA also embodies a general commitment to regulatory convergence and to harmonisation of air transport standards (at a high common level) in safety, security and the environment. An OAA is intended therefore to provide a holistic framework that goes beyond the basic Open Sky model described above.

Like the Open Sky model, the OAA concept is oriented towards consumers and improving commercial opportunities by rejecting the constraints of traditional bilateral air services agreements that restrict frequencies and/or capacity which in turn can lead to an under supply of what can be described as the “travel commodity”; leading further to non-optimal pricing, where prices are higher than would be the case in a fully functioning market. The liberalisation of traffic rights to remove these constraints can therefore create new market opportunities by allowing the introduction of new operators and increased capacities.

The OAA concept, however, goes further than eliminating such restrictions. It includes the possibility of creating cross border investment opportunities and scope for requisite industry consolidation.\(^{29}\) Under an OAA it would be possible for airlines of the participating states to merge with or acquire each other and thus to bring an increase in

\(^{27}\) See Regulation 847/2004 of the Council and the Parliament.

\(^{28}\) In its complete form an OAA not only remove all restrictions on 3rd, 4th, and 5th Freedom services (that is, on operations between points in the US and the EU as well as intermediate or beyond points to third countries) but also 6th and 7th Freedom services that move traffic between the territory of the other Party and a third country without stopping over (6th Freedom) or even passing through (7th Freedom) the territory of the designating Party. A full OAA would also address the question of Cabotage (8th Freedom) that could permit carriage of traffic between domestic points by an international service carrier.

\(^{29}\) The US airline market has suffered several severe down cycles in the past 25 years and arguably is experienced the worst of these at present – even though the US economy overall seems to be on a solid growth path. While US airline deregulation stimulated growth of service and greatly eased entry, critics increasingly note that the problem in the US is lack of an “exit” strategy. That is, entry is easy but exit is hard; the legal system (bankruptcy laws) and various forms of direct as well as indirect state aid frustrate consolidation.
industry efficiency through economies of scale and the benefits to be had from involvement in a larger market.

In contrast with Open Sky agreements, the OAA’s approach to competition regulation is far more systematic. An OAA explicitly tackles issues like state aid, which are not addressed at all in the US model. The goal is to help place the industry on a more stable, long-term growth path characterised by fewer insolvencies and ruinous down cycles.

These aspects are important because conditions of fair as well as open competition are needed to get the right balance between the interests of consumers and producers while safeguarding the overall public interest. The OAA involves consideration of social, environmental, technical and security as well as narrower economic aspects. As such there is likely to be value in addressing air transport relationships in the context of wider policy development.

2.4 PROGRESS IN EU-US NEGOTIATIONS

On November 18, 2005 Delegations of the United States and the European Union (led by the Commission and including 25 Member States) signed a Consolidated Memorandum of Consultations (MOC) and initialled ad referendum a Consolidated Text of an “Air Transport Agreement” (ATA).

While we shall not review its individual provisions here, we believe that the ATA will represent a significant step forward in the relationship between the parties. It provides greater market access through removing many if not all restrictions on route rights and designation and creates important mechanisms for ongoing cooperation and the enhancement of regulatory convergence. It is a truly path-breaking agreement. However, several requirements remain in order to achieve a fully Open Aviation Area. These include:

- further and/or complete liberalisation of foreign investment rights leading to a national treatment regime among the North Atlantic parties
- enlargement of the scope of the agreement to include member states of the European Free Trade Association (EFTA) and/or ECAA
- extension of unrestricted 7th Freedom all-cargo rights to US carriers and to the carriers of both parties with respect to combination services
- fair, efficient and adequate access to vital infrastructure such as airport slots and (in the case of all-cargo operators) night-time operations
- removal of traffic uplift preferences such as the Fly America Act
- removal of any remaining constraints on price competition, e.g. price leadership issue on intra Community 5th Freedom sectors (as might be raised by the US)
- liberalisation of cabotage and wet leasing
- possible consideration of labour and social protections
- further discussions on convergence issues and procedures.

The question of how to best to address the broad goal of airline worker benefit remains largely open and is, therefore, an area of particular analysis in this report. See Chapter 5 below.
The further discussions on convergence issues and procedures are likely to require the creation of expert groups, as the Joint Committee established by the OAA identifies specific tasks that need to be accomplished on the basis of shared information, analysis and expertise.

The Commission’s OAA approach is not a one-way linear process; that is, the creation and maintenance of an OAA are not just a matter of peeling away layers of restriction. Stakeholders must work together to confront new challenges and to manage if not avoid new restrictions.

Economic growth and employment will depend, for example, in ensuring market access by developing constructive land use policies that keep airports open and capacities growing, while industry and government cooperate in advancing environmental protection through new technology and better organisation.

The economic benefits calculated in this report assume creation of an OAA that consists of having all these aspects in place.
3 EU-US AIR TRANSPORT MARKET 2000 – 2005

3.1 OVERALL MARKET DEVELOPMENT

In order to provide a context for the economic impacts and policy analysis to follow, and to provide supporting and explanatory information in respect of some significant changes which have occurred in the airline industry in the period under analysis for this study, an overview of the EU-US market is provided in the following subsections.

3.1.1 Traffic Growth and Decline

3.1.1.1 EU-US Market

The US air transport market is the largest in the world with over 712 million passengers carried in 2004\(^30\). Of these 67 million (9\%) travelled on international services. The EU represents the second largest world market and 2004 saw 650 million travellers by air\(^31\), 34\% of whom were travelling on extra-EU flights. The traffic between the two is, unsurprisingly, a significant volume in itself, being 45.4 million passengers in 2004\(^32\).

An indication of the importance of the EU and US markets is provided by the International Air Transport Association’s (IATA) data which shows that North American makes up 29.2\% of all scheduled services and the EU 23.3\%.

30 Bureau of Transportation Statistics, System Revenue Enplanements. Note that US DoT data has been used as the main data base for this analysis, complemented by publications from Eurostat. The DoT T-100 data offers a comprehensive set of data allowing country level analysis to a degree not yet facilitated by European sources.

31 Eurostat 26 January 2006

32 DoT data totals 45.4 million passengers for 2004; Eurostat’s report Air Transport in Europe in 2004, one of its Statistics in Focus series states that 53.2 million passengers travelled between Europe and North America (includes Canada).
World air traffic grew steadily from its development as an accessible industry to many consumers in the 1970s through to the end of the 20th Century. Only two individual events have led to a fall in global outputs year on year:

- the Gulf war in 1991 which saw a fall in global traffic in that year but which recovered in 1992
- the terrorist attacks of September 11th 2001 which acted as a catalyst for a more significant drop in traffic totals – and exposed underlying structural weaknesses of several established carriers in Europe and in the US.

The figure below shows the fall in demand after the second of these events.

![EU-US Passenger Traffic](image)

**Figure 5: EU-US Passenger Traffic 1995 - 2005**

EU-US traffic fell from its peak of 48.7 million passengers in 2000 to 40.4 million in 2002 and is yet to recover to pre-September 11th totals since most recent data shows a total of 47.4 million in 2005. It could be argued that the market is six years behind where growth rates would have expected to take it were it not for the impact of the terrorist activity.

However, although recent totals are lower than four years previously, the market has seen three consecutive years of traffic growth.

The Brattle Group report was therefore written at what appears to have been a low point in recent years, and the latest data available at the time did not include the downturn. As new airlines in Europe and the US emerge, and others continue their recovery or fail, demand has returned and, while faced with significant challenges, the market appears to be entering a new phase of growth.

### 3.1.1.2 EU Internal and US Domestic Passenger Markets

The total EU market for air transport is reported\(^{33}\) as having grown by 8.8% in 2004 over 2003 to a total of 650 million passengers. Of these, 429 million or 66% travelled on intra-EU flights (whether between Member States or within individual Member States). Of the 221

\(^{33}\) Eurostat 26th Jan 2006
million passengers travelling on extra-EU services, 23.6% in 2004 were to and from North America (US and Canada).

The growth in traffic was experienced in all Member States. In new Member States, growth was exceptional – albeit from a relatively low base - and Slovakia saw a 73% increase, for example but to only 1 million passengers in 2004.

In the US the overall trend in terms of passenger numbers since domestic liberalisation has been upwards. Domestic traffic fell by 6.8% in 2001 over 2000 and after another fall of 0.4% has returned to growth with a 5.4% increase in 2003 vs. 2002 and a jump of 8.6% in 2004 over 2003 – from 597 million passengers to 645 million34. Figures for the first 10 months of 2005 also suggest that the annual increase in domestic traffic will continue and show growth of +4.6%.

As the figure demonstrates, the proportion of international traffic in the US, is relatively small at 9% in 2004.

34 US DoT Bureau of Transportation Statistics.
3.2 EU-US PASSENGER MARKET

3.2.1 Market Size and Development

As introduced above, the EU-US market consisted of 47.4 million passengers in 2005. When EFTA countries are included the Europe-US market totalled 49.4 million.

3.2.1.1 Traffic and Capacity

Analysis of traffic data shows that there is a significant concentration of the market on the larger EU countries: the top five countries of UK, Germany, France, Netherlands and Italy countries make up 82% of the total market. The UK-US market alone comprises 37%. The country shares have remained largely constant since 2000, with a small concentration effect towards the top countries: the same five represented 80% in 2000.

The scope of this study is expanded beyond the Brattle Group’s report to look at the economic impacts on the EU and EFTA countries (included in this overview analysis)
The individual passenger totals for 2000 and 2005 (including EFTA) are shown below. The chart shows that all significant markets bar one – Germany – have fallen since 2000.

![Europe-US traffic 2000 and 2005](image)

**Figure 9: Europe-US Passenger Traffic 2000 and 2005**

Forecast rates of traffic growth for 2006 onwards are optimistic about the future, with Airbus and Boeing predicting a growth rate of 4.9% for transatlantic passengers, and IATA being yet more sanguine with a prediction of 5.6%.

Figure 10 below charts the development of the overall Europe-US market since 2000. It highlights the fact that the new Member States of the EU since 2004 (called here EU10, with EU15 for the Member States before May 2004) represent only a small proportion of the overall market, being consistently around 1% of the total passenger market. Similarly the EFTA countries together are also small compared with the overall market and combined are less than 5% of all passenger traffic.

![Europe-US traffic evolution – 2000 to 2005](image)

**Figure 10: EU-US Traffic Evolution Showing Breakdown by EU15/EU10 plus EFTA**

The table below shows individual country transatlantic passenger traffic from 2000.
Table 12: EU/EFTA-US Market 2000-2005

NB: the table excludes those Member States, who have no direct services - or such infrequent services as to be, relatively, insignificant in the context of a 45 million plus market. Estonia, Lithuania, Slovenia and Slovakia have no traffic recorded in the data; Cyprus had 1,000 passengers in 2000, and 4,000 in 2001 but none since; Latvia had 2,958 passengers in 2004 and has recently increased its traffic substantially to 23,103 in 2005; Luxembourg had 32,000 passengers in 1999 and 4,000 in 2002; Malta 4,258 in 1997.

Analysis of the annual growth rates from 2000 to 2005 highlights the contraction in the market in 2001 and 2002. Low levels of growth begin in 2003 – the strong growth in the future new Member States of the EU (EU10) compared with existing Members is due to an increase of 23,000 (22%) in traffic to and from the Czech Republic as all others in this category continued to fall. However, new Member States increased traffic in 2004 and 2005, with Latvia commencing direct flights and Poland and Hungary also increasing their capacity.
A similar but more pronounced pattern is observed in passenger capacity. The vast majority of countries have reduced their capacity over this period, though there are optimistic signs with Germany, a major market, last year increasing its capacity to a new high of over 10 million seats. The overall profile of the markets remains fairly similar as the two charts below demonstrate.

Between 2000 and 2005 the total number of seats decreased by 3 million or 5%.
One positive side effect of these decreases has been a general increase in load factors, which suggests that carriers are becoming more efficient in allocating their capacity. Overall, load factors improved by 3 percentage points over the period to an average of 82%.

The chart above shows the change in load factors varies significantly for some markets. The major markets however have seen only small changes. Load factors for selected airport markets are explored in more detail in Appendix 6.
3.2.1.2 Routes

An OAA which removes constraints on points which may be served and on designations may be expected to result in an increase in the number of routes. All of the original EU15 countries are currently served by direct transatlantic flights to the US, with the sole exception of Luxemburg. Three of the newer EU Member States (EU10) share this honour with Poland leading the way with four different routes – more routes than Finland, Portugal, Greece, Austria or Sweden. Last year Latvia also started a regular direct flights between Riga and JFK. Three members of the EFTA (excluding Liechtenstein), also make a good showing, with Switzerland in particular being well-connected to the US.

The number of transatlantic routes decreased considerably after their initial peak of 197 routes in the year 2000, reaching a low of 175 just two years later, a decrease of more than 12%. The number of routes decreased or remained the same across all countries studied, with the exceptions of Denmark and the UK which both increased slightly. The period 2002 to 2005 was one of recovery, by the end of which the total number of 202 routes had surpassed its former peak through a slight. The decline in routes available since 2000 is part of the airlines’ response to the adverse market conditions experienced after 2001, as operators reduced capacity and consolidated operations. The revival in the numbers of routes available since 2002 may be expected to continue if new entrants are able to join the market and as airlines recover commercially. The table shows the breakdown of number of city-pairs served by European country. Routes are defined as city pairs with scheduled flights at a frequency of at least 50 departures/year.

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<th>State</th>
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<th>2002</th>
<th>2003</th>
<th>2004</th>
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<td>Latvia</td>
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<td>Poland</td>
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<td><strong>EU10</strong></td>
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<td>Grand total</td>
<td>197</td>
<td>193</td>
<td>175</td>
<td>181</td>
<td>189</td>
<td>202</td>
</tr>
</tbody>
</table>

Source: DoT International T-100 data

### Table 13: Summary of Transatlantic Routes

It is worth noting that only eight of the 21 countries increased the number of transatlantic routes over the years examined, whereas in the 1990s growth was virtually universal across Europe (exceptions to this include Denmark and Spain). In percentage terms, the number of routes remained steadier in the EU15 countries compared to the new member states and the EFTA, which suggests that the supply of transatlantic travel was sufficiently established to withstand short-term political shocks, but may also reflect the larger market existing between the two areas.

NB: the Brattle Group’s analysis included a similar analysis of routes in order to investigate the impacts of the introduction of Open Skies agreements between the US and individual European countries. In doing so the criteria chosen for a route was that it was operated as a scheduled service for six months in a year. In order to exclude routes which carry very little traffic, a scheduled route for the purposes of our analysis is considered to be one which has over 50 departures per annum.

As with analysis of traffic totals, the impacts of the 9/11 attacks on demand have the effect of disguising the development of routes served since 2001.

### 3.2.2 Analysis of Market Changes by Nationality of Carrier

Major carriers\(^{36}\) on both sides of the Atlantic were analysed with respect to traffic volume and passenger capacity in order to provide an overview assessment of the relative competitive position of EU and US airlines with similar operating models (to attempt to avoid comparing the much smaller operations of some of the EU carriers with US majors).

The graph below shows the share of traffic volume, for the major EU/US carriers only. This has not changed significantly over the five years, US carriers varying their market share from 45.8% to 49.4% over the period analysed, but with no discernable trend overall – their share was 46.7% in 2000 and 48.1% in 2005. Thus, the US and EU are fairly evenly matched in terms of passenger volume.

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\(^{36}\) The top fifteen transatlantic carriers were examined. For the EU these are: Aer Lingus, Air France, Alitalia, BA, Iberia, KLM, Lufthansa, SAS, and Virgin; for the US: American Airlines, Continental, Delta, Northwest, United, and US Airways.
Figure 15: EU/US Share of Passenger Volume for Major Carriers

Note that the picture is not significantly altered if the entire transatlantic market is taken into consideration – i.e. including the smaller European carriers from new EU Member States as well as the largest network players.

Of the overall market US carriers have 42% of the traffic, EU carriers 54%. The remaining 4% of passengers are carried by other airlines operating fifth freedom services over Europe. This total volume is carried by only 25 European, 6 US and 11 other airlines.

The growth rates have been compared between EU and US carriers (considering only the major airlines in order to simplify the analysis) in terms of seat capacity and passenger numbers over the last 5 years. The changes are shown in the figure below.

Figure 16: Change in Traffic and Capacity by Nationality of Carrier

Carriers from both areas reduced their capacity in 2001 and 2002, the EU carriers to a greater degree than the US carriers. However, by 2004 capacity was being increased once again. Overall, the compound annual growth rate (CAGR) was -1.4% for EU carriers and 0.1% for US.

Passenger volumes since 2000, shows a similar overall pattern. All carriers experienced a decrease in their traffic volume in 2001 compared with 2000. However, the US carriers appear to have recovered passenger volume faster than the EU carriers. Over the entire period US CAGR stands at 0.8% compared to -0.4% for EU carriers; once again a small difference between the two.
Since passenger traffic has decreased less than capacity, this indicates an improvement in load factor for both EU and US carriers. Examining the figures, average load factor has increased from 78% and 79% respectively for EU and US carriers in 2000, up to 83% for major EU carriers and 82% for US carriers in 2005.

This analysis suggests that, at least as far as passenger traffic, capacity and load factor is concerned, major US and EU carriers are currently on a par, with neither making significant inroads against the other.

3.2.3 Financial Weakness of Performance of US Carriers

Despite the return to growth, financial performance of world airlines and of US airlines in particular remains unimpressive. The US domestic market has, been the worst affected and in 2005 the US domestic airline industry reported its fifth consecutive year of losses.

. . . IATA members (accounting therefore for largely international services) saw an overall profitable 2005 in their operating results but net results showed significant losses. Of the twenty airlines which made a loss, nine were US carriers. In contrast European carriers, alongside Asia-Pacific network airlines, were declared to be among the highest profit generators.

The cumulative effect of such losses is that over the period 1999-2005 IATA’s members have lost approximately $27 bn (€26 bn\(^{37}\)). IATA’s members do not include either the major integrated express carriers or LCCs. At the same time as these losses, the integrated express carriers have been making large profits despite the downturn in the international passenger market. A number of LCCs on both sides of the Atlantic have also continued to make profits. The table below illustrates this for three major LCCs:

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\(^{37}\) Using the average exchange rate over the entire period. In today’s money this is equivalent to €22 bn.
<table>
<thead>
<tr>
<th>Carrier</th>
<th>Profits €m</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
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<tbody>
<tr>
<td>Ryanair</td>
<td>Operating Result</td>
<td>68</td>
<td>84</td>
<td>114</td>
<td>163</td>
<td>263</td>
<td>271</td>
<td>329</td>
</tr>
<tr>
<td>(Ireland)</td>
<td>Net Result</td>
<td>58</td>
<td>73</td>
<td>105</td>
<td>150</td>
<td>239</td>
<td>207</td>
<td>267</td>
</tr>
<tr>
<td>easyJet</td>
<td>Operating Result</td>
<td>13</td>
<td>47</td>
<td>61</td>
<td>111</td>
<td>70</td>
<td>74</td>
<td>71</td>
</tr>
<tr>
<td>(UK)</td>
<td>Net Result</td>
<td>2</td>
<td>36</td>
<td>61</td>
<td>78</td>
<td>47</td>
<td>61</td>
<td>62</td>
</tr>
<tr>
<td>Southwest</td>
<td>Operating Result</td>
<td>734</td>
<td>1110</td>
<td>705</td>
<td>443</td>
<td>428</td>
<td>446</td>
<td>584</td>
</tr>
<tr>
<td>(US)</td>
<td>Net Result</td>
<td>445</td>
<td>680</td>
<td>571</td>
<td>256</td>
<td>391</td>
<td>252</td>
<td>389</td>
</tr>
</tbody>
</table>

Source: Company Annual Reports, 1999-2005

Table 14: Profits for Prominent Low Cost Carriers, € millions

All succeeded in staying in the black throughout this period. Ryanair has grown steadily throughout, with a slight decline in net profit in 2004 which it nevertheless recovered in 2005. Southwest was, naturally, the worst hit in 2001, but it nevertheless maintained a comfortable profit margin throughout.

There are also signs of recovery in the market. The AEA reports that following five years of consecutive losses, in 2004 its members posted an aggregate operating profit of US$417 million (€335 m). IATA reports that North American carriers are forecast to cut their losses from $10.8 bn (€8.7 bn) in 2005 to $5.4 bn (€4.5 bn) in 2006.\(^\text{38}\)

### 3.3 ADDITIONAL FACTORS AFFECTING THE MARKET SINCE 2000

#### 3.3.1 Air Transport Market Structural Changes

##### 3.3.1.1 Evolution of Airline Business Models

One of the key developments in the structure of the industry since 2000 has been the emergence of new airlines – often those that can be characterised as Low Cost Carriers (LCCs)\(^\text{39}\) – or the strengthened position of those already in the market at the time.

In the US domestic market, the growth of Southwest Airlines has been documented extensively, and Jetblue which commenced operations only in February 2000, carried over 11.8 million passengers in 2004. In Europe, Ryanair’s growth over the period has been little short of astounding to many observers and competitors: growing from 5.6 million passengers in 2000 to 33.4 million in 2005.

The significance of these examples is not only in the impact they have had in stimulating market growth, but also in the impacts they have had on the markets of established operators.

Removal of regulatory barriers to entry has enabled low-cost carriers to undermine network carriers’ hubs. For example, in the US, Southwest Airlines grew rapidly at the expense of the network carriers’ as they attempted to consolidate their hub and spoke operations, by offering of cheaper direct services and is now the largest airline in the US in terms of passengers carried (81.2 million in January – November 2005, Delta is second with 72.1 million). In Europe, Ryanair has been successful in creating new markets between secondary airports in the proximity of leading cities or tourism destinations.

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\(^{38}\) Press Release, 22 Mar 06, IATA

\(^{39}\) The term Low Cost Carrier is used as a convenient label to represent the new generation of airlines which have become significant market players in the last 10 or so years in the US and in the EU (including, but not restricted to, easyJet, Ryanair, Southwest, Jetblue, Air Berlin). These airlines have offered successful competition to the established network and regional carriers and benefit from lower costs which for established carriers are a legacy of their original growth and strategic development. The LCCs have, in general, applied their lower costs to simpler business models. We note that there are few common characteristics between LCCs, all of whom have their own particular strategies, strengths and weaknesses when compared with traditional or legacy carriers.
The success of low cost carriers has meant that the airline industry is in a state of transformation. Legacy network carriers have lost market share to LCCs and to regional jet operators (the latter often established by network carriers to respond to market changes and in an attempt to reduce operating costs). The chart below shows how since 2000 the LCCs in the US have continued to erode the network carriers’ market.

![US Airline Market Share by Type of Carrier](image)

**Figure 18: US Airline Market Share by Type of Carrier 2000 - 2004**

In the EU also, LCCs have an increasingly large share of the market. Members of the European Low Fares Airlines Association, which represents 10 European LCCs carried 58.6 million passengers in 2004, or 9% of the overall European market. Adding easyJet’s 24.3 million passengers raises this proportion to 13%.

The ability to move quickly in adding new destinations and adjust schedules and pricing rapidly in response to market conditions (features of liberalised markets) have been critical enablers of their and others’ success. The low-cost carriers’ advantage is large with up to 60% of total costs on a stage-length adjusted basis. The advantage is also sustainable, as it is imbedded across their business.

The advantage to LCCs of their lower cost base is expected to make them increasingly competitive relative to full service carriers. In addition to the lower cost base exploited by the new airlines, the key operational factor is their focus on rapid turnaround times. The figure below demonstrates the efficiency and aircraft utilisation generated by rapid turnaround times. In this example, Southwest airlines achieves eight services in a sixteen hour working day compared with a typical network airline’s five.
The major network carrier in this stylised example has longer flight sectors by around a third and its turnaround times are over twice as long as the Southwest operation. Short flight times have contributed to the efficient use of the aircraft and typically form part of an LCC’s strategy to maximise return on assets.

The importance of short turnaround time is magnified in dense, short-haul geographies. This approach – increasingly pursued by the network carriers – not only maintains utilisation of aircraft, enabling effective use of assets, and providing reliable performance levels which generate improved customer satisfaction, but the discipline required to achieve it leads to lower costs through the business. Rapid turnaround uses ground staff only for a limited time, it prevents additional costs being sucked into the business which come with uncertainty of timing and delay to departures.

The fact that this approach has been pioneered by LCCs and picked up by legacy carriers has an important impact on the analysis of the benefits of an Open Aviation Area. A significant economic benefit identified by the Brattle Group came from efficiencies gained from airlines moving to lower costs under pressure from new competition. In the intervening period since the original report, that pressure has led many legacy carriers to reduce their costs (and under competitive pressure some traditional European flag carriers have failed e.g. Sabena or Swissair) – the incremental impact in this respect of a more open aviation market is likely therefore to be less in 2005 than it was in 2000.

In some cases legacy carriers, in seeking to obtain operational benefits and in attempting to reduced costs overall, have effectively transformed themselves into completely different airlines. In Europe, for example, Aer Lingus made swift progress in its initial cost reduction plan by adopting some of the characteristics of the low cost carriers including reducing onboard service on short haul services and by increasing the proportion of internet bookings as well as reducing headcount. They achieved an 11% reduction in operating costs from 2003 to 2004.40

Another strategy deployed by some major network airlines has been to overcome their legacy structures by establishing subsidiaries to operate as low cost carriers in their own right; however, these have been met with mixed success. In Europe, British Airways created Go and Deutsche BA, but it found that these airlines were a distraction from their core business and moved to sell both. In the US one of United’s answers has been to establish Ted

40 Source: Aer Lingus company reports, BAH Analysis; unit costs reduced from 6.51 to 5.88 Euro cents per ASK
to operate low cost services, and Delta has Song, flying with older equipment in leisure markets. Both these subsidiaries have a strong focus on services to leisure markets with a significant number of services to Florida.

There are currently no long haul airline operators who could be said to be LCCS in the sense that the term has become familiar for within Europe and in the US. The operating characteristics – in particular short turnarounds, have been thought to be impossible to apply to long haul intercontinental operations. However, examples of potential such services in Europe and Asia are regularly found in the media. For example at the end of March 2006 it was widely reported that Wind Jet, a Sicily based budget carrier was seeking wide body aircraft for long haul operations to the US and possibly China.41 In other regions, established airlines and new entrants are looking to introduce simpler services onto longhaul services, for example, Qantas’ Jetstar subsidiary is planning to introduce international long haul services (in addition to those across the Tasman sea).

3.3.1.2 On-going Impact of Heightened Security

The heightened threat of terrorist attacks has led to increased security requirements being imposed through a variety of channels, including modifications to aircraft (e.g. hardened cockpit doors) and on reservations and load management operations, such as the requirement of the US authorities for the provision of additional passenger information which requires airlines to gather and supply data before passengers travel to the US. The operating costs of airlines have therefore been increased.

3.3.1.3 Fuel and Other Costs

Another significant change in the development of the air transport industry is the increasing importance of fuel costs. Traditionally airline organisations have reported that fuel costs of their members are around 15%-17% of operating expenses and are the second largest cost item. IATA reports that fuel costs have increased absolutely and as a proportion of its members expenses to 22%.42

Standard jet engine fuel, being a kerosene and generally derived from crude oil by fractional distillation, has a price which is typically closely correlated to crude oil prices. In December 2000, crude oil cost $28.44 per barrel43 but by the end of 2005 it was at $59.42. The trend has continued into 2006. At the time of writing the price of a barrel of WTI crude was $65.75.

Over the last twenty years, the cost of jet fuel has risen slightly faster than the rate of crude oil. The market for jet fuel has a tendency to exaggerate increases in the price of oil, the most obvious example being in 2005 in particular.

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41 ATI News 31st March 2006
42 Source: IATA World Air Transport Statistics. For detailed cost breakdown specifically on the transatlantic market see Section 0 below
43 US Department of Energy, Energy Information Administration, WTI
The greater proportional increase in jet kerosene prices partly reflects the increasing range of common alternative uses for kerosene: for example, it is increasingly a substitute for domestic and commercial heating oils in North American and Japanese winter heating, and has been particularly heavily so used in the severe winters in recent years. It also reflects kerosene’s high fungibility in terms of cracking (kerosene is a heavier fraction than naphthalene and gasoline, and can therefore be “cracked”, either thermally or catalytically, to produce gasoline suitable for automotive use), and changes in the prices of additives to jet kerosene. The result of the wider desirability of kerosene appears therefore to be that airlines feel a disproportionately large impact from increases in the general fuel price.

The wider impacts of rising global fuel prices, exemplified by the crude oil benchmarks shown above, may also be expected to increase prices and therefore suppress demand for air transport.

As legacy airlines have struggled to reduce their costs to compete with new entrants in their home markets, so they have put downward pressure on staff costs.

The chart below shows how, in spite of significant fuel price increases in the last five years, BA has restrained the growth of fuel costs as a proportion of its costs – attributable in part to hedging strategies and in part to a realignment of BA’s route network. By contrast, AA has seen its fuel bill increase by around a quarter in four years, and take up a much greater share of its total operating costs in the context of severe reductions in labour costs.

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44 Note that European and US oil prices are closely related over the period both for crude oil and jet kerosene. Over the period shown, the price per barrel of West Texas Intermediate and Brent Crude diverges by no more than $0.50 at any time. West Texas is shown for the sake of graphical clarity.
3.3.1.4 Exchange Rate and Labour Costs

Using data from 1998-2000, the Brattle Group report found that US pilots earn “about 15% more than EU pilots”\(^45\). At the time, the euro was relatively weak against the dollar, with a euro buying between $0.85 and $1.00. Since that time, the euro has become significantly stronger, one euro buying as much as $1.34, a rise of over 30% from December 2002 to January 2005.\(^46\)

The figure below shows that fluctuations in the EUR-USD exchange rate from 1999 to 2005.

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\(^{45}\) There is also a common perception that the dollar’s current level, perceived as high relative to the United States’ current account deficit, is maintained by purchases of US dollars by China and other Asian economies, and that it might otherwise have fallen further, and may be expected to do so in the future, to the extent that Eastern economies become increasingly able to reabsorb funds generated.
The principal inputs of an airline business often come from a number of countries, and may thus be effectively denominated in different currencies. The majority of salary costs will, for most airlines, be denominated in the currency of the home country, and relate to the cost of domestic inputs within that country. Thus, the appreciation of the euro against the dollar means that the imbalance in labour costs are significantly reduced. This has impacts for consideration of future transatlantic investment and consolidation in the airline industry. The opportunities for new financing arrangements and the opportunities for foreign investment enabled by an OAA are investigated in section 11 below.

As examples of the impact of that market’s evolution, one might cite the effect of the expansion of the EU and the pool of personnel available from New Member states (where they have been accorded full freedom of movement of labour), as being likely to depress wages (by increasing supply), versus the increase in aviation activity associated with the growth of the low cost carriers, which has brought, on the one side, tighter competition on cost, but, on the other, a considerable expansion of the demand for airline personnel. On the US side, *prima facie*, it appears that pressures on US-based airline personnel’s wages have been predominantly downwards, as a result of bankruptcies, other renegotiations of labour costs, and LCC competition. Relative costs for US and representative European carriers are included in chapter 9.

### 3.3.2 Extension of the European Union – New Members and Policies

#### 3.3.2.1 New Member States

In May 2004 the European Union admitted ten new Member States. Citizens and corporations from the Czech Republic, Cyprus, Estonia, Hungary Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia became part of the single aviation market adding 74 million people to the EU\(^47\). However, as described above (section 3.2.1.1) in all cases the new Member States have relatively small air transport markets at present, and while they therefore offer an opportunity for growth, in many cases limited catchment populations mean that small states in particular are unlikely to generate major impacts relative to the large markets.

The pie chart below shows the share of traffic for those new member states with direct transatlantic flights. As can be seen, only half of the new member states have (or have had in the last five years) direct scheduled transatlantic flights, with Poland responsible for approximately two-thirds of the transatlantic traffic to the New Member States.

*Figure 23: Share of Traffic for New Member States*

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\(^{47}\) Eurostat
The next section analyses the traffic levels across Europe and draws comparisons between the EU15 and the ten New Member states. It is worth noting that although they currently account for a small proportion of traffic, forecasted growth rates are high. The table below shows the top five countries worldwide for international air traffic growth, two of which are new Member States. No other European country even makes the top twenty, with the exception of Ireland which is 19th with a forecasted average annual growth rate of 6.4%.

<table>
<thead>
<tr>
<th>Country</th>
<th>AAGR 2005 - 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>11.2%</td>
</tr>
<tr>
<td>China</td>
<td>9.6%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>9.5%</td>
</tr>
<tr>
<td>Qatar</td>
<td>9.2%</td>
</tr>
<tr>
<td>Turkey</td>
<td>8.9%</td>
</tr>
</tbody>
</table>

*Source: IATA traffic forecast*

Table 15: Top Five Countries for International Air Traffic Growth, Passenger Travel Only

For the majority of the report, the new Member States have been aggregated into groupings according to the status of their Open Skies agreements and therefore their traffic is not considered in isolation. However, it is worth bearing in mind that they are likely to become increasingly important markets for direct transatlantic flights as their economies grow.
4 THE CARGO SECTOR

4.1 INTRODUCTION

Air cargo has played a crucial role in facilitating global trade and economic development. The continued development of integrated express and other air cargo services is essential to the future growth of the North American and European economies. This chapter focuses on the implications of an Open Aviation Area for the EU-US air cargo market and is composed of the following sections:

- **General Organisation and Structure of the Industry.** We summarise the role of airborne cargo in supporting trade development and describe how the services are supplied. We outline the structural characteristics and basic differences of the principal types of airlift suppliers which include: Integrators (companies who organise and provide transport and a full range of supply chain services door-to-door); airlines specialising in all-cargo services between airports; and combination airlines that carry cargoes in the bellies of passenger aircraft as well as operating some pure freighter capacity.

- **Industry Trends.** Focusing on US and EU operators, we examine in some detail the recent development of these various suppliers and the role they play in the North Atlantic market as well as at home. In particular we consider the market position of the four large Integrators, whose economic importance now matches or exceeds that of most combination airlines, and also consider their position in global as well as regional markets.

- **Importance of Liberalisation and Open Market Access.** We review the particular relevance of flexibility of traffic rights, open access to infrastructure, intermodalism and ability to control brand and service quality for the development of airborne all-cargo services.

In addition to exhibits showing carrier traffic data and operating patterns, we also provide more detailed information in Appendix 1 on industry structure, US-EU air trade and the integrated carrier networks.

4.2 CARGO MARKET OVERVIEW

Air transportation of freight and mail has become an increasingly important element of economic development and now accounts for more than 40% of the world’s merchandise trade value and approximately half of the total trade value between the US and EU. Air cargo services are essential to the rapid transportation of manufacturing inputs, finished products and consumer goods and the market’s expansion has coincided with advancements in distribution and logistics systems. From a relatively minor role in the air transport sector, air cargo now accounts for a significant share of world airline fleets and airline industry employment. Industry forecasts project that air cargo will continue to exceed passenger growth in the future.

The expansion of air cargo has coincided with the liberalization of traffic and operating rights particularly in the US domestic market and for the operation of international cargo hubs within multi-national integrated carrier networks. This section provides a brief overview of the underlying structure of cargo markets in general with emphasis on the relationships between that structure and OAA impacts. A more detailed industry description is provided in Appendix 1.
4.2.1 Air Cargo Service Sector

The structure of the air cargo service market is similar to passenger airline markets in some respects, but differs in the greater integration of ground services and the requirements for specialized services by third parties such as forwarders and customs brokers. The international air cargo business contains the following types of service providers:

- air carriers/airlines
- airports and associated public agencies
- freight forwarders and customs brokers
- ground trucking firms (linehaul and local pickup/delivery)
- warehouse operators and airport ground handlers
- multi-function and logistics/distribution firms.

Air carriers provide the air transport segment of international air shipments, and may also provide ground handling or pickup/delivery services. Air carriers are primarily categorized as either “direct airport-to-airport” carriers who are mostly responsible for the air portion of the trip, or “integrated” carriers who maintain single entity responsibility for shipments on a door-to-door basis. The airport-to-airport carriers include scheduled passenger (“combination”) airlines carrying freight in their belly-holds (e.g. British Airways, Lufthansa, Delta), scheduled all-cargo operators of freighters (such as Polar, Cargolux), and charter freighter operators. A final category of all-cargo airline are “wet-lease”) or ACMI (Aircraft, Crew, Maintenance and Insurance) operators that operate freighter aircraft for other airlines. The impact of an OAA on the airport-to-airport cargo carriers would be comparable to that of passenger airlines with the primary differences based on the one-way pattern of cargo flows and the relatively small share of cargo activity that is handled by all-cargo freighter operators.48

The most significant innovation in air cargo services in recent years has been the development of transportation carriers that integrate air and ground services into a door-to-door transportation product. There are four large, international integrated (express) carriers (UPS, FedEx, DHL and TNT) whose overall approach is to control the entire shipment from pickup at the shipper’s dock/office to delivery at the consignee’s facility or general distribution point (“door-to-door”). These carriers utilise their ground and air networks to collect and distribute international traffic, linking domestic transport with international freighter flights at their primary hubs or regional gateway hubs. The integrated carriers have diverted a substantial share of cargo traffic from traditional all-cargo airlines and have created a distinct service sector based on high reliability and service levels. The design and capabilities of these carriers’ networks are highly dependent on the availability and flexibility of traffic and other operating rights, so the OAA will have a more drastic impact on this sector albeit one that is distributed over their networks rather than on a market-to-market basis.

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48 Any OAA impacts on passenger services will also affect the belly capacity available in OAA markets. These impacts are considered as a by-product of the passenger changes because cargo operations have a limited impact on passenger flight scheduling and fleet planning.
The non-airline participants in the air cargo service market include airports that provide facilities and support services to air carriers and air cargo shippers, some of which operate as the express hubs (e.g. Memphis or Brussels) in support of an integrated carrier’s network. Other firms provide service for or manage international cargo shipments in support of the airline or the shipper/consignee including:

- **freight forwarders** provide ground and other handling services that connect shipments to airport-to-airport services as an agent for the shipper or consignee

- **customs brokers** are primarily responsible for marshalling inbound shipments through local customs and inspection requirements

- **trucking firms** assist in the transportation between airport and origin/destination when not handled by the airline or forwarders

- **specialized services** including warehousing, airport ground handlers, and third-party logistics (3PL) or distribution firms

The relevance of these service providers to this analysis is primarily that (1) they typically play a more active role in the cargo transportation process than comparable agents in the passenger market (e.g. forwarder managing an air shipment vs. travel agent providing limited ticketing services) and (2) their functions are often part of the integrated carrier networks and should be considered as part of a single service rather than an independent transit.

While air cargo services share some characteristics with air passenger markets (and in the case of combination carriers function within a single airline), air cargo patterns have unique elements that are relevant to understanding the potential impact of the proposed OAA including:

- Air cargo flows are almost entirely one-way and can produce great imbalances leading to unused capacity and disproportionate freight rates in one direction. This serves to diminish the benefits of expanded service rights as does the fact that air cargo origin/destination patterns can shift drastically on short time periods and may not directly follow general industrial patterns (i.e., small economic markets may be large cargo markets). In particular, the lack of cargo service rights on particular routes may have no impact if the market is relatively small and can be handled using passenger capacity.

- There is great variance in the level of service provided by air cargo companies ranging from overnight (or even faster) guaranteed door-to-door delivery (from integrated carriers) to deferred space-available transfer between airports (by all-cargo or passenger airlines). The importance of expanded OAA rights depends on how it affects the level (and cost) of service with the greatest impacts to be expected for the air cargo companies that offer a high level of service.

- While passenger carriers focus on transporting people from airport-to-airport via a single mode, transportation of cargo is generally a door-to-door process involving multiple modes that are typically managed by the transportation company rather than the "user" (i.e., shipper or consignee). OAA impacts can not be considered solely in terms of the air segment, but must also consider ground elements.
While air passenger services directly affect international travel and tourism markets (as well as passenger-based trade), the cost, efficiency and availability of air cargo services has its greatest impact on international merchandise trade and consequently regional economic development. With increasing dependence on air transport, manufacturing firms require efficient links to both source materials and final consumer markets and should be considered the sector that is most affected by the OAA.

4.2.2 Air Cargo Demand Sector

The structure of air cargo demand is also distinct from the passenger sector, mostly due to the great variability in commodities that are handled. The key characteristics relevant to air cargo demand are:

- **Origin/Destination** – most air shipments do not originate or terminate at an airport, but are determined by industrial and demographic location patterns. The origin and destination of a shipment determine the range and cost of routing and service options available.

- **Commodity** – commodity type affects both the desirability of, and requirements for, air shipment. Key characteristics include size, perishability, value, weight, and physical dimensions. There are thousands of distinct commodities that move in trade markets, some of which have great variability in shipment characteristics.

- **Desired transit time** – for the most part, the level of air cargo service desired is determined by the shipment’s physical characteristics, although conditions may dictate use of air services (e.g. emergency need for a low-value part).

- **Shipment size** – for the most part, air shipments are small and typically must be consolidated into pallets or containers for handling to and from the aircraft. Larger sized shipments may require special handling or aircraft types, but they can also move at a lower cost.

- **Shipment volume** – while air cargo services are available in some form for almost all conceivable origin-destinations, the volume of traffic for a particular origin or destination dictates the variety and scope of services available. For example, some airports’ local market areas may not generate enough traffic to justify direct freighter service, thereby increasing transit times and handling costs.

Air cargo traffic can be categorized as follows:

- **Mail** – shipments collected and distributed through national postal systems and shipped to foreign points via airline contracts. This category may include intra-government mail (e.g. diplomatic pouches, military mail).

- **Express Freight** – air shipment of envelopes and packages via the express services of integrated carriers.

- **General Freight** – air shipment of mostly larger commodities and packages using more traditional airport-to-airport services (including those provided by integrated carriers). This is also known as “heavy freight”.

The impact of the OAA will ultimately depend on the distinct patterns of commodity flows that air cargo companies are trying to serve rather than the “demand” for any particular airport-to-airport route.

4.3 EU-US AIR TRADE PATTERNS

4.3.1 Overview

The EU-US air trade market includes three main components that are somewhat interdependent but would be uniquely affected by the proposed OAA based on current service patterns and regulatory restrictions. The OAA would expand market access, efficiency and competition in the following markets:

- EU-US transatlantic: Would be affected by the elimination of existing bilateral restrictions that could (1) add new direct routes and (2) expand options for existing routes (by allowing airlines to use their own aircraft or expand use of wet-lease services)

- Intra-EU and Intra-US: The primary impact would be to permit US airlines to serve intra-EU routes or EU airlines to serve US domestic routes (either directly or by wet leasing) while also expanding the ability of integrated carriers to design and operate their regional networks

- Extra-OAA: Expansion of intra-OAA air cargo efficiency could stimulate activity with other markets (e.g. EU airlines in US-Asia market) to the extent that new 5th and 7th freedom rights are available.

The OAA incorporates some of the largest and most advanced air cargo sectors in the world. Both the US and Europe have highly developed express networks as well as high levels of both passenger and all-cargo services. Combined the intra-US, intra-Europe, and North America-Europe markets accounted for 39.2 billion RTK (route tonne kilometres) in 2003, 25% of the world market. Individually, the EU-US and intra-US markets are each among the largest air cargo markets in the world. Boeing estimates Europe–North America air cargo traffic was 16.6 billion RTK in 2003, or 10.6% of world share. The intra-US air cargo market produced 21 billion RTK in 2003, or 13.4% of the world air cargo market. Intra-Europe air cargo traffic was 1.6 billion RTK, 1.0% of the world market in 2003.

Significantly, as a measure of where air cargo activity occurs, EU and US air carriers account for a substantial share of the world’s freighter fleet. In 2004, the combined US and EU freighter fleet accounted for 71.7% of the world total.

<table>
<thead>
<tr>
<th>Region</th>
<th>Aircraft</th>
<th>Share of World Total Freighters</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>968</td>
<td>61.0%</td>
</tr>
<tr>
<td>EU</td>
<td>171</td>
<td>10.7%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>448</td>
<td>28.2%</td>
</tr>
</tbody>
</table>

Source: Campbell-Hill

Table 16: Freighters Aircraft by Region of Operator, 2004

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49 Boeing’s forecast does not provide US-Europe market detail but rather combines the US and Canada into a North America-Europe entity. The US accounts for an estimated 90 percent of this market.
The majority of the US freighter fleet is comprised of aircraft operated by or on behalf of the integrators. Integrators also account for a significant portion of the EU freighter fleet, although less than in the US.

Air cargo traffic within and between the US and EU markets accounts for a significant share of air cargo activity for both regions. Figure 24: Distribution of US and EU Air Cargo Tonnes by Region shows the distribution of US and EU cargo tonnes by region in 2004.

![Figure 24: Distribution of US and EU Air Cargo Tonnes by Region](image)

Domestic US\textsuperscript{51} and US-EU combined account for 68\% of total US air cargo. Similarly, EU airports are highly dependent on traffic that would be affected by an OAA.

EU-North America and EU “domestic” (i.e. national and intra-EU international) combined account for 46\% of total air cargo tonnes enplaned at EU airports in 2004.

### 4.3.2 EU-US Transatlantic Air Cargo Market

The EU-US transatlantic market has long been one of the primary air cargo markets in the world based on the high level of trade between the industrial and consumer sectors of both regions. The relatively high level of detailed data facilitated the development of a clear profile of this market in particular, but also highlighted clearly the importance of demand patterns for the intra-regional markets as well.

The demand patterns for US-EU air cargo can be demonstrated by an analysis of the air trade statistics that measure true origin/destination country (as opposed to air gateway routing) and also provides commodity, shipment weight and value data.\textsuperscript{52} (Appendix 1 has a detailed description of the market.) Total air trade between the two markets was valued at $228 billion in 2005 (in current US dollars) including $124 billion in westbound trade and $104 billion in eastbound trade. The westbound market averaged 4.6\% annual growth from 2000 to 2005, while eastbound trade increased at an average of 1.4\% per year. Boeing projects that the North America-Europe air cargo market will grow at an average annual rate of 5.6\% through 2023, with eastbound growth of 5.2\% and westbound growth of 5.8\%.

\textsuperscript{50} US air trade data is based on the true countries of origin/destination without regard to the routing pattern, while T-100 air cargo traffic data is based on airport-to-airport flows of enplaned cargo. Any discrepancies between total traffic measured in weight is due to traffic being via intermediate countries and the inclusion of some beyond traffic in the T-100 statistics (e.g. US-Asia via Europe). Some differences may also be explained by different reporting requirements and coverage for each data set.

\textsuperscript{51} The calculation of “Domestic US” does not include traffic to/from Anchorage (ANC) since most cargo transported between ANC and other US points is coming from or bound for Asia.

\textsuperscript{52} Air trade data is measured in both value and weight, while the T-100 traffic data is only available as weight. Each statistic reflects a different aspect of the market. While shipment weight generally reflects the demand for air capacity, the high variability in shipment density between commodities makes it an imprecise indicator for that purpose. On the other hand, air trade value is a better indicator than weight in terms of air cargo revenues (as based on service levels) with higher valued commodities typically generating higher yields per pound.
The top air trade partners for the US in 2005 (as measured in shipment value) were the largest EU economies led by Germany and the United Kingdom, and followed by Ireland, France and the Netherlands. The highest growth occurred mostly for the new EU markets (Estonia, Denmark, the Czech Republic, Lithuania, and Latvia), while Ireland, Belgium and the Netherlands were the fastest growing large-volume markets.

The EU-US air trade market (as measured in shipment weight) accounted for 2.0 million tonnes moving between US and EU-25 markets in 2005 (based on first point of shipment and final destination). Total trade shipment weight declined from 2000 at an annual rate of 0.9%. In terms of weight, the market is imbalanced with 1.1 million tonnes of traffic westbound compared to 0.9 million tonnes eastbound. As with value, Germany and the UK are the top markets in air trade weight with France, Italy, the Netherlands, and Belgium also having high shipment levels. Of the top weight-based markets, Belgium was the fastest growing market, while the smaller Central European states of Estonia, Poland, and the Czech Republic, plus Greece were the top growing markets overall.

The US-EU air trade market represents a diverse combination of commodity flows each with unique shipment characteristics. The top industries in terms of westbound air trade value were producers of pharmaceuticals and medicines, technical equipment, aerospace products, and semiconductors. The top industries in terms of shipment weight also included some lower valued commodities such as Other General Purpose Machinery, Other Fabricated Metal Products Motor Vehicle Parts, as well as top value products such as pharmaceuticals, instruments, semiconductors and medical equipment and supplies.

The profile of top eastbound shipping industries is very similar to the westbound patterns, indicating the degree to which air cargo services allow US and EU companies to successfully compete in each others’ markets as well as the prominence of internal shipments by multinational companies (e.g. semi-conductors). The pharmaceutical industry is the top eastbound industry in terms of air value followed by the aerospace industry, computer equipment, technical instruments, and semi-conductors.

The US’ strength in computer and chemical manufacturing is indicated by the high level of eastbound air trade weight accounted for by computer equipment, basic chemicals, and resins and rubber. The other top commodities in terms of air weight include some of the top commodities in terms of value cited above, as well as lower-valued products such as motor vehicle parts and printed materials, each of which is probably moving by air based on “urgency” rather than commodity value (i.e. emergency need for US auto parts or the short shelf-life for newspapers, magazines and books).

### 4.3.3 Development of EU-US Air Cargo Traffic Patterns

The air trade between US and EU markets is carried by various air cargo services with service and routing patterns best described by shipment weight statistics from the US Dot T-100 data set. A total of 2.7 million tonnes of enplaned air cargo moved on direct flights between the US and the EU in the most recent year (based on US Department of Transportation T-100 data for the 12 months ending July 31, 2005). Traffic flows are relatively balanced with slightly more traffic moving westbound than eastbound. The majority of traffic (60%) moves as belly cargo on passenger services with all-cargo airline

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53 As described previously, the difference between the 2.0 million tonnes of air trade and 2.7 million tonnes of air traffic is a result of (1) the exclusion of low-value shipments from the trade data; (2) the routing of EU-US trade via intermediate countries; and (3) the inclusion of beyond and non-OAA traffic in T-100 statistics.
Air cargo capacity in the transatlantic market is based on over 241,000 one-way flights annually including over 16,500 all-cargo flights and over 5,700 integrated carrier flights. All-cargo departures increased by 19% from 2000 to 2005 with integrated departures up 4%. Total capacity on all-cargo carriers exceeded 1.5 million tonnes which was 35% more than the 2000 total and represents a 69% average load factor. Integrated capacity totalled 416,100 tonnes and was operated at a 71% load factor. Belly capacity on passenger flights decreased 7% from 2000 to 2005 based on a 5% drop in departures and a 3% decline in average capacity. The average capacity of integrated and all-cargo aircraft increased 2% and 11% respectively.

Total capacity for all-cargo services is shown to be imbalanced eastbound, probably caused by round-the-world services that are designed to provide additional capacity on the Asia-to-US trade lane that is heavily imbalanced in the eastbound direction. The increased share of traffic moving on all-cargo airlines (from 22% in 2000 to 31% in 2005) reflects the increase in ACMi operations for the express carriers and the expansion of scheduled all-cargo operations by airlines like Polar Air Cargo. Military charters have also increased this market sector.

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54 The T-100 data is based on the operating airline and does not identify the controlling airline for ACMi flight or integrated carrier traffic that is carried by other airlines. The service groups combine all passenger flights (scheduled and non-scheduled) as “passenger” with freighter operations designated as (1) “integrated” for traffic on FedEx, UPS and DHL Airways flights or (2) “all-cargo” for freighters operated by all-cargo or passenger/combination airlines. The distinction between scheduled and non-scheduled was not representative in this data since traffic on scheduled ACMi flights was sometimes shown as non-scheduled.
The average aircraft size for all-cargo services (as measured by average capacity per departure) increased by 4% from 2000 to 2005 while average load factor remained relatively constant. The average capacity for non-scheduled cargo services increased 67% while the load factor more than doubled from 26% to 54%. The top airlines carrying EU-US air trade on freighter aircraft are Atlas Air (an ACMI and charter airline) and the integrated carriers, FedEx and UPS. Other top carriers include all-cargo airlines such as Polar, Gemini, Martinair, and CargoLux and freighter operations by passenger airlines such as Air France, Lufthansa, and Singapore Airlines. Besides Atlas, the top ACMI airlines include Air Atlanta Icelandic and Global Supply System who operate freighters for Lufthansa and British Airways.

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>MT (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlas Air- Inc.</td>
<td>US ACMI</td>
<td>158.3</td>
</tr>
<tr>
<td>United Parcel Service</td>
<td>US Integrated</td>
<td>117.8</td>
</tr>
<tr>
<td>Federal Express Corporation</td>
<td>US Integrated</td>
<td>111.2</td>
</tr>
<tr>
<td>Compagnie Nat l Air France</td>
<td>France Combination</td>
<td>96.0</td>
</tr>
<tr>
<td>Polar Air Cargo Airways</td>
<td>US All-Cargo</td>
<td>76.6</td>
</tr>
<tr>
<td>Lufthansa German Airlines</td>
<td>Germany Combination</td>
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<td>Gemini Air Cargo</td>
<td>US All-Cargo</td>
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<tr>
<td>Martinair Holland N.V.</td>
<td>Netherlands All-Cargo</td>
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<tr>
<td>Air Atlanta Icelandic</td>
<td>Iceland ACMI</td>
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<tr>
<td>Singapore Airlines Ltd.</td>
<td>Singapore Combination</td>
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<tr>
<td>Cargolux Airlines Intl S.A</td>
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<td>World Airways- Inc.</td>
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<td>UK ACMI</td>
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<td>Alitalia-Linee Aeree Italia</td>
<td>Italian All-Cargo</td>
<td>22.2</td>
</tr>
<tr>
<td>Centurion Cargo- Inc.</td>
<td>US Charter</td>
<td>17.5</td>
</tr>
</tbody>
</table>

Source: USDOT, T-100 (12 months ending July 2005)

Table 18: Largest Freighter Operators in Total Freight and Mail Tonnes (2005)

The top EU states (based on the location of gateway airports) in terms of all-cargo traffic were Germany, France, the UK, Belgium and the Netherlands which combined accounted for 85% of the traffic weight. All of these top markets experienced growth from 2000 to 2005 led by the Netherlands and Belgium. Netherlands and Germany traffic growth for this period exceeded that for the previous five year period, while the other top markets’ growth rates declined. Of the remaining markets, only Sweden increased its traffic from 2000 to 2005, while non-Open markets Ireland, Spain, Hungary and Greece all declined (albeit some from low traffic levels in 2000).

The top EU gateway airport for freighter traffic in 2005 was Frankfurt, the primary hub for Lufthansa followed by Paris-CDG (the Europe hub for FedEx), Amsterdam, Brussels (DHL’s hub) and Cologne (UPS’ hub). Top growing airports include emerging cargo gateways in the UK (Prestwick, Stansted and East Midlands).

The top US gateway airports in 2005 were New York-JFK, Chicago-O’Hare, Philadelphia, Atlanta, Memphis, and Newark. Memphis is the primary US hub for FedEx which also uses Newark as a European gateway. UPS operates its European flights from Philadelphia. The other top gateways are all primary cargo centres (JFK, ATL and LAX) that attract shipments from broad market regions, while others are sources for military cargoes (Charleston and Dover). Madison County Airport is located in Huntsville, AL and is the primary Eastern US airport for Cargolux.
There was no significant change in terms of the number of EU-US city pairs with scheduled all-cargo service between 2000 and 2005. The only market with a significant change from 1995 or 2000 was Belgium, which added 5 airport pairs between 2000 and 2005.55

4.3.4 Intra-EU Air Cargo Market

4.3.4.1 Overview

As noted above, intra-Europe air cargo traffic accounted for 1.6 billion RTK, 1.0% of world market in 2003. Europe’s compact geography helps to explain why its level of air cargo traffic is relatively low. The comparatively short distances between major population centres in Europe make trucking an economically attractive means of transporting time-sensitive cargo in many European markets. By tonnage rather than ton kilometres, intra-Europe accounts for 4.2% of world share. According to Boeing estimates, express and scheduled freight carriers each held about half of the intra-European market in 2003.

Table 19: Largest EU Airports by Domestic Freight and Mail Tonnes (2004) provides the largest EU airports in terms of “domestic” (i.e., national and intra-EU international) freight and mail tonnes for 2004.56 Table 20: “Domestic” EU Freight and Mail Tonnes Transported by Air by Member State (2004) presents national and intra-EU international freight and mail tonnes transported by air for each of the EU25 member states for 2004. In terms of total “domestic” (total national and intra-EU international) tonnes, Germany is the largest market among the EU member states. The United Kingdom, France, Italy, and Spain comprise the rest of the top five. In terms of national air transport only, France is the largest country market followed by the United Kingdom, Spain, Germany, and Italy. In addition to having the largest absolute national market, France also leads the EU in terms of the percentage of total domestic tonnes accounted for by national traffic (44% of total). With respect to non-national tonnage, there is great variation across the member states in terms of the distribution of intra-EU international tonnes unloaded versus loaded (right-most column). Ireland, the Netherlands, Germany, and Belgium top the list in terms of the percentage of total intra-EU international tonnes that are loaded. On the other end of the spectrum, Luxembourg, Latvia, Slovenia, and Lithuania are the member states where the most intra-EU international air cargo is unloaded relative to the amount loaded.

55 While the number of direct routes is an appropriate level of service measure for the passenger market, the patterns for freighter operations did not indicate any correlation for market expansion or restriction, mostly due to limitations in the data coverage of ACMI and integrated carrier operations.

56 Eurostat does not have data on all European airports. For example, Liege, Belgium, home of TNT’s air hub, does not appear in the data. Liege would likely appear on this list if its data was collected by Eurostat. There is no air trade data that identifies true origin/destination, commodity, or shipment value for this market.
### Table 19: Largest EU Airports by Domestic Freight and Mail Tonnes (2004)

<table>
<thead>
<tr>
<th>Airport</th>
<th>Domestic Tonnes Loaded/Unloaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Köln/Bonn</td>
<td>372,905</td>
</tr>
<tr>
<td>Frankfurt Main</td>
<td>265,573</td>
</tr>
<tr>
<td>Paris Charles-de-Gaulle</td>
<td>254,851</td>
</tr>
<tr>
<td>Bruxelles National</td>
<td>247,650</td>
</tr>
<tr>
<td>East Midlands</td>
<td>218,997</td>
</tr>
<tr>
<td>Madrid Barajas</td>
<td>174,621</td>
</tr>
<tr>
<td>London Heathrow</td>
<td>170,257</td>
</tr>
<tr>
<td>Bergamo Orio al Serio</td>
<td>119,444</td>
</tr>
<tr>
<td>Genova Sestri</td>
<td>103,949</td>
</tr>
<tr>
<td>London Stansted</td>
<td>89,420</td>
</tr>
</tbody>
</table>

Source: EUROSTAT data

### Table 20: “Domestic” EU Freight and Mail Tonnes Transported by Air by Member State (2004)

<table>
<thead>
<tr>
<th>Member State</th>
<th>Total &quot;Domestic&quot;</th>
<th>National</th>
<th>National % of Total Domestic</th>
<th>Intra-EU International</th>
<th>Intra-EU International Loaded as % of Total Intra-EU International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>27,779</td>
<td>7,891</td>
<td>28%</td>
<td>19,888</td>
<td>68%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>65,069</td>
<td>0</td>
<td>0%</td>
<td>65,069</td>
<td>56%</td>
</tr>
<tr>
<td>Germany</td>
<td>727,164</td>
<td>123,037</td>
<td>17%</td>
<td>604,127</td>
<td>54%</td>
</tr>
<tr>
<td>Belgium</td>
<td>250,280</td>
<td>488</td>
<td>0%</td>
<td>249,792</td>
<td>54%</td>
</tr>
<tr>
<td>Denmark</td>
<td>4,877</td>
<td>366</td>
<td>8%</td>
<td>4,511</td>
<td>54%</td>
</tr>
<tr>
<td>Italy</td>
<td>394,106</td>
<td>120,704</td>
<td>31%</td>
<td>273,402</td>
<td>53%</td>
</tr>
<tr>
<td>Finland</td>
<td>72,985</td>
<td>5,243</td>
<td>7%</td>
<td>67,742</td>
<td>53%</td>
</tr>
<tr>
<td>Hungary</td>
<td>31,095</td>
<td>0</td>
<td>0%</td>
<td>31,095</td>
<td>50%</td>
</tr>
<tr>
<td>France</td>
<td>405,460</td>
<td>177,665</td>
<td>44%</td>
<td>227,795</td>
<td>50%</td>
</tr>
<tr>
<td>Malta</td>
<td>11,906</td>
<td>0</td>
<td>0%</td>
<td>11,906</td>
<td>49%</td>
</tr>
<tr>
<td>Austria</td>
<td>57,127</td>
<td>985</td>
<td>2%</td>
<td>56,142</td>
<td>49%</td>
</tr>
<tr>
<td>UK</td>
<td>588,711</td>
<td>132,522</td>
<td>23%</td>
<td>456,189</td>
<td>49%</td>
</tr>
<tr>
<td>Spain</td>
<td>310,733</td>
<td>125,682</td>
<td>40%</td>
<td>185,051</td>
<td>46%</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>34,964</td>
<td>433</td>
<td>1%</td>
<td>34,531</td>
<td>45%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>27,993</td>
<td>0</td>
<td>0%</td>
<td>27,993</td>
<td>45%</td>
</tr>
<tr>
<td>Portugal</td>
<td>84,835</td>
<td>22,160</td>
<td>26%</td>
<td>62,675</td>
<td>44%</td>
</tr>
<tr>
<td>Sweden</td>
<td>82,280</td>
<td>13,745</td>
<td>17%</td>
<td>68,535</td>
<td>41%</td>
</tr>
<tr>
<td>Poland</td>
<td>17,701</td>
<td>4,493</td>
<td>25%</td>
<td>13,208</td>
<td>41%</td>
</tr>
<tr>
<td>Estonia</td>
<td>4,580</td>
<td>0</td>
<td>0%</td>
<td>4,580</td>
<td>36%</td>
</tr>
<tr>
<td>Greece</td>
<td>83,957</td>
<td>17,994</td>
<td>21%</td>
<td>65,963</td>
<td>35%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1,733</td>
<td>52</td>
<td>3%</td>
<td>1,681</td>
<td>34%</td>
</tr>
<tr>
<td>Lithuania</td>
<td>4,936</td>
<td>0</td>
<td>0%</td>
<td>4,936</td>
<td>33%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>3,182</td>
<td>0</td>
<td>0%</td>
<td>3,182</td>
<td>33%</td>
</tr>
<tr>
<td>Latvia</td>
<td>3,772</td>
<td>0</td>
<td>0%</td>
<td>3,772</td>
<td>27%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>66,000</td>
<td>0</td>
<td>0%</td>
<td>66,000</td>
<td>21%</td>
</tr>
</tbody>
</table>

Source: EUROSTAT Data

### 4.3.4.2 Recent and Projected Growth Trends

According to Boeing, intra-Europe air cargo traffic grew throughout the 1990s but exhibited contraction or only modest growth in the early 2000s. Boeing notes that border control relaxation and regulatory harmonization have enabled trucks to carry a substantial volume...
of freight and mail that had formerly travelled by air. Boeing also describes the important role that “air-trucks,” trucks operating with airline flight numbers, play in the European market. According to Boeing, over 3,000 weekly air-truck frequencies connecting 328 city pairs were offered in the intra-Europe market as of May 2003.

According to Boeing figures, intra-European express shipments grew at an average rate of 13% per year from 1993 through 2003 (from 138,000 shipments per day to 455,000 shipments per day). However, the pace of growth has slowed in recent years. The average annual growth rate of express traffic was 28% between 1993 and 1998 but fell to 7.1% per year between 1998 and 2003.

Boeing projects the overall intra-European air cargo market will grow 5.3% per year through 2023, forecasting that express carrier traffic will grow 4% to 7% per year and other air cargo traffic 2% to 4% per year.

### 4.3.5 Intra-US Air Cargo Market

#### 4.3.5.1 Overview

According to Boeing, intra-US air cargo traffic accounted for 13.4% of the world total in 2003. The importance of the integrated carriers to this market is shown by the fact that in 2003, they had a 60.9% share of the domestic US market – while scheduled freight carriers had a 19.3% share. Mail and charter freight account for the balance of US domestic air cargo traffic. Table 21: Largest US airports by Domestic Freight and Mail Tonnes (2004) presents the largest US airports in terms of total enplaned/deplaned domestic\(^57\) freight and mail tonnes in 2004.

<table>
<thead>
<tr>
<th>Airport</th>
<th>Total Enplaned/Deplaned Tonnes</th>
<th>% Enplaned</th>
<th>% Deplaned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memphis</td>
<td>3,165,358</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Louisville</td>
<td>1,518,273</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>869,470</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>855,208</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>Wilmington, OH</td>
<td>613,084</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Oakland</td>
<td>609,482</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Newark</td>
<td>595,976</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Atlanta</td>
<td>546,106</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Chicago O'Hare</td>
<td>524,145</td>
<td>53%</td>
<td>47%</td>
</tr>
</tbody>
</table>

*Source: US DoT T100 Market data*

Table 21: Largest US airports by Domestic Freight and Mail Tonnes (2004)

Memphis and Louisville, the primary hubs of the two largest US integrators, occupy the top two positions. Indianapolis is FedEx’s second largest US air hub. Wilmington, OH is the hub for DHL’s US operations where it employs contract carriers.\(^58\) Table 22: Ten Largest Carriers of US Domestic Air Cargo (2004) lists the ten largest carriers of US domestic air cargo for 2004.

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\(^{57}\) As noted above, flights to and from Anchorage were not classified as domestic because of that airport’s role as a gateway to Asia.

\(^{58}\) Wilmington, OH is now also a hub for Astar Air Cargo, DHL’s other US airline operator.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Carrier</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FedEx</td>
<td>4,736,428</td>
</tr>
<tr>
<td>2</td>
<td>UPS</td>
<td>2,421,108</td>
</tr>
<tr>
<td>3</td>
<td>ABX Air</td>
<td>662,933</td>
</tr>
<tr>
<td>4</td>
<td>Delta Air Lines</td>
<td>363,408</td>
</tr>
<tr>
<td>5</td>
<td>American Airlines</td>
<td>284,713</td>
</tr>
<tr>
<td>6</td>
<td>United Airlines</td>
<td>255,409</td>
</tr>
<tr>
<td>7</td>
<td>Astar Air Cargo</td>
<td>244,724</td>
</tr>
<tr>
<td>8</td>
<td>Kitty Hawk Airlines</td>
<td>169,804</td>
</tr>
<tr>
<td>9</td>
<td>Southwest Airlines</td>
<td>157,241</td>
</tr>
<tr>
<td>10</td>
<td>Express.Net Airlines</td>
<td>132,928</td>
</tr>
</tbody>
</table>

Source: US DoT T100 Market data

4.3.5.2 Recent and Projected Growth Trends

According to Boeing, the US domestic air cargo market grew 31% between 1993 and 2003, driven almost entirely by growth in the express sector. Express traffic grew throughout the 1990s but contracted in 2001 and has exhibited modest growth since. One of the reasons for the decline in express traffic in recent years is that ground transport is playing an increasing important role in the US domestic express market, a trend that is expected to continue. It is important to keep in mind that the US domestic express business expanded rapidly in the late 1970s and 1980s in the wake of the deregulation of the US domestic cargo market in 1977. While the US express industry continued to grow throughout the 1990s, by this point, the industry was already nearing maturity. Boeing projects that the overall US domestic air cargo traffic will grow 2.6% per year through 2023.

4.4 INTEGRATED AIR CARRIER CARGO MARKET

4.4.1 Introduction

The impact of OAA liberalization differs significantly by type of carrier. Integrated carriers rely on inter-connected hub networks to link worldwide markets within a common service structure. The express markets served by these carriers have expanded significantly in recent years based on the ability for these networks to expand and adapt to market demand, while also stimulating demand with increased reliability and expedited delivery.

The integrated carrier market has expanded in concert with the growing importance of air cargo in general. The networks for the primary integrated carriers share many characteristics. They seem to be converging to a common structure based on multi-region hub networks. These networks are linked by efficient intra-continental connecting flights that produce increasingly efficient air transport service that is merged with other value-added services to satisfy worldwide demand.

The OAA affects the extent to which this convergence can and will continue by providing needed flexibility and expandability in three of the primary sectors for these worldwide networks – EU-US transatlantic, intra-EU and intra-US. Integrated carriers will be able to better operate and control air services beyond their domestic markets, either by

1) owning and operating a single, efficient multi-use airline (in some cases, replacing regional “non-integrated” airlines)
2) being able to better wet-lease or charter the most cost-efficient air services regardless of country domicile. Full access to all available traffic moving within these market sectors will allow more efficient flight planning and lower unit operating costs.

Finally, the ability to continue the integration of air, ground and value-added services will be enhanced by removing local operating impediments ("doing business issues") in some markets and permitting desirable mergers and acquisitions.

The beneficiaries of allowing the continued expansion of integrated carrier networks are the EU and US businesses which increasingly depend on reliable, multi-layered delivery options to support manufacturing processes and distribution/logistics systems for both components and final products. The large variety of delivery services provided by these carriers allows businesses to match level of service and cost to their wide variety of needs. In particular, the ability to operate in a multi-national environment requires seamless and comparable access to worldwide production areas and consumer markets. In the US, recent job creation has been attributed to both the growth of new innovative small businesses and the expansion of large multi-national businesses dependent on foreign trade. Both of these sectors depend on integrated express services – small businesses in order to compete in large geographical markets and multi-national businesses to efficiently manage both in-house and external logistics and trade. Continued expansion of integrated carrier networks will create jobs for those carriers, but also jobs for businesses that can expand their markets with better transportation and logistics.

The ultimate beneficiaries are the customers whose products are delivered as they want them, when they want them, and at a reasonable delivered cost. Integrated express services have not only accelerated delivery time for items that lose value over time (e.g. seafood or DVDs), but they have expanded the options for buying products, leading to greater product variety, increased competition, and often lower costs considering delivered “value”.

This section of the report analyses the current status of this critical sector of the service market, describing the general patterns for developing and operating express networks and specific patterns relative to the three US-EU geographical markets. Future requirements for network expansion are then related to the anticipated impacts of an OAA.

4.4.2 Overview of Worldwide Integrator Market

The emergence of integrated air express carriers since the 1970s has resulted in a highly developed worldwide network of services tailored to the shipment of high-value and perishable commodities. While traditional airport-to-airport cargo services still handle a significant amount of traffic, the express market represents the fastest growing market segment and is the most sensitive to regulatory conditions. It is important to consider the OAA integrator market within the context of what is a global market. This section provides a brief summary of the worldwide sector (with additional detail in Appendix 1).

Although the air express market first emerged in the 1970s, it has been the fastest growing airline sector and accounts for an enormous amount of worldwide airline activity. It is estimated that the global express industry (including ground elements) generated total revenues of $130 billion in 2003 and was responsible for 1.25 million direct jobs.\(^{59}\) In terms of scope and size of aviation and traffic activity, the European Express Association (EEA) estimates these airlines serve over 220 countries world-wide, operate fleets exceeding 1,200 aircraft on over 2,000 flights per day, and handle more than 6 million packages daily.\(^{60}\)

\(^{59}\) *The Impact of the Express Delivery Industry on the Global Economy, OEF March 2005*

\(^{60}\) *European Express Association web site*
These air carriers operate more than 200,000 trucks and delivery vehicles showing the importance of ground transportation to their operations.

The worldwide express market is dominated by the four major global integrators (FedEx, UPS, DHL, and TNT). These integrated carriers share common service structures and developmental patterns including:

- Development from a core regional market sector
- Provision of multiple levels and types of services albeit with a concentration in the express market
- Operation of worldwide networks serving both domestic and international markets
- Delivery networks that mix air and ground services using both in-house and contract equipment.

While express services are a key core business for each carrier, all have diversified operations, of which express transportation is just a part. The integrated carriers sell levels of service rather than modes of transport and their networks reflect the highly diversified service mix, particularly the combination of air and ground services.

An analysis of the current status and development patterns for these integrated carrier networks reveals both the common elements for those networks and how each carrier responds to market demand under existing supply market constraints (including regulation).

The three largest integrators (FedEx, UPS, and DHL) are similarly structured in that they operate worldwide networks comprised of multiple regional networks linked by intercontinental flights. All three also rely on extensive ground pickup and delivery networks that are coordinated with air hub-and-spoke systems to offer customers door-to-door transportation options that link almost any two points across the world. TNT, the fourth largest integrator, operates in the same basic fashion, although it is more regionally oriented than FedEx, UPS, and DHL and thus relies more on ground transportation for express shipments than the big three.

Their worldwide network structures have common elements:

- Regional air and ground networks providing a wide range of services spanning different modes, shipment sizes, and delivery objectives
- Inter-regional networks of hub-to-hub and direct flights for handling EU-US and other overseas markets
- A combination of uses for airports including primary sort hubs, secondary sort hubs, international gateways and service airports
- Local and regional pickup and delivery networks at “service airports” providing the ground elements of the total door-to-door delivery package.

A number of smaller niche or regional carriers (including passenger airlines) offer “express” services including door-to-door delivery in many cases. The primary integrated carriers of interest for this study each operate networks serving both EU-US and intra-regional markets.
• An array of value-added services ranging from standard tracking and tracing plus guaranteed delivery times to third-party logistics, forwarding, customs brokering, and warehousing services designed to better satisfy existing customers, expand customer bases, and better utilize existing networks and market infrastructure.

Each carrier is trying to deliver the widest array of service options to the largest group of shippers, tailoring their networks to produce the fastest delivery at the lowest cost while maintaining shipment integrity and certainty of delivery. The future impact of an OAA will greatly depend on the extent to which new service freedoms coincide with the demands for expanding the efficiency and comprehensiveness of these networks. The following sections describe the interaction of market demand and supply constraints in each of the primary OAA markets as described by current and historical patterns for these networks.

4.4.3 Integrated Carrier Market: EU-US

The basic service patterns for express traffic between the US and EU is to

1) collect traffic at an international gateway/hub\(^{62}\) using an intra-US or intra-EU network of air and ground services;

2) transport by air to the destination market’s regional hub or gateway

3) deliver traffic using the destination market’s air and ground network.

Therefore, the EU-US express market is dependent on the efficiency of the express services for all three OAA markets (EU-US, intra-EU and intra-US). The design and development of these networks results from the interaction of carriers’ service objectives and underlying demand and supply conditions.

As with most international markets, the demand for air express services between US and Europe has been linked to the overall globalization of production and consumer markets, particularly the development of accelerated manufacturing systems, advanced logistics and an increased appetite for expedited delivery of “perishable” goods that now include fashion and electronic items as well as food commodities. As service standards have increased (in terms of guaranteed delivery and time to deliver), demand for express services have expanded, resulting in both stimulation of new air traffic and diversion from traditional freight services. The availability of expedited delivery between the US and Europe has not only made commerce easier, it has created commerce that otherwise would not exist.

According to trade data from the US Census Bureau, in 2005, 28% of combined trade between the US and EU (as measured in weight) was classified as express\(^{63}\). While express commodity trade weight grew faster than the all commodity average in both directions from 1995 to 2000, a significant decline in eastbound express trade from 2000 to 2005 resulted in a net decline in traffic over the period.

\(^{62}\) Airports may fulfil multiple roles for a carrier (e.g. Memphis is FedEx’s primary US domestic hub, but is also an international gateway). While consolidated operations at a single airport may have some efficiency benefits, the geographical orientation of the intra- and inter-regional traffic combined with the available airport locations may dictate using different airports for different roles.

\(^{63}\) The classification of “express” commodities was based on an average value of $100 per kilogram or greater by commodity in 2005. While average value is a strong indicator of express volumes, it is not the sole determinant, so these statistics are used to represent general trends in express commodity trade, rather than absolute carrier traffic.
The significance of express commodities is much higher in terms of trade value. Express commodities accounted for 81% of the total US-Europe air trade value in 2005, or over a third of total trade between the two regions (including all modes). The express share of total trade as measured by value has increased generally faster than the share measured in weight. The express share of air trade value of 81% increased from 74% in 1990 and 79% in 2000 in a period where the express share of trade weight remained relatively constant.

Similar to the weight totals, express air trade value increased rapidly from 1992 to 2000 before experiencing a 2001-2003 decline and then a return to strong growth. Total air trade value averaged 4.9% annual growth from 1990 to 2005 (in constant dollar terms) with express trade increasing 5.5% per year compared to 3.3% for freight and 5.0% for all commodities. In comparison, air express weight increased just 3.6% per year compared to 4.0% per year for freight.
Growth since 2000 in trade value is even more weighted towards express commodities with an increase in constant dollar trade of 7% over the period compared to a 6% decline for air freight commodity value. These patterns indicate that the expansion in US-EU air trade has been based on increased commodity values and a greater orientation towards commodities that require express service. Since 2000, express commodity weight has declined slightly, while average value and total value have increased.

The EU-US air express market declined between 2000 and 2005 in terms of shipment weight at an annual average of 0.5% per year. Shipment value increased 3.6% per year in current dollar terms and 1.2% in constant value terms. Express traffic increased westbound from 2000 to 2005 (at 2.0% per year) but decreased eastbound (-2.7% per year). The 2000-2005 period contrasts sharply with the previous five year period when total traffic increased at an average of 8.0% per year with westbound traffic up 11.0% per year.

The top EU trade markets for air express (as measured in weight) are all high air trade markets in general, including Germany, UK, Italy, the Netherlands and Spain. All of the top markets declined in absolute tonnage from 2000 to 2005 except for Germany and Sweden with the greatest percentage decline for the UK and Ireland, which are two of the remaining non-open markets. Both markets experienced severe declines in their eastbound markets, although Ireland had above average growth westbound.

### EU-US Integrated Carrier Service Patterns

The US DoT T100 data for the 12 months ending July 2005 shows a total of 2.6 million tonnes of enplaned air cargo traffic (freight and mail combined) moving between US and EU airports (including traffic transferring to or from other regions). Of this total, the integrated carriers handled 229,000 tonnes or 9% of the total on their own aircraft.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FedEx/UPS</td>
<td>143,875</td>
<td>203,820</td>
<td>7.2%</td>
<td>228,978</td>
<td>2.4%</td>
</tr>
<tr>
<td>Other Integrated</td>
<td>43,637</td>
<td>52,194</td>
<td>3.6%</td>
<td>5,479</td>
<td>-36.3%</td>
</tr>
<tr>
<td>All-Cargo</td>
<td>437,463</td>
<td>599,460</td>
<td>6.5%</td>
<td>806,476</td>
<td>6.1%</td>
</tr>
<tr>
<td>Passenger</td>
<td>1,269,917</td>
<td>1,771,721</td>
<td>6.9%</td>
<td>1,543,909</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>1,894,892</td>
<td>2,627,195</td>
<td>6.8%</td>
<td>2,584,842</td>
<td>-0.3%</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, T-100 data for selected carriers

| Table 23 US-EU On flight Traffic by Airline Type |

Sixty percent of the traffic moved on passenger flights in 2005, while the remaining 31% moved on freighter flights by non-express airlines (“all-cargo”) including those operated by passenger or ACMI airlines. The integrated share has remained relatively stable at around 10% since 1995 after increasing from 7% in 1990. Passenger flight share has decreased from 67% in 1995 with the all-cargo share increasing from 23% to 31% over the same period.

64 The pattern of trade by “commodity type” does not necessarily correlate with the patterns of air cargo service type because available airline statistics do not measure true origin and destination and are unable to identify integrated carrier traffic moving on ACMI and other flight.
However, care should be taken in interpreting these figures as they are reported to the US DoT by the operating carrier. The operating carrier may not be the carrier in commercial control of the cargo. For instance, Atlas Air, an all-cargo carrier, operates certain ACMI services on behalf of combination carriers. As another example, Lufthansa, a combination carrier, operates select freighter flights on a shared capacity basis with integrated carrier DHL. Gemini Air Cargo operates ACMI services on behalf of both combination and integrated carriers. ACMI carriers accounted for over 300,000 tonnes of traffic in 2005, more than one-quarter of the all-cargo total.

Assuming that a share of the ACMI traffic is moved for the integrated carriers and adding some traffic moving on passenger flights as well, the estimated share of US air trade weight for the integrated carriers in 2005 is estimated at 13% (260,000 tonnes) with 80% of that total moving under US carrier control. Assuming an 80/20 mix of express and freight commodities for these carriers, it is estimated that the integrated carriers handled approximately $71 billion of air trade or 31% of the US-EU total.

The demand and supply patterns for this market indicate several general trends that relate to the proposed OAA including:

- Traffic growth exceeded capacity growth from 1995 to 2000 with the relative growth rates converging from 2000 to 2005 (during a slump in traffic growth).

- Average aircraft size has decreased over the same period while the number of departures has increased, reflecting an expansion in gateway airports being used to expand overall market coverage and capacity.

- The US carriers utilize US gateway airports in addition to their primary US hubs, but have limited traffic that bypasses hubs and gateways.

- Both UPS and FedEx have expanded their EU hubs while also increasing direct service to the German and UK markets.

FedEx and UPS handled 229,000 tonnes of enplaned traffic between the US and EU in 2005, 98% of the reported traffic for the integrated carriers. The relationship between traffic and
capacity over time indicates both the ability to expand capacity to meet market demand and shifts in the types and size of aircraft used. Between 1995 and 2000, these two US integrated carriers increased capacity at 5.3% per year and departures at 5.8% per year while traffic grew 7.2% per year. This represents a slight decrease in average aircraft size (from 76 MT to 75 MT of capacity) and a significant increase in average load factor (63% to 73%). Since 2000 and during a period of slower traffic growth, these carriers have expanded capacity by increasing departures while average aircraft size continued to decline. This pattern indicates that these carriers have continued to expand their networks in excess of traffic growth, in order to improve service levels (with more frequent departures to more points).

### Table 24: US-EU Operating Patterns for FedEx and UPS

<table>
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</thead>
<tbody>
<tr>
<td>Enplaned Traffic (tonnes)</td>
<td>143,875</td>
<td>203,820</td>
<td>7.2%</td>
<td>228,978</td>
<td>2.4%</td>
</tr>
<tr>
<td>Capacity (tonnes)</td>
<td>248,418</td>
<td>321,602</td>
<td>5.3%</td>
<td>405,366</td>
<td>4.7%</td>
</tr>
<tr>
<td>Load Factor</td>
<td>63%</td>
<td>72%</td>
<td>71%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Departures</td>
<td>3,261</td>
<td>4,316</td>
<td>5.8%</td>
<td>5,503</td>
<td>5.0%</td>
</tr>
<tr>
<td>Capacity per Departure</td>
<td>76.2</td>
<td>74.5</td>
<td>-0.4%</td>
<td>73.7</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Traffic per Departure</td>
<td>44.1</td>
<td>47.2</td>
<td>1.4%</td>
<td>41.6</td>
<td>-2.5%</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, T-100 data

The historical development of the integrated carrier networks display general patterns of service expansion for these carriers and provide an indication of how their worldwide and OAA networks will ultimately develop with or without an OAA. Some general relevant patterns include (detailed in Appendix 1) include:

- The growth in EU-US traffic for FedEx and UPS has seen an expansion from dependence on flights between single hubs or gateways in the US and EU to more direct routings and gateways and improved coordination between intra- and extra-regional flights. In future, these carriers will require the ability to expand, enhance, and possibly relocate their primary hubs, but also utilize other gateways either to better serve primary markets or to coordinate flights with regional sub-networks.

- While routing patterns for the EU carriers (DHL and TNT) are more difficult to determine due to the high use of contract carriers, these carriers have chosen to serve the EU-US market using a combination of dedicated flights (some under ACMI operation) and shared capacity with other airlines. Only DHL operates an intra-US flight network to support EU-US trade and that is using contract lift. In the future, these carriers need the ability to operate their transatlantic flights on a similar basis to FedEx and UPS (particularly through access to traffic on connecting trade lanes and the ability to use US regional sub-networks and gateway airports).

### 4.3.5 Intra-Regional Integrated Carrier Markets

As stated above, the integrated carriers utilize their intra-regional networks to handle intra-regional shipments (intra-EU and intra-US), but also as origin/destination distribution networks for inter-regional traffic (EU-US, EU-Asia). The design of a particular intra-regional network and the way it interfaces with a worldwide network depends on a number of factors including:

- The distribution of traffic relative to hub location
• Geographical dispersion of the regional network relative to market location and time zones

• Ability to utilize ground services to meet service requirements

• Ability to use sub-regional hubs/networks and direct flights to enhance service levels and/or reduce costs and congestion

• Synergies between intra-regional and inter-regional traffic

• Cost and service factors related to cross-border operations.

Geographical considerations are paramount in the design of regional air networks that depend on a centrally located hub that permits a high level of service (in terms of delivery time and guarantees) at the maximum coverage of the regional market. The standard express network consists of end-of-business day flights from multiple markets (“service airports”) to the sort hub where shipments are distributed to returning flights arriving in the early morning for distribution during the business day. To accomplish this sorting, integrated carriers must be able to operate late night flights at both their hubs and service airports. The size of the market and time zone differences determine the maximum level of next day service available with higher levels providing more “value” to shippers as reflected in higher rates.

The standard express network model utilizes right-sized aircraft to link the hub with all of the service markets based on market size. Larger markets may justify multiple hub flights, while smaller markets may be linked using multi-stop flights. With the objective of obtaining the quickest delivery standard throughout the network at minimum costs, integrated carriers will utilize both ground services to reduce costs and “bypass” flights for fastest delivery. Ground transport is significantly cheaper than air transport and can be used to replace or supplement air legs for certain market pairs, but only for city pairs that have highway connections. Similarly, large volume market pairs may justify direct flights that can be cheaper if the plane is full by saving on handling at the hub. Finally, the linking of city pairs via the hub can be supplemented with “regional sorts” that retain traffic moving within a sub-region and can save costs, speed delivery, and reduce congestion at the primary hub.

Regional networks that are part of larger worldwide networks handle a blend of intra-regional and inter-regional traffic that affects network size and design. The addition of inter-regional traffic improves cost efficiency due to higher load factors and/or lower unit costs using larger aircraft. To the extent that high volume inter-regional traffic justifies non-hub “direct” flights (e.g. Memphis-Frankfurt), it also creates new flight segments that can be used for intra-regional traffic (if allowed).

A final consideration is the constraints that cross-border operations place on regional networks, both in terms of operating restrictions and the costs and time associated with border processing.

In summary, the cost and time efficiency of an integrated carrier’s regional network determines the level of service that can be produced and at what cost. The following sections discuss the intra-EU and intra-US integrated markets in terms of current structure, past development and future requirements as they relate to the OAA.
4.4.4.1 Intra-EU Market

Although the integrated express market as currently designed was originally implemented in the intra-US domestic market, the intra-EU express market has expanded significantly in recent years based on a high level of competition (four major carriers) and the continued liberalization and integration of the EU market. The intra-EU express networks are essential for handling intra-EU (and domestic) trade, as well as linking most of Europe to North American and Asian express markets.

According to an October 2004 study by OEF, the express industry directly contributed over 10.5 billion Euros to EU GDP in 2003. According to the European Express Association, “In the EU-25 alone, the express industry currently employs 250,000 people and delivers more than 450 million packages each year, constituting almost half of the intra-European air cargo market. It has been forecast that, by 2013, the express industry will employ 550,000 people in the EU-25.” This represents 8.2% annual growth.

According to Boeing estimates, express and scheduled freight carriers each held about half of the intra-European market in 2003. The intra-Europe express market is different from the intra-US express market in several important ways. First, the express market within Europe is smaller than that of the US. Second, the intra-Europe express market is much less reliant on air to transport express shipments than the intra-US market due to closer distances between the primary Western European markets. TNT, the fourth largest integrator and a major player in the European express business, estimates a 70%/30% mix of ground versus air transport for its express traffic. Third, the European express market is less concentrated than the US express market. Figure 28 provides DPWN’s estimate of European CEP (courier, express, parcel) revenue shares for 2004 (from DPWN’s 2005 annual report). According to DPWN’s figures, the two largest companies account for only 32% of the intra-European express market. This contrasts with a figure of 80% in the intra-US market.

Based on the Eurostat data, it is possible to estimate the baseline traffic level for this market sector. In 2004, national and intra-EU cargo traffic exceeded 2.2 million tonnes of which 50% was estimated as being handled by express carriers (by Boeing). Assuming that 90% of the

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65 It is difficult to distinguish between intra-EU traffic that has a true origin and destination in the EU and extra-EU traffic that is transferred to or from an intra-EU flight, particularly for carriers with EU sort hubs.
express traffic moves via a sort hub (and hence generates two enplanements), the one-way intra-EU traffic for integrated carriers is estimated at 605,000 tonnes.\footnote{As a check on this estimate, Boeing estimates a total intra-Europe market of 1.3 million tonnes of which 50% moves via express carriers or 650,000 tonnes. This includes all of Europe, not just the EU.}

The design of the intra-EU networks reflect common objectives of integrated networks such as intra-Asia and intra-US, but also indicate unique elements such as the high dependence on ground connectivity, the relatively compact time zone regions, and the particular location of large markets relative to suitable hubs. Some general characteristics of the intra-EU networks include:

- Primary sort hubs centralized in Belgium, France and Germany with the ability to reach large markets by ground
- Large markets in the UK and Germany that generate direct inter-regional flights and available flight segments for intra-regional traffic
- A mixture of open and restricted markets that dictate different service patterns for the US carriers
- The relatively small importance of domestic or “national” markets that require air services for express delivery
- The significance of overseas linkages as compared to US domestic market.

The past, current and future designs of the intra-EU integrated networks provide some insight into factors relevant to OAA impacts including (see Appendix 1 for more detail):

- FedEx developed its EuroOne network using a primary hub in Paris and a flight network that utilizes a combination of direct dedicated flights (using special hub rights from US-France bilateral), contract flights (some dictated by traffic rights and others by economic considerations), and flight segments generated from intercontinental services. Some markets are also served using ground connections from a centralized airport (e.g. Eastern Europe via Vienna), sub-regional networks (Scandinavia via Copenhagen “hub”), or direct “hub bypass” flights (for large trade lanes). Possible future expansion or enhancements include more sub-regional flight networks (e.g. Eastern Europe) and the elimination of flights dictated by traffic rights (e.g. UK-Paris).

- UPS followed a similar development pattern, although UPS’s intra-EU network has been active for a longer period and UPS also serves domestic markets such as Germany. Similar to FedEx, UPS’s primary hub in Cologne was developed in concert with getting expanded traffic and other operating rights. While FedEx operates most of the intra-EU flights, UPS used a contract carrier operating its own aircraft, but is in the process of shifting to a full contract operation. The use of an EU contract carrier avoided some of the traffic rights issues experienced by FedEx, but it must be assumed to have had a limited effect since they are expanding rather than reducing their use of contract services. UPS may be interested in regional sub-networks and the ability to utilize segments from an expanding array of trans-continental flights.
• DHL and TNT have been active in the intra-EU market for longer than both FedEx and UPS and therefore have more highly developed networks and a larger share of the market. Both carriers are also subsidiaries of large transportation groups that have dominant positions in the European market. While the OAA would not directly affect their intra-EU networks, impacts on other market segments (e.g. US-EU) would stimulate opportunities for expansion.

• DHL operates its air network from a Brussels hub that will be moved to Leipzig in 2008. DHL utilizes a combination of in-house airlines and external flights to create its air network. This structure is mostly due to past requirements to have regionally-based airlines (e.g. UK, MidEast, Latin America), but it is also due to the high availability of non-dedicated lift out of Brussels to Europe and the world. The EU liberalization gives DHL the ability to operate a single EU airline for its intra-EU operations, although it continues to use contract services in certain markets.

• TNT has placed a higher reliance on its highly developed ground network that is used for 70% of its European express traffic. TNT’s air network is based at Liege Airport, but its ground hub is located at Arnhem, Holland. TNT operates two airlines, TNT Airways registered in Belgium and Pan Air registered in Spain, on an estimated 4,000 scheduled flight segments per week.

4.4.4.2 Intra-US Market

The intra-US (“US domestic”) integrated market is possibly the most developed in the world, and hence provides insight into possible future developments in other world markets. Express services have come to dominate the intra-US air cargo market in the last 30 years. In 2003, the express/integrated carriers had a 60.9% share of the domestic US market while scheduled freight carriers had a 19.3% share. Mail and charter freight account for the balance. In terms of air freight traffic moving on scheduled flights, the US integrated carriers have a 76% market share.

Based on the US T-100 data, it is possible to estimate the baseline traffic level for this market sector. In 2004, total enplaned traffic by integrated carriers moving between US airports (excluding Anchorage traffic) totalled 8.4 million tonnes. Assuming that 90% of the express traffic moves via a sort hub (and hence generates two enplanements), the one-way traffic for integrated carriers is estimated at 4.7 million tonnes. 67

According to Boeing, the US domestic air cargo market grew 31% between 1993 and 2003, driven almost entirely by growth in the express sector. The graph below illustrates US domestic express carrier RTKs by year from 1993 to 2003. The sector grew throughout the 1990s but contracted in 2001 and has exhibited modest growth since. One of the reasons for the decline in express traffic in recent years is that ground transport is playing an increasing important role in the US domestic express market with some air express traffic being diverted to truck services by both the integrated carriers and traditional trucking companies.

67 As a check on this estimate, Boeing estimates a total intra-Europe market of 1.3 million tonnes of which 50% moves via express carriers or 650,000 tonnes. This includes all of Europe, not just the EU.
The existing express system originated in the 1970s when FedEx started its Memphis-based air network and expanded to large jet service under deregulation. The express share of US domestic traffic increased to 24% in 1985 and 44% in 1990, and has exceeded 60% since 1996. While high operating costs and the shift to ground express services has slowed air express growth in recent years, it is expected that the market will continue to handle the majority of intra-US air cargo, particularly with the elimination of wide-body passenger service and the increase in cargo-limited regional jets in domestic markets. Growth will be limited by the ability to handle express shipments more economically by ground. The Colography Group projects that the domestic air cargo market will increase only 1.2% in 2006, as compared to 5.1% for ground parcels and 3.8% for less-than-truckload (LTL) ground trucking.68

The intra-US industry is dominated by FedEx and UPS, which collectively have about an 80% share of the package market. Over the past few years, DHL has been making an aggressive push to expand its presence in the US domestic market. However, under US airline ownership and control laws, DHL, as a non-US entity, must use US contract airlines for its US domestic operations. (As discussed below, under an OAA, DHL would be free to operate its own services in the US domestic market.) In 2003, DHL bought Airborne, an US express service company. DHL retained Airborne’s ground operation and spun off Airborne’s air operations as ABX Air. In addition to ABX Air, DHL contracts with ASTAR Air Cargo (a US carrier formerly called DHL Airways) for its US domestic air lift.

The intra-US express network demonstrates key elements of an advanced integrated express system:

- Interlinked hub-based air and ground networks
- Multi-modal and multi-level service options

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• Use of sub-regional hubs and distribution networks

• Use of “bypass” flights for primary city pairs

• Linkages to other worldwide networks

4.4.5 Impact of OAA on Integrated Carriers

As noted above, the integrated carriers have been able to develop and expand their service networks in the EU-US, intra-EU and intra-US sectors under existing regulations. Other than some obvious instances (e.g. requirements to use a contract airline for certain routes), it is difficult to associate existing restrictions with impacts on specific market segments. A cost or service inefficiency for a particular market caused by existing regulations (e.g. higher air segment costs) is absorbed throughout the network and may not be reflected at all in market-specific rates or service levels, particularly as these carriers are competing with other carriers that do not experience similar restrictions.69

While each carrier (in the interviews) noted some cost and service benefits from the OAA, the primary benefit will be to permit continued expansion and enhancement of their networks perhaps in directions not currently anticipated. The express market is demand-driven with a historical pattern of producing faster delivery at a high level of certainty and a minimum of cost. New demand patterns will dictate new express services, just as enhanced services will permit expanded demand.

The ability to provide such a high (and increasing) level of service at a reasonable cost depends on the ability to match traffic levels to the operated aircraft, airport, and ground capacity. “Emergency” air shipment has always been available, but the true innovation of the integrated carriers was to provide affordable “expedited” service that has widespread appeal. The importance of time and cost efficiency to the integrated carriers can best be shown by their ability to estimate the cost of a single minute of delay. These carriers need the ability to expand and modify their services as necessary (which they mostly have under current conditions), not just to maintain delivery schedules, but also to avoid operating unused capacity that drives up unit costs. A requirement to use contract carriers creates an impediment to this needed flexibility and hampers cost containment. Just as importantly, the ability to access all of the available traffic for any particular market sector improves load factors and lower costs. Traffic right restrictions inhibit both flexibility and cost minimization.

The primary impact of an OAA on integrated carriers would be to permit each of the four carriers to have competitive access to the three OAA market segments, as well as the ability to best integrate OAA networks with their worldwide networks (e.g. 5th and 7th freedom rights). Existing restrictions mostly add operating costs to the carriers’ networks, either by restricting the options for operating flight segments or limiting access to traffic that might raise load factors and lower unit costs. Traffic and operating regulations also inhibit the flexibility for expansion and service enhancement that has been an essential trademark of the integrated carrier. Improved market access and efficiency throughout an OAA could also result in the development of new integrated carriers or the expansion of other transportation companies into the air express sector. The ultimate impact would be to

69 For example, the US carriers seek to offer a competitive and relatively uniform set of rates and delivery guarantees throughout Europe in competition with DHL and TNT. Any cost or service penalty for a particular combination of markets would be unlikely to be reflected as a cost or time penalty, but rather would be considered a “network” cost spread over all operations.
increase air express services and reduce costs to the benefit of OAA businesses and consumers.

A key element of the integrated network is its ability to adapt to existing regulatory environments in order to provide a relatively uniform level of service between worldwide markets. Optimally, integrated carriers want to own and control every aspect of their door-to-door transportation including air transport, airport handling, ground linehaul transport (when appropriate), local pickup and delivery, and customs clearance. Guaranteed delivery time is an essential element to the express product, as is cost-control and the ability to track and trace every shipment in real-time. For the most part, integrated carriers rely on their own transportation and handling to achieve these objectives. An OAA would eliminate some requirements to use contract carriers on certain flight segments, reducing costs and perhaps better utilizing other existing flight capacity.

On the other hand, the ability to purchase outside services that are provided more efficiently and cheaply by others (e.g. small aircraft services) is also a requirement to create the optimal service. Blending the right mix of in-house and purchased services also requires the ability to acquire specialist firms when necessary. An OAA would expand the availability and efficiency of ACMI services in particular markets.

The location and capabilities of sort hubs are also critical to developing and maintaining the air network. Integrated carriers need to operate flights to critical service airports, and efficiently control the transfer of traffic in a short time span. Self-handling at hub airports is critical to producing high service levels, as is the ability to operate at night. Both FedEx and UPS’ intra-EU networks were enhanced by the ability to locate and expand their primary hubs in markets with adequate operating rights. Future expansion of all these carriers requires the flexibility to locate and operate hubs based on service efficiency not traffic rights, particularly for expansion into sub-regional networks as has occurred in the US. An OAA would eliminate intra-OAA traffic rights as a prime factor in hub and gateway airport location leading to greater network efficiency.

The most distinctive characteristics of integrated carriers relative to other airlines is that the primary service is based on door-to-door transportation rather than airport-to-airport. This requires an extensive local pickup and delivery network that combines truck, van, and other vehicle fleets with local terminals at both airport and off-airport locations. Beyond air express, a major enhancement of the integrated express product line has been the expansion into both deferred and regional express shipment by ground service. The ability to provide an integrated approach to their ground networks is as important as the air networks are to providing high service levels. Integrated carriers need the ability to optimally provide or purchase both air and ground services over an entire market sector. An OAA would provide full intermodal and self-handling rights in countries served, reducing door-to-door costs and expanding market coverage and competition.

Another key aspect of the integrated network is the multi-layered profile of services that are provided under a single “brand name”. Integrated carriers seek to sell service levels to shippers, not mode-based transport services, and also try to satisfy all of a customer’s logistics needs, not just a limited number of ad hoc transportation requirements. This has been achieved partially by expanding into new product lines, but also by acquiring complementary transportation, trade, and logistics businesses. An OAA would expand the ability to acquire or control firms in foreign markets as is often critical for new market expansion.

As a general matter, the four primary integrated carriers indicated that even under existing restrictions they can offer competitive levels of services between all points in the market(s)
they currently serve\textsuperscript{70}. These carriers handle traffic in markets where they have limited or no air service rights that they can operate directly (i.e., by subcontracting their services). However, as stated above, integrated carriers prefer to own and operate all of their air services for several reasons:

- Cost efficiency of a single integrated fleet that can be tailored to a carrier’s market (e.g., aircraft size and the ability to handle proprietary containers) and can utilize a common maintenance and spare parts “pool”

- More opportunity for network synergies and more flexibility in expanding or modifying capacity and schedules

- Lower costs and more cost certainty with in-house operations due to subcontractors’ mark-up and multiple corporate overheads

- Better coordination between flights, airports, and ground services.

- Improved purchasing power including aircraft purchasing costs.

The requirement to use contract air services is based on a lack of cabotage rights for EU carriers in the US and limited or no 5\textsuperscript{th} and 7\textsuperscript{th} freedoms for US carriers in some EU markets. In simple terms, the elimination of these restrictions would allow carriers to operate existing flights with their own aircraft, eliminate duplicative flights through better coordination, or create new flights to support network expansion.

Based on the carrier interviews and the analysis above, the following impacts were identified:

**EU-US**

- The EU-US market would mostly be affected by the increased efficiency and competition in the intra-EU and intra-US networks that support Transatlantic services. The ability of DHL to increase the efficiency of its intra-US network by including secondary hubs and gateways (see below) could stimulate additional transatlantic services.\textsuperscript{71} Removal of restrictions on creating intra-US networks might attract TNT to expand its EU-US activities.

- Neither US carrier is restricted in terms of EU-US flights to or from their primary hubs, so the impact of increased access to currently restricted markets would have to be based on the need to operate direct “bypass” flights, to develop secondary hubs, or to relocate existing hubs. Both FedEx and UPS are able to locate direct flights to the UK now and the small size of the other restricted markets make them unlikely candidates for direct flights or hubs.

- The US carriers could improve utilization of their transatlantic flights that stop at a point between the US and their European hub (e.g., UK) by carrying local traffic and

\textsuperscript{70} FedEx does not serve EU national markets and TNT does not serve the intra-US market. It is unclear to what extent regulatory restrictions have affected these choices, but there was no indication that either intended to expand into those markets with or without an OAA.

\textsuperscript{71} Some of the “regional” hubs operated in the US by the US carriers (e.g., Newark for FedEx) combine intra-US and extra-US operations. The ability of EU carriers to create regional hubs would be enhanced with the OAA to the possible benefit of both market sectors.
possibly eliminate existing hub flights by contract carriers (although this impact mostly applies to the intra-EU sector).

- The US carriers operate their own aircraft in the transatlantic market, while DHL uses a US airline (Astar Air Cargo, formerly DHL Airways) that is fully dedicated to their operations, as well as other dedicated and common user lift. There may be potential to consolidate these operations within a single airline, particularly one with US domestic rights, thereby reducing air operating costs.

**Intra-EU**

- The US carriers are required to use contract carriers to carry UK origin/destination traffic within their intra-EU networks, and they contend that the impact is primarily in terms of extra costs and higher unit costs due to a lack of traffic consolidation. Existing flights could be operated using their own fleets or replaced if consolidated with existing intercontinental flights.

- The US carriers use contract carriers in other markets but indicated that it was either by their choice or that there was a limited impact.\(^{72}\)

- The express network development pattern in the US shifted from a single national hub to multiple secondary hubs that improved cost and service efficiency for growing “sub-regional” markets (e.g. traffic between West Coast points). While FedEx and UPS have developed their intra-EU networks effectively using their existing hubs in Open Skies countries, future growth may require the use of “secondary” regional hubs/networks, particularly as the European market expands to more distant regions. An OAA would enable these carriers to select the most optimal hub location and network design without regard to traffic restrictions.

**Intra-US**

- DHL currently uses two US airlines to carry its intra-US traffic, and, while they are primarily dedicated to DHL’s operations, DHL has indicated that there are cost disadvantages to the current situation. With an OAA, DHL could presumably purchase and combine the airlines, yielding some cost and operating efficiencies. As a later (and restricted) entrant to the US domestic market, DHL’s network is less developed than either FedEx and UPS, but will likely expand in a similar pattern beyond a single air hub. Expanded flexibility in US aircraft operations could enhance DHL’s ability to expand to regional hubs and dedicated gateway airports, thereby increasing its service levels. The ability to own and operate a fully-functional airline and develop a full-fledged domestic network in this market might also attract TNT or a future carrier to expand to this market, thereby increasing competition.

In instances where contract services are preferable, the expanded ability for wet leasing might also have some cost and efficiency benefits (see section 10.4).

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\(^{72}\) UPS formerly used a contract airline to operate its own fleet in Europe, but is shifting to a full contract operation (with the aircraft owned by the contract airline) and therefore can be assumed to have limited impacts.
4.4.5.1 Traffic and Operations Impacts

Unlike passenger markets, the optimal service for any particular express market need not include direct flights but rather requires efficient access to a full range of carriers’ hubs and networks. A restriction on direct services between multiple US points and a particular EU market may not have any impact at all if the desired service level can be achieved using existing rights for hub-to-hub and hub-to-market flights. For example, express shippers using US carriers between the US and Greece experience the same level of service as shippers to markets with Open Skies agreements without regard to any direct flight restrictions.

The importance of the intra-US and intra-EU networks to EU-US express services also makes it difficult to distinguish and allocate impacts that result from specific restrictions on elements of a network. For example, traffic restrictions on FedEx flights between UK and France affect service between (1) the UK and France, (2) the UK and other EU markets (via the Paris hub), (3) the US and the UK, (4) the US and other EU markets, and (5) possibly the US, UK, EU and non-OAA markets. Similarly, costs imposed on DHL’s US domestic network affects its service between US points, but also affects its ability to distribute its EU traffic to and from US origins and destinations. It is difficult to determine how a specific flight or traffic restriction translates into rate and service effects for certain markets as the carriers themselves probably don’t directly allocate cost impacts.

The relative impact of having open vs. non-open access to integrated carrier networks can be shown by comparing the patterns of growth in express commodities in the EU-US air trade market. Non-Open EU markets accounted for 30% of the overall shipment weight and 38% of shipment weight for total air express trade in 2005. These markets experienced significantly lower growth (or smaller declines) in express commodity trade between 2000 and 2005. While the overall market in express trade averaged 3.6% annual growth in value and a 0.5% annual decline in weight, the non-Open markets had half the growth in value and averaged a 3.8% annual drop in weight. In addition to having below average growth in both express weight and value, this pattern also applies in both directions with the differences even greater than in the aggregate market.

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<tr>
<td>Non-Open Skies</td>
<td>$42,679</td>
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</tr>
<tr>
<td>Open Skies</td>
<td>$55,252</td>
<td>6.1%</td>
<td>$59,793</td>
</tr>
<tr>
<td>Total</td>
<td>$97,931</td>
<td>5.5%</td>
<td>$86,455</td>
</tr>
<tr>
<td>Non-Open Skies Share</td>
<td>44%</td>
<td></td>
<td>31%</td>
</tr>
<tr>
<td><strong>Weight (tonnes)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Open Skies</td>
<td>83,411</td>
<td>-1.4%</td>
<td>82,482</td>
</tr>
<tr>
<td>Open Skies</td>
<td>194,514</td>
<td>3.7%</td>
<td>193,766</td>
</tr>
<tr>
<td>Total</td>
<td>277,925</td>
<td>2.0%</td>
<td>276,248</td>
</tr>
<tr>
<td>Non-Open Skies Share</td>
<td>30%</td>
<td></td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 25: US-EU Air Express Trade: Open vs. non-Open Markets, 2005

These patterns indicate that market restrictions and inefficiencies can result in differential growth of 1 to 3 per cent per year for those markets affected. While it is difficult to precisely project impacts on specific market sectors, it is possible to estimate the relative scale of those restrictions.
impacts based on the size of the markets affected and some generalised assumptions regarding the maximum level of cost or service improvement. The base market levels were estimated in the previous sections along certain assumptions concerning market splits between the affected carriers (e.g. US carrier for intra-EU and EU carriers for intra-US). Based on the interviews, it is estimated that OAA cost and service efficiencies could stimulate traffic by between 10 and 20 per cent for the carriers and markets affected. The following impacts were estimated:

- **Intra-EU Market**: The elimination of restrictions on self-operated intra-EU flights, access to more efficient ACMI operators, and improved use of EU-US and EU-Asia flights for intra-EU capacity will improve US carriers’ cost efficiency for both intra-EU and extra-EU services (including EU-Asia). Assuming a 10-20% cost improvement applies to 20% of the US carriers traffic, the net stimulation to Base Level Traffic (for all carriers) is estimated at 0.3 to 0.5% per year.

- **Intra-US Market**: The OAA would allow the EU carrier (DHL or others) to self-operate intra-US capacity and/or consolidate domestic airline operations, utilize transcontinental flights as domestic service segments, and expand domestic networks with regional hubs and gateways. Assuming a 10-20% efficiency impact would affect 20% of the EU carrier’s traffic, the net stimulation to Base Level Traffic (for all carriers) is estimated at 0.5 to 1.0% per year.

- **EU-US Market**: For both US and EU carriers, expanded traffic rights would increase load factors on intercontinental flights (including Europe-Asia) and more efficient intra-EU and intra-US flight operations (based on improvements above) will decrease network costs as allocated to EU-US traffic. Assuming that the 10-20% cost/efficiency improvement would apply to about 10% of the US carriers’ traffic and 20% of EU carriers’ traffic (due to relatively greater restrictions for EU carrier in the US), the net stimulation to Base Level Traffic (for all carriers) is estimated at 1.5 to 3.0% for a single year.

The resulting traffic stimulation of 29,000 to 58,000 tonnes is 0.5% to 1.0% based on the 5.6 million tonne total market. This impact is equal to the difference between projected annual growth rates for total and express air traffic for the EU-US market, as estimated by Boeing. It is reasonable to assume that the continued ability to grow express networks will permit express traffic to maintain this differential in the future.

<table>
<thead>
<tr>
<th>One Way Traffic, '000 tonnes</th>
<th>Base Level</th>
<th>Low Stimulation</th>
<th>High Stimulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-US</td>
<td>263.0</td>
<td>3.9</td>
<td>7.9</td>
</tr>
<tr>
<td>Intra-EU</td>
<td>605.0</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Intra-US</td>
<td>4,700.0</td>
<td>23.5</td>
<td>47.0</td>
</tr>
<tr>
<td>Total</td>
<td>5,568.0</td>
<td>29.0</td>
<td>57.9</td>
</tr>
</tbody>
</table>

**Table 26: Estimated Cargo Traffic Generation from OAA - Integrators**

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73 All assumptions are based on an even split between US and EU carriers in the EU-US market sector, a 25% market share for US carriers in the intra-EU market and EU carriers in the intra-US market.

74 In chapter 10, the liberalization of ACMI markets is discussed in terms on their impact on those airlines. A more competitive and efficient ACMI market will also benefit the users including both integrated carriers and all-cargo carriers over all market sectors.

75 Assuming that the non-Open markets would experience “freight”-type growth without liberalization (3.6%) and “express” growth with the OAA (6.2%), these markets could achieve stimulations of 2.6% based solely on liberalization of traffic rights without regard to network cost savings and synergies.
4.4.5.2 Employment Impacts

Assuming a direct relationship between traffic and employment stimulation, the OAA could stimulate an additional 700 to 1,400 direct jobs for US express markets and 900 to 1,900 direct jobs for the EU market (see Appendix 5 for detailed estimates). Total impacts (including induced effects) would be 4,500 to 8,900 jobs. Note that the direct jobs include employment related to ground and airport operations, not just “airline” jobs. The impact does not include any catalytic effects of improved air express costs and service levels for OAA manufacturers, distributors and consumers that could be substantial.

| Year | Base level direct jobs | Low traffic stimulation | | High traffic stimulation | |
|------|------------------------|-------------------------| |-------------------------| |
|      | Direct Jobs | Indirect Jobs | Total | Direct Jobs | Indirect Jobs | Total |
| US   | 127.8 | 0.7 | 1.8 | 2.5 | 1.4 | 3.5 | 4.9 |
| Europe | 150.0 | 0.9 | 1.1 | 2 | 1.9 | 2.1 | 4 |
| Total | 277.8 | 1.6 | 2.9 | 4.5 | 3.3 | 5.6 | 8.9 |

Table 27: Employment created in Europe and US due to OAA for Cargo Integrators (000s)

4.5 US-EU COMBINATION/ALL-CARGO CARRIER MARKET

4.5.1 Introduction

The non-integrated segment of the OAA-related air cargo market consists of traffic moving on the passenger flights of combination airlines (“combination”) and traffic moving on freighter flights of both all-cargo and passenger airlines (“all-cargo”). While the services provided by these airlines may include value-added elements, the essential service is “airport-to-airport” transportation with the other elements of total door-to-door delivery typically handled by the shipper or consignee themselves or by a third party such as a forwarder or logistics operator. Accordingly, the potential impact of an OAA on these carriers would be more similar to that of the passenger market than the “network” effects anticipated for the integrated carriers.

Even though passenger flights handle a majority of intercontinental cargo traffic, the focus in this section is on all-cargo freighter operations as the passenger-based capacity and traffic will respond to OAA impacts on passenger airlines and services. As described in detail in Appendix 1, the non-express freighter operators primarily serve (1) high volume cargo trade lanes that lack adequate capacity from passenger and integrated carrier flights and (2) speciality markets that require oversized or upper deck capacity or link markets with low passenger volumes. In general terms, the all-cargo freighter operators fill in the service gaps

76 Airlines often market some of these same services on a limited basis so as not to compete with their largest customers, the freight forwarders.

77 Combination and all-cargo services may be very similar, frequently offered concurrently on the same trade lanes. However, there may be significant differences in terms of service characteristics for certain market segments. While cargo capacity on passenger flights may be marketed and utilized in a highly efficient fashion, cargo markets rarely if ever are considered in flight routing or scheduling. Accordingly, the pattern and level of the available capacity is determined by passenger markets and is concentrated at large passenger airports. Freighter flights that are scheduled (or unscheduled for that matter) are routed solely based on the cargo market, so the pattern and level of capacity is more closely related to cargo volumes and origin/destination patterns. Freighter operations need not utilize the primary passenger airports, although airport routing often is influenced by the concentration of combination capacity at passenger airports. Due to variability in traffic loads and unreliable weather conditions, freight forwarders typically prefer using an airport with multiple flights to their primary destinations in order to guarantee space availability. This results in a concentration of freighter flights at the primary international gateways (JFK, LAX, LHR) based on the high volume of wide-body passenger flights to numerous destinations.
between (1) the higher cost integrated carriers whose “freight” (i.e., airport-to-airport) capacity is dependent on their express hub networks and (2) the passenger-driven capacity of combination carriers.

There are four basic segments of the all-cargo market that are relevant to this analysis:

- scheduled freighter operations by passenger airlines
- scheduled freighter operations by all-cargo airlines
- scheduled freighter operations, operated for both passenger and cargo airlines (including integrated carriers) by ACMI operators
- non-scheduled/charter operations, operated mostly by all-cargo carriers.

The scheduled element of this market will be directly affected by the OAA, while the charter segment would only be affected indirectly to the extent that the same carriers participate in both markets.

While the standard freighter schedule is based on point-to-point direct routings, some airlines (e.g. Polar) operate limited regional hub networks in order to better utilize capacity, expand market coverage and/or achieve a better balance in load factors. Other carriers (e.g. Kitty Hawk in the US) operate freighter networks used to support freight forwarders in a regional market. Both passenger and all-cargo freighter operators seek to schedule flights on high volume routings that can support the larger aircraft that characterize this market. In the EU-US market, the average all-cargo aircraft has 95.3 tonnes of capacity compared to 72.3 tonnes for the integrated carriers and 41.8 tonnes for passenger flights.

Other than ACMI freighter operations conducted for the integrated carriers, the scheduled all-cargo market is driven by cargo flow patterns and the service requirements of freight forwarders. As with the passenger markets, an OAA would mostly affect all-cargo airlines in terms of

1. the ability to directly serve currently restricted routes, while also providing
2. flexibility in maximizing loads (with fill-up traffic),
3. the ability to consolidate US-EU airline operations through merger or cooperation.

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78 In recent years, there has been a significant increase in ACMI freighter operations for both passenger and all-cargo airlines. A primary reason for this trend is that cargo markets can be more variable than passenger markets and it is easier for an ACMI airline to shift freighter capacity worldwide than for an airline within a limited network. Unlike the passenger market, airlines may only require a few freighters for their primary routings and, in some cases, it is more economical to use an ACMI carrier that can maintain a larger freighter fleet with the associated economies of scale (particularly in regards to crew and maintenance). The direct impact of the OAA on ACMI airlines is discussed in chapter 10.

79 Non-scheduled airlines mostly serve specialty markets requiring freighter aircraft (e.g. project cargoes) or unique routings for specific industries (e.g. oil field) or the military. Charter authority is much less restricted than scheduled authority and is not considered in this analysis.

80 Freighter operations of passenger airlines are more likely to closely align with their major passenger gateways based on the ability to better utilize freighter and passenger lift capacity, as well as corporate synergies and traditional relationships. The freighter operations of passenger airlines, both ACMI and self-operated, are used to supplement their passenger-based capacity on high-volume routes. In most respects, these operations differ little from standard scheduled all-cargo operations other than being more influenced by the patterns of the carrier’s passenger network.

81 As noted above, shippers and other third party operators (including airlines) may be responsible for cargo routing decisions, but the freight forwarders drive the market in most cases.
A more efficient ACMI freighter market could also improve all-cargo users’ cost and service efficiency. In this section, the discussion is focused on the US-Europe market because the impact of an OAA on the non-express air cargo segment in the domestic US and intra-EU markets is expected to be minimal.

4.5.2 EU-US All-Cargo Market

The non-integrated operators of freighter aircraft (the “all-cargo” operators) handled over 806,000 tonnes of enplaned traffic between the EU and US in 2005 accounting for 31% of total traffic (as measured in the T-100 airport-to-airport routing statistics). The all-cargo segment of the EU-US cargo market has expanded over the last five years, mostly due to increased use of ACMI services and the increase of military charters. All-cargo traffic increased 6.1% per year from 2000 to 2005 with the share of total traffic (by all carrier types) increasing 8% (from 23% to 31%) as overall traffic declined slightly in the market. The growth rate over this period declined from the previous five year average of 6.5% annual growth. The growth in traffic was slightly exceeded by an increase in capacity that averaged 6.2% annual growth from 2000 to 2005 resulting in the overall load factor declining slightly from 72% in 2000 to 69% in 2005. The number of freighter operations grew slower than capacity over the same period as the average aircraft size increased from 83.9 tonnes of capacity to 95.3 tonnes.

The all-cargo market is served by passenger carriers that operate freighters to supplement their passenger aircraft capacity and mostly “niche” all-cargo airlines that provide supplementary capacity for a limited number of routes or markets. While the large European and Asian passenger airlines continue to operate freighters on major trade routes, there has been a decline in self-operated capacity particularly by the European carriers. The top carriers in the EU-US market are Air France, Lufthansa, and British Airways (via wet leases). No US passenger airlines operate freighters in this market. While more affected by passenger traffic patterns that the all-cargo airlines, these carriers should react similarly to an OAA albeit at a lower level.

The primary cargo-related impacts would apply to the all-cargo airlines that operate freighter aircraft in the EU-US market. The largest non-integrated all-cargo carriers in the US-Europe market include:

- **Atlas and Polar**, the two largest all-cargo carriers in the US-Europe market, are both US carriers operating under a single parent company, Atlas Air Worldwide Holdings. Atlas is primarily an ACMI operator. Polar operates scheduled service that caters to freight forwarders.

- **Gemini Air Cargo** is a US all-cargo carrier that operates ACMI services on behalf of combination, integrated, and other all-cargo airlines with a fleet of DC-10-30Fs and MD-11Fs. The company also operates charters.

- Luxembourg-based **Cargolux** is the largest European all-cargo airline and focuses on the airport-to-airport market and operates exclusively for freight forwarders.

- **Kalitta Air** is a US carrier that operates scheduled services and on-demand charters.

The non-integrated freighter operators handle a wide range of commodities, as determined by the customers of their primary customers, freight forwarders. Forwarders typically

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82 The T-100 data identifies the operating carrier and does not attributed ACMI operators to the controlling carrier. Some of the traffic shown here is integrated carrier traffic moving on dedicated flights operated by other airlines. Similarly, some of the traffic attributed to all-cargo airlines may be flights operated for combination carriers.
handle traffic that is lower-valued, of higher-volume and/or moving in larger shipment sizes than most traffic using the integrated carriers, although forwarders also directly compete with those carriers for distribution of high-value commodities particularly if they move in the large volumes. However, it is reasonable to say the all-cargo freighters depend heavily on the high-volume low-value commodity markets while the integrated carriers tailor their services to high value shipments that can support their significantly higher express rates.\footnote{While the distinction is clearer for infrequent shipments, the integrated carriers will negotiate rates that are competitive to freight forwarders for large shippers regardless of the commodity value.}

The importance of all-cargo operations differs significantly by EU market. Luxembourg, the hub of all-cargo airline, Cargolux, had 100\% of its US traffic (as measured in T-100 weight statistics) moving by freighter with other large markets such as Belgium (73\%), the Netherlands (39\%) and Germany (37\%) also with high market shares. France’s share via cargo airlines is slightly lower at 28\%, again based on the high level of integrated capacity. \textbf{It is interesting to note that four of the restricted markets, Ireland (9\%), Hungary (8\%), Spain (1\%) and Greece (1\%), have relatively low levels of freighter service (and no integrated service).}

The primary all-cargo “trade” market for this analysis is defined as air shipments of commodities with an average value of less than $100 per kilo in 2005. This “air freight” market between the EU and US is estimated at 1.4 million tonnes in 2005 with the westbound market exceeding the eastbound market by 152,000 tonnes. The total market value is $43.4 billion at an average value of $30 per kilogram. The westbound market is slightly higher valued at $33 per kilogram compared to $27 per kilogram eastbound.

The EU-US air freight market declined between 2000 and 2005 in terms of shipment weight at an annual average of 1.1\% per year. Shipment value increased slightly at 1.1\% per year, but, if measured in constant dollars, would have declined as well. In contrast to the express commodity market, westbound shipment volumes declined from 2000 to 2005 while eastbound shipment weight increased marginally. The 2000-2005 period contrasts sharply with the previous five year period when total traffic increased at an average of 6.2\% per year with westbound traffic up 7.8\% per year. Part of the recent stagnation in the lower-valued air “freight” market is a result of diversion of “marginal” or “wedge” commodities to ocean services during a period of lower trade demand.

\subsection*{4.5.3 Intra-Regional All-Cargo Markets}

Non-integrated freighter operations in both the intra-US and intra-EU markets have declined in importance in recent years based on the continued improvement of ground trucking networks and the expansion of integrated carriers into the heavy freight market by both air and truck. While still serving a niche market between passenger-based and integrated lift, that niche is much narrower for the intra-regional markets. With carriers leaving these markets, the opportunities for expansion with the OAA are limited, other than to support international routes with fill-up traffic that might be available with US cabotage rights or expanded EU 5\textsuperscript{th} freedoms.

\subsubsection*{4.5.3.1 Intra-US Market}

US domestic freighter operations have traditionally been oriented to providing freight forwarders with an alternative to passenger flights and the higher-cost integrated carrier services against which they competed for shipper accounts. Over the years, a number of airlines operated forwarder-dependent flight networks, often tailoring service to major
customer bases (e.g. the auto industry). Some airlines carried USPS mail, and even, overnight bank checks. The dual expansion in the integrated carriers’ market coverage (e.g., LTL shipping) and the rise of “air truckers” (e.g. Forward Air) eliminated much of the market for these airlines with most now operating in specialty markets (e.g. US-Puerto Rico garment trade, military, charter).

Based on T-100 statistics, non-integrated freighter operations handled 1.2 million tonnes between US airports in 2004, just 11% of total enplaned freight for domestic operations. Even this total overestimates the market as it includes international traffic that is transferred between US airports and some ACMI traffic carried for other airlines. A significant OAA impact would depend on EU carriers supplying new alternatives or competition to a very limited market.

4.5.3.2 Intra-EU Market

The intra-EU market for non-integrated freighter airlines operating flights other than for integrated carriers has also been squeezed by the ground and integrated carriers. Boeing (in the World Air Cargo Forecast 2004/2005) estimates that non-express scheduled freighter service has declined 5.2% per year on average since 1998 as “trucking is now the preferred mode of transport for most freight and mail” for intra-EU traffic. While no statistics exist for these carriers, the all-cargo freighter share of total intra-EU traffic is probably minimal, other than that moved for the integrated carriers or on off-shore routes (e.g. Channel Islands). As with the intra-US market, a significant OAA impact would require a major increase in the importance of these services (other than for ACMI supplemental capacity).

4.5.3.3 OAA Impacts on All-Cargo Market

The non-integrated freighter market responds to demand for air capacity that is not sufficiently or adequately provided by the belly lift on passenger flights, or by the integrated carriers via either their distribution networks or their airport-to-airport services. In the only market with any significant potential for OAA-based expansion (EU-US), the analysis above indicates that freighter operators need access to primary cargo gateways, but also the ability to shift capacity based on quickly changing conditions on both the demand- and supply-sides. The air freight market is characterized by large flows of high demand commodities, but both demand for commodities and the location of their producers or consumption points are highly variable, even under normal market conditions. Freighter operators occupy a niche between marginally-priced passenger lift and the high rate integrated services, and must also contend with shifts to other modes.

The primary impacts that can be expected from an OAA include:

- expanded matching of all-cargo airlines with possible routes;
- increased flexibility in “organizing” an all-cargo airline (by merger, consolidation, or access to investment capital) that could serve a wider range of markets and thereby better hedge against fluctuating demand and supply conditions;
- better ability to match and coordinate flights to traffic demand; and
- expanded opportunities for wet-leasing freighter operations.

The interview process did not identify any particular routes or markets that are currently underserved with freighter flights, although traffic patterns indicate a lower use of freighter flights for the non-Open Skies markets. Future demand growth may require new services for the restricted markets. For example, Ireland is a fast growing air cargo market, mostly
for express traffic. As that market matures, it is likely that there will be a shift to heavier freight as has occurred in other air markets. As noted above, Ireland utilizes non-integrated freighter services less than most of the other EU markets, probably due to the restrictions on serving Irish airports.

In terms of the cost and service efficiency of all-cargo airlines serving the EU-US market, existing traffic rights limit opportunities for multi-country freighter flights that might be justified based on cargo flows alone. For example, direct freighter service that might not be justified based on the traffic between a single EU market and the US, might be with the ability to handle traffic via an intermediate EU market, intermediate US points, or to a beyond point (Canada or Mexico).

Removal of cabotage restrictions, allowing EU carriers to carry fill-up traffic on domestic US legs, may make feasible certain services that are not feasible today. Certain European carriers might be interested in 7th freedom services between another European country and the US. For example, now that Lufthansa and Swiss are one airline, Lufthansa might want to operate its own freighters from Vienna or to operate a Swiss freighter from Frankfurt. Similarly, a Europe-US-Latin America service could be operated and designed to best handle the severe imbalance in the US to Latin America air trade. In essence, the benefit is the ability to configure flights in line with market demand instead of based on national boundaries. This flexibility should lead to more competition and lower prices and better services, as well as the ability to develop “freight” networks.

As on the passenger side, ownership and control changes could enable cross border mergers that would increase efficiency and produce cost savings. Ownership and control changes would also open up access to foreign capital that could be used to finance new entrants. OAA liberalization of foreign ownership could create more opportunities for partnerships as well.

The ability to wet-lease capacity for the carriage of air cargo is important because it provides greater flexibility to respond to changes in demand in a cost-effective way. Currently, the US does not allow its carriers to wet-lease cargo or passenger aircraft from non-US operators while European carriers can and do wet-lease aircraft from US operators. This would change under an OAA, providing more competition in the market for wet-leased aircraft.

An interview with a US wet lease operator provided the following interest in the OAA:

- Although current restrictions mostly affect EU airlines’ ability to serve the US market, a final agreement would eliminate general uncertainty for US carriers (i.e., remove possibility of future changes to existing US rights in EU) and assist in future planning.

- Possible removal of current restrictions on the maximum length of wet leases by US airlines in the EU would specifically improve market certainty for a capital-intensive business.

The primary market for expanded freighter operations is the EU-US market where 31% of the traffic moves on freighter flights by all-cargo and passenger airlines including flights for integrated carriers. The total “all-cargo” baseline market in 2005 is estimated at 540,000 annual tonnes based on total EU-US air trade of 2.0 million tonnes and the re-allocation of 4% of the “all-cargo” to the integrated carriers.

The difference in the use of freighter operations for non-Open markets was described above. Patterns of growth for freight commodities moving to those markets relative to overall EU-US growth indicates lower growth (or smaller declines) in traffic between 2000 and 2005.
While the overall market (including countries with no air services) averaged 1.1% annual growth in value and a 1.1% annual decline in weight, the non-Open markets declined in terms of value and averaged a 1.8% annual drop in weight. This pattern applies in both directions as the non-Open market’s growth rates over the period were 1 to 2 percent “worse” than the overall average. The non-Open markets accounted for 30% of the overall traffic (in weight) for air freight commodities in 2005, resulting in a potential 0.3 to 0.6 percent stimulation of the overall market based solely on achieving “Open Skies” conditions for all EU markets.

<table>
<thead>
<tr>
<th>Value (Million US $)</th>
<th>Westbound</th>
<th>Eastbound</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Open Skies</td>
<td>$5,707</td>
<td>-0.5%</td>
<td>$5,796</td>
</tr>
<tr>
<td>Open Skies</td>
<td>$20,338</td>
<td>2.1%</td>
<td>$11,580</td>
</tr>
<tr>
<td>Total</td>
<td>$26,044</td>
<td>1.5%</td>
<td>$17,376</td>
</tr>
<tr>
<td>Non-Open Skies Share</td>
<td>22%</td>
<td></td>
<td>33%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight (tonnes)</th>
<th>Westbound</th>
<th>Eastbound</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Open Skies</td>
<td>183,624</td>
<td>-3.3%</td>
<td>244,978</td>
</tr>
<tr>
<td>Open Skies</td>
<td>614,352</td>
<td>-1.8%</td>
<td>401,050</td>
</tr>
<tr>
<td>Total</td>
<td>797,977</td>
<td>-2.2%</td>
<td>646,028</td>
</tr>
<tr>
<td>Non-Open Skies Share</td>
<td>23%</td>
<td></td>
<td>38%</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 28: US-EU Air Freight Trade: Open vs. non-Open Markets, 2005

The direct impacts of an OAA on the EU-US all-cargo market would include (1) the ability to better serve currently restricted markets (directly or indirectly), (2) enhanced coordination of flights and traffic between all markets, and (3) more efficiency access to ACMI services.

The potential employment impact on this sector is limited by the currently low level of employment associated with this market estimated at less than 2,000 jobs for both the US and EU markets. Based on average productivity and yield estimates as applied to the traffic stimulation (see Appendix 5), a total of 140 direct jobs are estimated to result during a single year for the OAA including both airline, other aviation and cargo transport sectors. A total of 410 jobs would be created including multiplier effects. It is expected that these jobs would be split equally between the two markets.

<table>
<thead>
<tr>
<th>Year</th>
<th>Base level</th>
<th>Direct Jobs</th>
<th>Indirect Jobs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>&lt;2,000</td>
<td>70</td>
<td>135</td>
<td>205</td>
</tr>
<tr>
<td>Europe</td>
<td>&lt;2,000</td>
<td>70</td>
<td>135</td>
<td>205</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>270</td>
<td></td>
<td>410</td>
</tr>
</tbody>
</table>

Table 29: Estimated Employment Impacts for All-Cargo Airlines from OAA

4.5.4 Combination Carriers

Roughly half of worldwide air cargo travels in the belly of passenger aircraft. As noted above, in 2004, 76% of total US-Europe air cargo weight was carried by combination carriers with 54% of that total on passenger flights. To the extent that an OAA leads to increases in
combination carrier capacity, the air freight market would also benefit from corresponding increases in belly capacity available for the carriage of freight.

The estimated stimulation to the passenger market increases from 1.6 to 2.8 million passengers in 2006 to 9.8 to 11.1 million passengers in 2010. In 2005, the transatlantic passenger airlines average 38 kilograms per enplaned passenger. Assuming this relationship holds, air cargo traffic would increase 67,000 to 105,000 tonnes in 2006 and 371,000 to 423,000 tonnes in 2010. As added belly capacity often eliminates the need for all-cargo capacity, it is likely that the net impact would be much less as traffic is shifted from cargo carriers.

The employment impact of this additional traffic is included in the impacts calculated for the passenger traffic, since the employment used to calculate the ratios combined both cargo and passenger employment for those airlines.

### 4.6 Concluding Points

Air cargo’s key role facilitating global trade and economic development would be enhanced by an OAA. The probable impacts differ by geographic market and type of service as follows:

- **Integrated Carriers**: An OAA would create an environment where the four primary integrated carriers in the EU-US market sectors could develop their services based on market demand and free of regulatory impediments that currently add cost and inefficiency to network operations. These carriers would be free to operate their own flights or utilize the most efficient contract flights. Traffic patterns could be efficiently spread over an optimized flight network and network design (e.g. airport selection) would be dictated by economics not the availability of traffic rights. Finally, air-based restrictions would not limit the flexibility and capabilities of multimodal transportation and logistics companies. The enormous size and impact of this industry on the OAA economies suggests that any marginal improvement to cost or service efficiency could reasonably produce significant direct employment impacts (1,600 to 3,300 direct jobs and 4,500 to 8,900 total jobs). The indirect effect on trade (and employment) related to the sourcing and distribution by air of commodities would further increase these impacts significantly.

- **All-Cargo Carriers**: The non-integrated freighter operators seek to efficiently provide cargo capacity for trade lanes not adequately served by either the integrated carriers or the cargo lift provided on passenger flights. Similar to the integrated carriers, the ability to optimally match traffic patterns to flight operations (without artificial restrictions based on national registration) would improve the cost and service efficiency of these carriers, while also opening new route opportunities (particularly multi-national ones). The relatively small size of this market segment makes significant employment impacts unlikely in the short term (140 direct and 411 total jobs per year), but the continued availability and viability of these services are essential to US and EU shippers.

- **Combination Passenger Flight Capacity**: A significant amount of air cargo moves in the bellies of passenger flights, capacity that is driven by passenger markets but has a major impact on cargo markets. OAA-based impacts on passenger capacity will generate supplemental cargo capacity and stimulate traffic.

- **ACMI Carriers**: ACMI airlines operate freighter flights for integrated carriers, all-cargo airlines, and combination carriers. Increased efficiency and competition in this
market will not only benefit the ACMI carriers but will also indirectly improve the efficiency and competitiveness of the “user” airlines.

Two additional points bear emphasis relevant to the cargo industry

- the importance of the four large integrated carriers should not be underestimated. Their economic influence and commercial size matches or exceeds that of most combination airlines. They represent truly global brands and have built global networks whose customers expect reliable swift delivery.

- liberalisation and open market access, particularly flexible traffic rights, open access to infrastructure, intermodalism and the ability to control brand and service quality is essential to the development of airborne all-cargo services. In this respect an OAA can be seen as a regulatory step towards a level of liberalisation that the cargo industry in particular has come to expect.
5 EMPLOYMENT, SOCIAL PROTECTIONS AND LABOUR MOBILITY

A significant additional element of this report over the original Brattle Group study is the consideration of employment, social protection and labour mobility in the air transport industry in the United States and the European Union. Creating an Open Aviation Area presents opportunities and challenges for employees as well as for shareholders, managements and governments.

This chapter reviews the relevant laws and considers the major similarities and differences in the rules and practices establishing social rights and governing employment in airlines. We focus in particular (in accordance with the guidelines for this study) on these rules and practices as they relate to mobile workers, i.e., flight and cabin crew, working on international routes as well as in services within the US and the EU.\(^{84}\) We shall among other things consider regulations, policies and institutional processes with respect to:

a) general trends with respect to the impact of liberalisation on labour relations;

b) the relationship of safety regulations in areas such individual licensing and work hours’ rules that shape access to the labour market based on the need to optimise skills, alertness and efficiency in technologically and professionally demanding functions;

c) collective bargaining rules and mechanisms for settlement of labour disputes;

d) social protections, especially with respect to rules and practices governing termination; and

e) the legal ability of US and European staff to be employed in each other’s markets.

While chapter 9 of this report examines the situation with respect to comparative wage rates and also considers certain economic trends in work organisation that affect the structure of the airline labour force (e.g. the impact of the internet on marketing and sales), we shall in this chapter consider the feasibility and probability (overall) of work shifting based on political and social as opposed to market-based criteria. Thus we shall examine in particular the concerns expressed by the US Airline Pilots’ Association (ALPA), in the context of the 2006 US DoT regulatory review of the economic rights and powers of foreign investors in US airlines, that foreign airlines would use such powers to favour work allocation to their own staffs even if US crews were equally or more competitive.\(^{85}\)

At the outset it is important to make clear that labour and immigration regulation in the European Community differs in structure compared to the United States. The principal

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\(^{84}\) We deal with, but do not focus our attention on, ground staff. Staff such as aircraft maintenance workers and ground handling service providers is as vital to the welfare of the public and the success of the industry as mobile workers are. However, it is in our view that the position of such employees is unlikely to be affected as a general matter, unless markets integration were to be widened beyond air transport in the direction of creating a general North Atlantic Community Market with rights of regional labour mobility. Thus we would not expect labour mobility to enjoy a different quality in an OAA, except perhaps for the positions that in their nature are inherently mobile. In the case of cabotage, the debate has focused on the right to conduct direct aircraft operations with foreign staff. While an operator may wish to import some of its nationals to support its operations in another country (and such matters are already foreseen in existing air services agreements), as discussed in 5.3 and 5.4 below, such employment is entirely subject to local laws and would remain so under the provisions of the ATA.

\(^{85}\) For the format of this analysis we will not assume that ALPA realistically expects regulators to fence off international work along national lines. Even without OAA market access liberalisation, the existing general absence of capacity controls in North Atlantic markets would make this a futile policy. Please see extended discussion in Section 5.6 below.
difference is that, in the US, primarily federal laws govern airline labour relations, whereas in the EU only a limited number of labour-related areas are harmonised by way of Directives at the Community level. These establish minimum standards, which Member States must meet or exceed in formulating national legislation.86

Such a difference means the systems cannot be easily described using identical analytical formats. Our approach will be to describe the US system first and in doing so to identify areas of law that are particularly relevant for international comparison. These include the chief legislation affecting airline labour and also, in light of the cabotage and wet leasing questions, rules governing employment of non-resident aliens (relevant immigration law).

We shall then present information and analysis with respect to the EC situation to create the needed basis of comparison. In the final sections of this chapter we attempt to pull things together through a contrast and compare analysis to consider the implications of labour market rules for market access issues such as investment rights, wet leasing and cabotage.

In order to provide readers with a broad overview, we conclude this introductory section with a table that attempts to show (as will be explained and discussed in the presentation that follows) how certain key questions are dealt with in the EU and the US respectively.

<table>
<thead>
<tr>
<th>Area</th>
<th>EU</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right to organise guaranteed by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Airline industry organised by crafts unions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Employee rights separately protected by Works Councils or like institutions</td>
<td>Yes</td>
<td>Not as a matter of federal law</td>
</tr>
<tr>
<td>Management power to terminate contracts or employment without cause</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Prevented by labour relations laws</td>
<td>Partially</td>
<td>Yes</td>
</tr>
<tr>
<td>Prevented by employee tenure rights</td>
<td>Partially</td>
<td>No</td>
</tr>
<tr>
<td>Conditioned by collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Government ability to impose mediation</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Licensing requirements for mobile workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flight Crew</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cabin Crew</td>
<td>Qualifications must be certified</td>
<td>Qualifications must be certified</td>
</tr>
<tr>
<td>Hours &amp; Working Conditions fixed in law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Modified by collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Social Insurance Coverage Required by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Company Pension plans also available</td>
<td>Generally yes</td>
<td>Generally yes</td>
</tr>
<tr>
<td>Regulated/Protected by law</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Agreed in collective bargaining</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Health Insurance coverage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Required by law</td>
<td>Mostly</td>
<td>No</td>
</tr>
<tr>
<td>Established by contracts</td>
<td>Often</td>
<td>Mostly (collective bargaining)</td>
</tr>
<tr>
<td>Employee choice options</td>
<td>In some cases</td>
<td>In some cases</td>
</tr>
<tr>
<td>Non-resident alien crew members:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visa-Free entry to</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Temporary employability in</td>
<td>Yes (limited)</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 30: EU/US comparison of employee rights & social conditions in the Air Transport Sector

86 See for instance, Council Directive 91/533/EEC of 14 October 1991 on an employer’s obligation to inform employees of the conditions applicable to the contract or employment relationship, which applies to every paid employee having a contract or employment relationship defined or governed by the law in force in a Member state in a Member state.
The general message that we would invite readers to reflect on is: different regulatory contexts can still produce like results, especially in economies governed by similar commitments to consumer interest and competition. This is particularly true for an industry whose technical standards and commercial service priorities have, from the beginning, been strongly influenced by international standards and criteria as well as national thinking.

5.1 IMPACT OF AIR SERVICES LIBERALISATION ON LABOUR

An opening question is whether commitments to open markets create like effects in all areas of law. Interestingly, analysts have begun to ask whether the liberalisation of air transport will produce more labour regulation. Labour concerns are becoming an increasingly important topic in a deregulated and liberalised air transport sector. Deregulation and liberalisation result in a profound restructuring that is influenced by the interrelated effects of the following factors:

- **Redefinition of markets.** Liberalisation has opened intra-EU markets to all air carriers, which have a principal place of business in the Community and thus *enhanced competition* between air carriers.

- **New forms of market access and cooperation.** Liberalisation in a transatlantic context has produced *Open Skies* agreements between the US and EU Member States and transatlantic airline alliances which create scope for forms of combined or coordinated service provision which may have repercussions on labour relations. The formation of regional and global *alliances* is perceived by pilots as a motivation to outsource present and future work to allied airlines with lower labour costs.

- **Privatisation of formerly state-owned air carriers** calls for maximisation of profits for the benefit of shareholders, stimulating management to reduce (labour) costs.

- **New market entry by low cost carriers** who may have tense relationships with labour and trade unions will also enhance labour competition.

As a consequence of the above factors, all airlines in the EU and the US are under strong pressure to *cut costs*. A report made in 2003 found that many airlines have challenged existing regulations by seeking to reduce cabin crew complement, increase flight crew duty hours or reduce national training and certification standards for maintenance engineers. At the same time, airlines compete fiercely on the labour market, both with each other and with their work force. The phenomenon of *outsourcing* gives evidence of this trend.

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88 See Table 5 “Main recent restructuring exercises in the European airline industry”, laid down in a report made by Eironline, “Industrial relations in the airline sector” (2005), to be found at: http://www.eiro.eurofound.eu.int/2005/08/study/tn0508101s.html
89 See the Third Aviation Package which entered into force on 1 January 1993
90 As a reaction, unions in alliances join forces in, for instance, the Wings Pilots Coalition, the Star Solidarity Alliance or the one world Cockpit Crew Alliance. Strikes of pilots at Northwest may result into strikes of pilots of its partner KLM in order to maintain a balance between wages so as to avoid a shift of production from KLM to NW (or vice versa); see: Jan Ernst de Groot, quoted, at 8-10. See also Subsection 5.4.5 below for further discussion of cross-border labour cooperation.
91 See Jan Ernst de Groot, quoted in footnote above, at 4.
Liberalisation of traffic rights has also invoked labour concerns in a EU-US context. Traffic rights determine not only commercial benefits but also employment opportunities. The resistance of the US to EU demands on opening up its domestic market for European air carriers is driven at least in part by the concerns of airline unions in the US. European labour’s position also seems to be one of wariness with the respect to the risks of new forms of competition.

New forms of competition, however, will offer opportunity as well as challenge for airline staff. In the competitive environment of an Open Aviation Area, in which all markets are contestable, industrial actions leading to cancellations or unreliability of service can seriously damage the market position of affected airlines.

The airline industry in both Europe and the United States has been and remains strongly organised. It is dependent on the critical technical skills and performance of its employees. While they must also bear the brunt of corporate failures, under systems that combine high and uniform technical standards with open social and economic relations such employees are also well-positioned to share in success.93

5.2 REGULATION OF AIRLINE LABOUR IN THE UNITED STATES

One central body of federal law, The Railway Labor Act of 1926, henceforth RLA (as amended), establishes rules and procedures governing labour/management relations in the US airline industry.94 Separately, however, regulations issued under the Federal Aviation Act of 1958 (as amended) establish licensing and qualification requirements for technical workers, as well as setting certain working hours and age restrictions in the airline industry.

Of course a number of other (and more generally applicable) laws affect employment in airlines and some will be referred to selectively below.95 As a general point of departure it is important to understand that it is not useful to think of the American economy in stereotypes such as being the home of unbridled capitalism: American regulations may in some cases even be more extensive than European regulations.

For example, while rights to fire employees may be constrained less by laws (than by collective bargaining agreements) in the US than in a number of European states,96 rules governing hiring or fairness of entry into the labour market are more extensive than is the general case in Europe. US federal laws against race, age and sex discrimination as well as fairness of access for persons with disabilities go much further than is the case in certain major European economies.

As will be discussed below, US legislation has worked to give US labour and professional groups considerable influence in the development of the standards and practices that govern working conditions in the US airline industry.

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93 Wages and benefits, as discussed in chapter 9 have experienced volatility, especially in the United States. Yet it also remains a fact that pilots, for example at successful carriers, including low cost carriers such as Southwest and JetBlue, as well those employed by the profitable integrators, FedEx and UPS, have achieved substantial gains.

94 Though originally intended only for the railway industry (hence its name), the coverage of the RLA was extended to air transport workers in 1936.

95 Several dozen federal laws, as well as state laws in local employment situations, could apply on particular issues, notably with respect to areas such as non-discriminatory access to the labour market; occupational safety and health; health benefits and retirement plans; rights to special forms of leave, etc. Other bodies of law also directly affect the aviation sector (as opposed to the airline industry taken narrowly). For example, industrial organisation of air traffic control employees (who are in the public sector) is not covered by the RLA but rather by laws governing the rights of civil servants to organise.

96 There are still significant differences among Member States of the EU.
5.2.1 Background and Regulatory Approach of the RLA

The adoption of a law at the federal level to regulate labour-management relations in a particular industry in specific ways (including the establishment of permanent institutional machinery and procedures) makes clear that the US Government viewed (and views) its national transportation system as a matter of public interest whose operations should experience minimised levels of disruption. Since the Railway Labor Act: a) does not find ready analogies in current European experience; and b) may not be in accord with conventional European thinking about how the US regulates, we shall attempt to provide a fairly full exposition of its meaning and effect.

5.2.1.1 Historical Background

The RLA, passed in 1926 under a Republican Administration, dealt originally only with the railroads – then of course the dominant means of interstate transportation, passengers as well as freight, in the United States. It had been preceded by a considerable history of industrial conflict in the railroad industry in the late 19th century (for example the Pullman strike of 1894) as well as a growing concern about the costs to the economy and the general public of service disruptions of the transport system.

Such concerns had come to a head in World War I as the US mobilised following American entry into War in 1917 and faced the need to transport large numbers of troops and materiel. In January 1918, the federal government took control of the railroads and effectively nationalised the US railroad system. An obvious and stated purpose of the seizure of control was to avert labour disputes and service disruption. However, during the ensuing two years of governmental control, as described by Prof. Robert Kaps, the right of labour to organise "became an accomplished fact" and unionisation went from 50% to 85% of the workforce. The government took steps to prohibit discrimination, raise and standardise wages and working conditions, and it established formal mechanisms (e.g. regional boards of adjustment) to hear grievances over the interpretation of collective bargaining agreements.

5.2.1.2 The Transportation Act of 1920

This law returned the railroads to private ownership; however, the Congress also wished to retain harmonious labour-management relations in the public interest. According to Kaps, neither railroad managements or the unions were satisfied by the law which was perceived as undermining their respective powers and responsibilities under collective bargaining by placing an unclear level of jurisdiction in the hands of a newly created “US Railroad Labor Board” that was to carry out both arbitration as well as mediation of disputes.

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97 Article 1 Section 8 of the US Constitution contains, inter alia, the so-called “Commerce Clause” which gives the US Congress power “to regulate Commerce with foreign Nations, among the several States, and with the Indian Tribes.”


99 US railroads, who had experienced an extraordinary and dynamic development, were privately owned. The Army Appropriations Act of 1916 (Stat. 619) had, however, given the President the power to take possession of any transportation system in time of war, and it did not specify conditions of reversion to private sector ownership. It included language that compensation rates for workers were to be “fair” and “just”. See Kaps, 21.

100 Ibid.

101 The federal government took a similar action in 2002 when it established the Transportation Security Administration and placed thousands of aviation security workers in the public sector. Such workers, whose labour organisation was previously governed by the RLA, are now subject to civil service laws on rights of representation.

102 Kaps, 22.
Numerous cases came before the new Board. It handled more than 13,000 disputes in its five years of existence, for the most part successfully. However, both labour and management contested its right to make binding decisions and subsequent court decisions struck down the Board’s enforcement powers.103

5.2.1.3 Railway Labor Act of 1926: Basic Structure

This law superseded the Transportation Act of 1920 and was passed by a large majority of both the House of Representatives and the US Senate following extensive consultations with both railway labour and management who came to consensus on its provisions. This subsection describes certain fundamental attributes of the RLA, which now apply to the airline industry (following the extension of the law’s scope to air transportation in 1936). The law recognises and sets forth the right to employee representation and actions along the following lines:

- **Coverage.** “Every common carrier by air engaged in interstate or foreign commerce is covered by the Act.”104 The law defines as an “employee” “every person…who performs any work defined as that of an employee or subordinate official.”105

- **Organisational assumptions.** The law provides that employees may be organised “according to crafts” thereby recognising the practice of so-called “crafts-or-classes” organisation of representation that had typified railroad unionism in which engineers, conductors and other groups were organised separately. The alternative to this approach is so-called industrial unionism under which all the employees of a corporation would be organised in a single labour organisation (as has been typical in the automobile, steel and mining industries in the US, for example).106

- **Rights of Representation.** The Act provides that, “the majority of any craft or class of employees shall have the right to determine who shall be the representative of the craft or class for the purposes of this Act.”107 As Kaps discusses at some length, the administration/oversight of this provision was put in the hands of the newly created Mediation Board, later National Mediation Board (NMB), which established certification procedures that had to come to grips with the meaning of “majority,” that is, determining how to deal with non-participation in elections.108 Neither the

104 US-based employees of foreign carriers engaged in international air transport to/from the US are subject to RLA. Kaps mentions case examples. Kaps, 71.
105 See 45 USCS@151 Definitions. Note: In applying Sections 151-63 of the 1926 Act to air transport (except for 153 that covers the work of the Railroad Adjustment Board), the Congress in 1936 also expressly applied the definition of employee to “every air pilot.” See 45 USCS@181. Interestingly (see also further discussion below), in the same historical period the Congress distinguished “supervisors” under the National Labor Relations Act of 1935 (that applies to all other US industries) and these were subsequently exempted from the definition of covered employees by the Taft-Hartley Act of 1947.
106 In American labour history the two approaches were typified in the emergence at the national level in the early-mid 20th century of the American Federation of Labor (AFOFL) which, founded in 1886 under the leadership of Samuel Gompers, organised under the crafts approach (which appealed to the interests of skilled or specialised workers) and the Congress of Industrial Organizations (CIO) founded in 1938 and led by Philip Murray from 1940 which achieved greatest levels of acceptance in cases of factory or mass production. Subsequently these organisations affiliated to form the AFL-CIO in 1955. Note: The crafts approach, which seems also to characterise European organisation of representation in airlines, exposes management to great pressure when a select or key group of employees can disable general operations by withholding their labour.
107 See 45 USCS@152.
108 The NMB has held that if a majority of the craft employees vote and a majority of these vote for a particular representation that certification will follow. Thus, as discussed by Kaps, 26% of the eligible employees may suffice theoretically to produce a legal majority. He also cites the case of a 1991 election at Command Airlines in which 64 flight attendants participated of which 32 voted for representation by the Transport Workers Union; 7 (by write-in) for
Act nor cases handled under it have provided a method for de-certification; that is, once organised, the craft group will stay organised; it can replace a representative but cannot vote representation out of existence.\(^{109}\)

- **Status of Contracts.** The Law provides wide scope for collective bargaining (see below) to set rules, rates of pay and working conditions. The RLA also provides for the indefinite validity of contracts; that is, it provides no scope for the conclusion of time-limitations or expiration of contracts. They can be replaced but not invalidated (except in the context of bankruptcy proceedings).\(^{110}\)

- **Self-Help.** The first goal of the Law is “to avoid any interruption to commerce or to the operation of any carrier engaged therein.”\(^{111}\) Thus it places strict conditions on the exercise of “self-help”; that is, strikes by employees or lockouts by management. The chief task of the Mediation Board (see below) is to prevent disruptions in service to the public by all reasonable means. Though it cannot mandate arbitration of differences, it can impose indefinite mediation.\(^{112}\)

### 5.2.2 Mediation and Arbitration Procedures

The RLA sought a balance between the interests of three parties: management, labour and the general public/economy-at-large. The institutional design of the Act clearly reflects this objective of balance. In doing so, however, it may have produced some unintended consequences in the form of extended and complex negotiating processes. Below we briefly review the mechanisms which the Act put in place in order to achieve its stated “General purposes” of the free and uninterrupted flow of commerce; freedom of association; independence of carriers and employees; prompt and orderly settlement of disputes; and fair and prompt resolution of grievances.\(^{113}\)

#### 5.2.2.1 National Mediation Board (NMB)

Originally established in 1926 as the “Mediation Board” and then reconstituted by amendment in 1934 as the “National Mediation Board,” the NMB is an independent federal agency that has three members appointed by the President with the advice and consent of the Senate for terms of three years. No more than two of the Members can be from the same political party. The Chairmanship rotates among them.

Professional staff supports the NMB. Its present annual budget is on the order of $11.6 million (€9.3 m), about three quarters of which is devoted to personnel, that is, salaries and benefits for staff or contracted services.\(^{114}\) The NMB handles grievance matters as well as collective bargaining disputes and, as indicated above, acts as the oversight agency with

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\(^{109}\) The RLA forbids what have been otherwise characterised as “Yellow Dog” contracts; that is, an employer making non-participation in a union a condition of employment. See 45 USCS@152 (Fifth). Kaps notes further that the RLA contains no mechanism for employees to vote for elimination of representation. See Kaps, 89.

\(^{110}\) See 45 USCS@152 Seventh. Note: The Bankruptcy Law is not referred to in the RLA; however, recent reorganisation proceedings under Chapter 11 have involved petitions by interested parties to have contracts declared invalid.

\(^{111}\) While the NMB is to release parties from mediation if it perceives an impasse, there are no statutory time limits on the mediation process. Kaps cites case law (Machinists vs. National Mediation Board 73 LRRM 2278 [1970]) in which the Court found that it could not look behind the NMB’s decision to continue the mediation process, even when it appears “interminable” and “futile” to the affected parties.

\(^{112}\) See 45 USCS@151a. “General Purposes.”

\(^{113}\) See 45 USCS@151a. “General Purposes.”

respect to certification of representation and participates in the organisation of elections. Its workload can be heavy. According to Kaps, some 200 airline agreements may be in negotiation in any given year. ¹¹⁵

Though many if not most of these negotiations may be resolved among the parties without significant recourse to mediation or arbitration (see below), all of them occur within the context of the RLA; that is, in the case of collective bargaining, either the employer or the employee representative gives a so-called Section 6 Notice to the other party, since all changes in rates of pay, rules or working conditions are to be arrived at in compliance with the Act. ¹¹⁶ The negotiations process then runs within the framework foreseen in the figure given below.

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¹¹⁵ See Kaps, 40. Under the crafts representation structure, employees at individual carriers are likely to have multiple representatives. Thus there will be separate agreements for flight crew, cabin crew, maintenance workers, airport and marketing staff, etc.
¹¹⁶ See 45 USCS @156.
5.2.2.2 Arbitration Procedures

As shown in the figure, while the NMB and/or its assigned mediator have the power to keep unresolved disputes in mediation, it is also tasked to encourage or formally “proffer”
arbitration. However, it cannot compel agreements or binding arbitration. In the end self-help actions can occur and in certain cases have stopped work for extended periods.

It is important to note that, unlike the situation under the National Transportation Act, the functions of the NMB with respect to arbitration are essentially administrative rather than adjudicative. Other than being called upon to appoint a third and neutral arbitrator (per Section 5, Third of the Act) when the parties cannot agree on such a person, the NMB’s tasks under the RLA are to support an independent arbitration process. This contrasts markedly with its active and direct responsibilities for mediation. The literature examined suggests that the labour/management parties in American air transportation have to-date not made significant use of compulsory arbitration as a method to resolve differences.

5.2.2.3 Presidential Emergency Boards (PEBs)

The RLA in its Section 10 provides that the Mediation Board shall notify the President if it believes that a dispute will “threaten substantially to interrupt interstate commerce to a degree such as to deprive any section of the country of essential transportation service.” The President may then appoint a board to investigate and report with the overall effect that work stoppages can be delayed by at least 60 days by law (See Figure 30).

In the 1920s (before the advent of modern air transport systems or extensive long range trucking) the American economy was indeed dependent on railroads. As airlines grew more important, the emphasis expanded to that mode. Between 1947 and 1966, American Presidents appointed some 33 Boards to help resolve airline disputes. However, only in eight of these cases had the disputes been fully resolved by the end of the PEBs term.

Since 1966, however, the use of PEBs has been sharply reduced. George Shultz, then Secretary of Labor, took the position in the late 1960s that industrial actions at a single carrier should not be the basis for a Presidential intervention. Indeed, for some 30 years not a single PEB was invoked.

In 1997, President Clinton acted to suspend a strike at American Airlines and again in 1998 to arrest a work stoppage at Northwest Airlines. President George W. Bush also invoked a PEB shortly after taking office in 2001, again with respect to NW. While we will not analyse the economic aspects of the question here, arguably these Administrations reacted to perceived changes in national economic circumstances. That is, concentration trends in US industry and the dependence of regions of the US on the services of major hub carriers, such as AA at Dallas and Chicago or NW at Minneapolis and Detroit, may have raised the issue of service deprivation (see the legal standard above) in a sharper form.
5.2.2.4 Self Help Procedures

We will not in this subsection attempt to review experiences in collective bargaining impasses, but we shall rather outline certain forms of action by employers as well as employees in general legal terms. Collective withholding of labour (the strike) is the most familiar of these. However, other actions such as attempts to substitute non-unionised labour reflect self-help from the managerial or corporate perspective.

The RLA on the one hand permits so-called “closed shops”, that is, the employer and a union can agree to inclusive representation in which all employees in the affected craft or class will have union dues withheld whether they voluntarily join the union or not. On the other hand, the law has, especially post airline deregulation, been interpreted to permit airlines to hire supplementary workers or use staff prepared to work during a strike.

In 1986, new management at TWA established the necessity to reduce costs to remain in business and asked all labour groups to accept wage cuts. When the airline could not reach agreement with the International Federation of Flight Attendants which struck, it began hiring replacements. As discussed at length by Kaps, the airline eventually prevailed even though at various points in a long dispute judicial rulings would not allow it to set aside the pre-existing contract, and it had to deduct dues from the wages of replacement workers that went to the striking union.

5.2.2.5 Self-Help and US Airline Deregulation

While the policy implications of post-1978 deregulation of the US airline industry for social and labour issues are discussed in 5.2.5 below, certain legal/organisational trends in the definition and practice of measures should also be noted.

First, one regulatory impact of deregulation was to shift the emphasis of the Civil Aeronautics Board (after 1985, the Department of Transportation), in promoting competition among individual airlines, toward scrutiny of previously accepted coordination efforts among them. A direct legal consequence of deregulation that affected collective bargaining was the ending of the ability of airlines engaged in interstate commerce to participate in the so-called Mutual Assistance Pact (MAP). Under MAP, airlines had been authorised, in the case of a strike, to pool windfall profits accruing to the non-struck airlines for the benefit of the airline(s) being struck to assist in covering fixed costs and averting bankruptcy.

Second, the removal of quantitative limitations on market access, that is, elimination of exclusive or limited route licences, stimulated widespread new entry – both by existing airlines on routes previously closed to them and by start-up operators. Start-up operators in the main entered the market without employee representation. Certain existing operators also founded subsidiaries of shell corporations, using a practice also known as “double-breasting” in order to create new, non-organised operations not subject to collective bargaining agreements and conditions.

While not strictly “self help” in the context of a specific industrial dispute, such efforts clearly aimed at creating greater managerial control and flexibility. All of these companies

123 The Taft-Hartley Law of 1947 with its so-called “right-to-work” provisions does not apply to industries covered by the RLA. Kaps, 30.
124 See Kaps 88-96.
125 The so-called IATA Show Cause Order (familiar to the European airline industry) was one product of this regulatory shift (and will not be further discussed here).
of course remained legally subject to the jurisdiction of the RLA, meaning that employees retained the freedom to seek representation.

Labour organisations logically sought to organise these new operations. In several cases, the NMB found that the new employers had acted illegally or improperly to discourage election of collective bargaining representation. Interestingly, at least one case involved a foreign carrier from the European Community, namely Laker Airways with respect to its US-based ground staff of some 300 persons located at four airports in the US. Sir Freddie Laker had appealed personally to these employees (who were also offered certain financial incentives) not to join the Teamsters Union. The NMB viewed “Laker’s admitted conduct as among the most egregious violations of employee rights in memory.”

5.2.3 Goals of and Experience in the Collective Bargaining Process

The RLA has been characterised as pro-labour legislation. While it has encouraged employee representation and exerted economic effects (see below), we should also recall that the Act sought a balance between the interests of management, labour and the general public/economy. Given fore-knowledge that real deadlines (e.g. in the form of expiring contracts) did not exist and that the logic of the Act would result in extended mediation, there was little pressure on the parties to work rapidly and, conversely, incentive to raise a wide and detailed set of concerns.

The Act makes “rules” and “working conditions” in addition to rates of pay expressly subject to the collective bargaining process. This, however, in no way derogates from the authority and responsibility established by Congress for the Federal Aviation Administration to regulate safety (see section 5.2.4 below) or other standards set in law (as opposed to contract) as might govern access to the labour market, minimum wages or insurance provisions, occupational health and safety, etc.

It is beyond the scope of this study to explore intelligently all the facets of collective bargaining in the airline industry – whether American or European. We can establish that the issues are both complex and extensive. The airline product is created by a wide range of specialists and professionals and places high demands on both managers and employees.

Education, skills, judgement, experience, recurrent or new training, professional licensing and certification of particular qualifications, as well taking formal accountability for the correctness of operations and multitudes of operational details are required by government (as well as by the terms of the business) to perform the work. Employee organizations have, therefore, seen a basic linkage between the professional requirements (which management and the public have a right to expect) and the social and work conditions under which tasks are performed. Seniority rights have been a strong concern, not only in the United States

126 The NMB found Laker Airways to be “a common carrier by air” as defined by the RLA (see 3.2.1.3 supra). The Board found further that the airline had through a variety of actions attempted to influence its employees unduly and inappropriately not to certify the International Brotherhood of Teamsters as their representative. See 8 NMB No. 79, FINDINGS UPON INVESTIGATION; ORDER CASE NOS. R-5131 AND R-5132 February 24, 1981, cited in Kaps 140-152.

127 Modern air transportation is often referred to by economists and other observers (in explaining its high elasticity of demand; that is sensitivity of discretionary users to price), as a commodity or as an example of “derived demand.” That is, travellers basically want to get somewhere and do not value the flying experience, per se. This situation, however, by no means makes the production of the good mundane or simple. Arguably, open heart surgery would be a classic example of a derived demand as are many other services people pay premiums to obtain because of the ex post facto value they derive from having undergone the experience, even when undesired and unpleasant.
where they, however, also serve as a key tool to provide job security beyond that provided by law.\textsuperscript{128}

Significant in the American case has been the early decision under the RLA to treat pilots in legal terms as “employees” rather than managers. As remarked previously, under the National Labor Relations Act of 1935 (as amended by Taft-Hartley in 1947), “supervisors” (which can include foremen on the shop floor) are not protected by the NLRA, which covers worker rights in all non-transportation industries in the US.\textsuperscript{129} Meanwhile, the Federal Aviation Administration requires that pilots of transport aircraft qualify as “Pilots-in-Command” (see below).

It seems beyond argument that commercial transport pilots exercise meaningful supervisory functions for decision-making and emergency response as well as performing technical functions. Agreements that have, at least until the recent past, given senior American pilots compensation levels in excess of Cabinet officers, in our judgement clearly reflect their de facto supervisory status and responsibility as well as the leverage they have enjoyed as possessors of critical skills in collective bargaining.

On the one hand, the concept of “employee” under the crafts concept extends to members of professional specialist groups. On the other, the development of operating systems to insure safety, security and efficiency of operations, which are clearly management issues, also depend on the insight, advice and participation of pilots. Without deepening this analysis further, it is still relevant to consider and reflect upon the implications of the decisions taken under the RLA.\textsuperscript{130}

5.2.3.1 Social Issues

The term “social issues,” particularly in contemporary European usage, embodies certain broad connotations of fairness, balance, worker rights and social justice, while at the same time dealing with concrete matters such as job security, the 35-40 hour work week issue, pension and health insurance rights, etc. In reviewing the situation in the United States we shall stick to the concrete matters and briefly summarise certain basic general aspects and social protections as well as considering particular issues of the airline industry.

All employed persons in the United States (including all civil servants, self-employed and managerial staff) are required to participate in the social insurance scheme (Social Security) and contribute to a fund for universal senior citizen (from age 65) health insurance (so-called “Medicare”). Employers must also purchase unemployment insurance. Pre-retirement health insurance is, however, not legally mandatory and is provided by voluntary individual or company plans (which have become a growing and significant issue in collective bargaining). Similarly, many gainfully employed Americans participate in a range of personal or employer pension plans (that enjoy tax-advantaged status).

The stability of company health benefits and especially pension plans has become a major social issue, in particular for the airline industry. As retirees live longer, their aggregate claims on the company’s cash flow (depending on the structure of the plans, as to which see

\textsuperscript{128} The US does not have legal provisions governing the private sector, as for example in Germany and France, that provide basic and general security against the termination of full time employees (Kuendigungsschutz) in all but small firms.\textsuperscript{129} See Kaps, 80.\textsuperscript{130} Analysts such as Kaps have seen hope in a future labour-management model in which groups like the pilots would be stakeholders in management. It is striking that when airlines are reorganised in the US, the pilots now typically take equity shares in the future company in exchange for accepting salary reductions. Such reductions, however, may also be tied to snapback provisions that restore former pay levels when profitability is regained. See Kaps, pp. 245-8.
also Footnote #132 below) can become significant and a contributing factor to illiquidity especially for companies whose sales and/or margins are flat or falling.

General pension plans are required by law to be insured. However, the law’s provisions set a cap on the level of pensions that the insurance fund (in the case of a bankruptcy) can pay with the consequence that higher paid employees may only have a portion of their promised pensions covered.\textsuperscript{131}

5.2.3.2 Special Considerations with Respect to Airline Workers.

Certain positions in airlines, particularly those of mobile workers (flight and cabin crews), distinguish them from employees in non-transportation industries with respect to the issue of working time. Concepts such as standard 40-hour weeks do not work because of the operational needs of the business. To some extent these matters are addressed by law through the impact of FAA regulations on safety (see below) that govern flight time limitations. However, especially in the case of flight attendants, the constraints on long hours at work and away from home imposed by safety requirements are far more limited and invite considerable modification through collective bargaining.

5.2.3.3 “Hire and Fire” – Protections against Involuntary Termination

Beyond the questions of supplementary and retirement benefits an ultimate social issue is job security. US Law at a broad, general level recognises the principle of “at will” employment. That is, the employer and the employee are in principle both free to offer and accept, withdraw or abandon work. However, the same body law places greater stress on the sanctity of contract. Thus conditions of termination as agreed in individual and collective contracts (through management/labour negotiations) cannot be set aside at will.

As discussed above, the RLA clearly foresees regulation of termination conditions through collective bargaining contracts, and it includes machinery for the review of individual or group grievances that might arise. We should also stress that in this sensitive area a number of other, more general, laws can come to bear, especially with respect to the rights of individuals. Any termination, for example, that is associated with actions that have the appearance of discrimination or harassment may invoke the application of a range of laws protecting persons with certain attributes or in certain circumstances.

While employers in the US in general appear to enjoy more flexibility to adjust staffing levels than in many other countries, the range of laws to be complied with is formidable. Very importantly, the US employer is exposed to the workings of an active court system in which costly suits are frequent and compel attention to compliance with regulations.\textsuperscript{132}

\textsuperscript{131} Pension plans have been broadly characterised as “defined benefit” or “defined contribution.” In the latter case, which includes all individual plans and some company and government plans, agreed amounts are contributed to create over time a pool of savings/investment income that belongs directly to the individual and on which payouts cannot begin between ages 60-70. Under defined benefit plans, the employer agrees to pay a defined pension (probably adjustable for inflation) that, however, may also bear relationship to years of service, contribution levels, etc. of the employee. Most plans arrived at through collective bargaining have been defined benefit plans. Such plans in recent years have proved to be very vulnerable. Perhaps in part because the benefit obligations are not tied directly to the employee’s direct investment, there has been a tendency to commingle contributions with general cash flow or invest them in company stock or otherwise to underfund future obligations. The Pension Benefits Guarantee Corporation administers the insurance programme. We have not determined maximum rates of current coverage, but we believe they do not greatly exceed $30,000 annually.

\textsuperscript{132} We have encountered a number of sources, which emphasise the need of potential foreign investors in the US to carefully educate themselves as to their obligations to employees. Dozens of laws and procedures are typically listed. For example, see the website of “Your Employment Risk Solutions” at \url{http://www.getyers.com/flagship_index.asp}.  

Booz Allen Hamilton January 2007
5.2.3.4 Contractual Job Security and the Role of Scope Clauses

While legal protection in the United States is extremely strong with respect to fairness and equality of access to job opportunities (that is, employment market entry), as we have already suggested, it is contractual rights – most broadly created by the collective bargaining procedure rather than by laws on job tenure, that most US private sector employees must rely on for legal protection against termination. In the case of the highly organised airline industry (and the predecessor railroad industry), contractual conditions achieved through collective bargaining have been critical in defining rules that govern job security.

Such guarantees have had both “what” and “who” components. Contractual provisions on work rules (as foreseen by the RLA) have at times significantly conditioned management ability to determine what jobs could be reduced or eliminated. However, companies then still had to respond to changes in technology and competitive conditions so that the companies and their jobs could survive, even if in reduced numbers.

In periods of structural adjustment or economic downturn, furloughing or laying off of staff becomes unavoidable and the “who” factor becomes critical. Airline and other unions have therefore worked very hard to establish standards if not controls over which staff is retained or laid off when companies must retrench. So-called “scope clauses” are tools that define which categories of persons have preference or access to which jobs in the airline system.

At first glance, the scope clause is a tool that establishes the framework for the familiar issue of seniority (along the lines of last hired, first fired); that is, who keeps working, who gets furloughed and who, later, gets recalled first. However, such clauses can also clearly affect corporate policy and strategic planning to the extent they may also deal with the definition of the job pie.

Illustratively, a number of US larger carriers in recent years have intensified use of regional jets in their service networks as part of right-sizing for smaller markets but also in the hope of being able to rely on younger and/or lower-paid pilots as have been employed by the purely regional airlines. Controversy resulted as unions negotiated terms for the ability to establish job access or preference for more senior pilots who had been flying larger jets as a condition of supporting such equipment restructuring strategy.

We also understand that international services have received increased attention in the negotiation of scope clauses with US carriers. While we lack authoritative information on the subject, not having been able to examine specific contracts (which are privileged information), we have heard that they may include subjects affecting the division of labour among international partners. For example, matters such as code-sharing policies – as well as larger and essentially capital decisions such as policy toward potential foreign investors – reportedly have been addressed in recent scope clause discussions as part of job protection strategy. Depending on how far they go, such arrangements could appear to begin to have aspects of what is known in Europe as “co-determination” (see subsection 5.4.5 below).

5.2.4 Professional Licensing and Safety Regulation of Working Conditions

As a general matter all persons directly performing safety-related functions in the US air transport system will be individually licensed and/or qualified in accordance with regulations prescribed by the Federal Aviation Administration (FAA). In view of this

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133 Note: There are of course tenure rules in institutional areas such as higher education and in the public sector that (when state and municipal employees are also taken into account) is larger in the US than many might think.

134 Examples are the long lasting discussion in the Railroad industry about eliminating firemen positions from trains with diesel-fuelled locomotives or regarding the introduction of two-person cockpits in commercial air transports.
study’s focus on mobile workers, we will confine our observations below to flight and cabin crew. The FAA of course prescribes requirements for a number of other key positions such as maintenance and repair workers, dispatchers and other ground-based operations personnel.

5.2.4.1 Flight Crew Qualifications

As set forth in Part 61 of the Federal Aviation Regulations (FARs), pilots must possess licences that include ratings for the class of aircraft, the type of aircraft being flown, and the category of flying (that is, as needed for operations under conditions of Category 1-3).\(^{135}\) To obtain an air transport pilot’s licence, applicants must be at least 23 years old and have a minimum of 1,500 hours of flying experience, including night and instrument flying, and must pass FAA written and flight examinations. The FAA also requires periodical physical and eye examinations as well as proficiency testing.\(^ {136}\)

Air transport pilots can acquire experience through military training and operations; work as commercial pilots (e.g. doing work in so-called fixed-base operations such as air taxis); private flying; and of course through civilian training schools and aviation curricula. Note: the FAA maintains oversight over flying instruction and also accredits institutions that provide it.

5.2.4.2 Cabin Crew Qualifications

As a general matter, flight attendants first qualify through taking courses in FAA-approved programmes. They will also require qualification with respect to the aircraft types being flown. Upon successful completion of training, flight attendants receive the FAA’s Certificate of Demonstrated Proficiency. Flight attendants also are required to go through periodic retraining and pass an FAA safety examination to continue flying.\(^ {137}\)

5.2.4.3 Flight Time Limitations and Age Restrictions for Flight Crews

**Flight time** - FAA rules prescribe that pilots fly no more than:

1) 1,000 hours in any calendar year;

2) 100 hours in any calendar month

3) 30 hours in any 7 consecutive days;

4) 8 hours between required rest periods.\(^ {138}\)

This rule means *inter alia* that for any international flight lasting more than 8 hours the onboard flight crew must include at least one additional pilot.

**Age restriction** – Pilots of US registered transport aircraft must be under the age of 60.\(^ {139}\) The continued timeliness of this restriction has been a matter of increasing debate, in the US

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\(^{135}\) See 14 CFR@61.3 and Part 121 FAR (governs large air transport operations) Sections 121.434 and 121.437, which also detail specific qualification, requirements.

\(^{136}\) For an excellent general summary of occupational demands see also entry for “Aircraft pilots and engineers” at the website of the US Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov).

\(^{137}\) See FAA Air Transport Operations Handbook (Order 8400.10) “Cabin Safety Related Sections” and also entry for “Flight Attendants” at the BLS website supra.

\(^{138}\) See Part 121 FAR, in particular Section 121.471, which sets forth the rules for rest periods in considerable detail.

\(^{139}\) See FAR 121.2
as well as elsewhere. Indeed it appears that ICAO will amend Annex 1 of the Convention to increase the age limit to 65 as of November 2006.\footnote{The ICAO Council adopted on 10 March 2006 an amendment to Annex 1 - Personnel Licensing that increases by five years the upper age limit for commercial pilots-in-command operating two-pilot aircraft (if the co-pilot is under 60). See Amendment 167 to Annex 1.}

5.2.4.4 Flight Time Limitations for Cabin Crew

Flight attendants can be scheduled for up to 14 hours and, with provision for supplementary staffing, for flight times up to 20 hours. Specific rest period requirements related to individual operations are prescribed in some detail; however, a general governing safety rule is that 24 consecutive hours of rest must also be given at least every 7 days.\footnote{See FAR 121.467.}

Based on the foregoing, flight attendants could spend many more hours in the air than flight crews. However, as a practical matter, flight attendant scheduling is in most cases carefully regulated through collective bargaining agreements that take into account the considerable dead time that can result in having to overnight away from home base. There may also be competition for assignments. According to the BLS, most airlines guarantee a minimum of 65 to 85 flight hours per month, with the option to work additional hours.\footnote{See BLS website cited supra.}

5.2.5 Airline Labour-Management Balance in the Current US Market: A Policy Perspective

Though a truism (but one that may still merit reflection) labour-management conflicts are about distribution of incomes and powers between these two parties. However, other parties, e.g. the general public, consumers and shareholders of publicly held airline companies are also very much affected. In the years following US airline deregulation the balance among these interests has shifted in significant if not dramatic ways and seems yet to have reached a condition of durable stability.

5.2.5.1 Points of Departure: Policy Trends of the Pre-Deregulation Period

Before the Airline Deregulation Act of 1978, another key party in the policy discussion was the Civil Aeronautics Board, which regulated both market access (by allocating route licences) and approved prices that could be charged to consumers. In such a regulatory environment, costs were a significant policy consideration and the key rationale in any proposals to authorize increased fares.

The decades immediately following World War II were also a period marked by periods of so-called “cost-push” inflation. Under the prevailing system, the regulated airlines were not under today’s market pressure to control costs and often in position to pass-through the costs of increased wage rates in their fares. During the period 1969-79, the average annual wage increase in compensation per employee in the US airline industry was 9.9% (compared to an 8.1% average for all US industry).\footnote{Kaps, 203.} However, it should also be noted that the airlines in this period were also reaching the high crest of productivity gains that marked the post-War period.

Kahn speaks of four waves between the late 40s and the 70s, as the industry moved first from DC-3 size and range aircraft, to larger and faster props such as the DC-6 and DC-7 (also capable of long haul international operations), to narrow body jets and then finally to

140 The ICAO Council adopted on 10 March 2006 an amendment to Annex 1 - Personnel Licensing that increases by five years the upper age limit for commercial pilots-in-command operating two-pilot aircraft (if the co-pilot is under 60). See Amendment 167 to Annex 1.
141 See FAR 121.467.
142 See BLS website cited supra.
143 Kaps, 203.
wide-body jets in the 1970s. Huge productivity gains in terms of speed, range and capacity occurred over a short space of time.

These gains would seem logically to have resulted in significant returns to capital, and indeed leading US airline stocks were still thought of, at least by some, as safe-havens for conservative investors in this period.\textsuperscript{144} However, the new aircraft also resulted in significantly increased labour productivity, and in this regard an early tradition established through ALPA’s representational work in the 1930s, that of federal government recognition of the so-called Decision No. 83 of the National Labor Board, worked to enable significant capture by pilots of productivity gains. Decision No. 83, whose details are hard for outsiders to grasp, basically related pilots’ compensation and working conditions to aircraft mileage as well as time actually worked. Airline managements fought unsuccessfully to get rid of the mileage component.\textsuperscript{145}

5.2.5.2 Trends in Labour-Management Relations and Policy Following Deregulation

As is well-known and will not be repeated here, the US airline industry has experienced turbulence since 1978, with numerous start-ups, expansions, contractions, failures and some, very notable, successes among its providers of air transportation.\textsuperscript{146} For the users, fares have fallen significantly and new forms of service have also emerged (as some others may have disappeared). During this restructuring, which is still in process, the national system, has continued to operate robustly.

For US airline employees, periods of significant instability have resulted. Failures of companies have resulted in losses of jobs and curtailment, for some severe, of pension rights. Those who had invested their savings in the company itself will, along with public shareholders, have had such investments entirely or largely wiped out consequent to bankruptcy or reorganisation.

A great many airlines have fundamentally restructured through mergers, acquisitions or reorganisations under the bankruptcy law – events that have worked to annul or significantly modify agreements on wages and benefits.

Employees have agreed in a number of cases (and particularly in down cycles, such as in the period 2001 to present) to accept at least temporary reductions in wages. A marked if not general trend has also occurred in the direction of greater employee participation in restructuring, as employee groups, especially pilots, have accepted risk equity participation in restructured enterprises in exchange for wage cuts.

Whether airlines belong in the so-called “legacy” group (implying notably that they carry a legacy or burden of fixed costs compared to young and inexperienced operators) or to the so-called “low cost” category, all, as we have shown, are under US federal law open to voluntary organisation and employee representation regardless of size or business plan if they engage in interstate or international commerce.

\textsuperscript{144} Companies such as Delta and Northwest Airlines, for example, used to be spoken of as “widows and orphans” stocks.

\textsuperscript{145} Kahn outlines successful political efforts by ALPA during the 1930s to attach the Decision No. 83 concept of compensation to laws governing airmail contracts and to route authorities granted by the CAB. See Kahn, 101-104. Kaps also devotes case study analysis to the political and legal manoeuvring leading to Decision No. 83, see Kaps 42-55.

\textsuperscript{146} Federal Express and Southwest Airlines are examples of companies whose national operations were made possible by airline deregulation and which have defied the cyclical nature of the airline business in achieving near continuous dynamic growth of turnover, profits and market value. These companies have also steadily increased employment.
Any airline, whether long established or relatively new, will – especially in an open entry market – be extremely vulnerable from a commercial perspective to work stoppages. The brand will suffer (perhaps irreparably), as customers have to go elsewhere. Thus, as long as cash flows are adequate, skilled employees especially will enjoy leverage to obtain a fair share of incomes. The test of a secular shift in power relations will depend on whether that shift occurs in good times as well as bad. A key question then is whether wages, rules and work conditions at the successful airlines remain positive from the employees’ perspective.

The determination of net costs and benefits for employees, may therefore depend on longer term effects such as profitability as well as total employment in the industry and average compensation levels. We analyse these quantitative aspects in chapter 9 of this report.

5.2.5.3 Final Query: Does the Railway Labor Act Continue to Make Sense?

Kaps, other scholars and observers that he cites, and others with whom we have spoken (including several interested European observers 147) question the continued need and relevance of the RLA. They suggest that either the US needs a modern law or that the National Labor Relations Act (whose provisions we have not examined here) would provide an adequate alternative to safeguard the interests of employees in the airline and railroad industries, as they would then enjoy the same status as all other private sector employees in the US.

On the other hand, as we have shown above, the first purpose of the RLA is not to protect employees but to protect the US national interest by providing a mechanism to defer if not prevent disruptions of the interstate and international transportation system. In this context, the last two US presidents have made use of its powers. Thus, whether the RLA could be abandoned or should be modified will, indeed must, be settled by American national debate.

As a final observation, while arguably at least somewhat inconsistent with it, the RLA did not slow down, much less stop, US airline deregulation. It may or may not have significantly influenced the distribution of earnings to the benefit of employees.

The largest question that both critics and advocates may have to put to themselves is: to what extent its deliberate inflexibilities with respect to amendment of contracts have encouraged the increased if not habitual recourse to Chapter 11 Bankruptcy proceedings by troubled carriers not only as a tool to shed debt and equity obligations, but also as a method of perhaps unavoidable choice to walk away from such contracts?

5.3 US REGULATION OF THE USE OF FOREIGN LABOUR IN AIR TRANSPORT

This section will examine relevant laws and rules relating to alien entry and right to work in the United States. The implications for mobility of labour in the air transport sector will be described and analysed.

As a general matter an alien with rights to permanent residence (or a landed immigrant) in the US enjoys employment rights comparable to citizens. Should a foreign carrier employ such a person (e.g. because of his/her language and cross-cultural skills) from a legal perspective it would essentially be the same thing as hiring an American citizen for that

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147 It will be recalled that employees of establishments of Community carriers in the US fall under the jurisdiction of RLA.
work. Such persons are obviously also free to apply for work on US airlines. In the latter case, they would need to meet the same professional qualifications and licensing rules (applied by the FAA or other government agencies) to US citizen employees.

Thus, as in the case of rules prevalent in the EU (see 5.5 below), we shall focus here on the scope provided for aliens who are temporary visitors to perform work in the air transport sector, for example in support of international air services. The rights of such alien workers are to some degree addressed in air services agreements under Articles that deal with recognition of foreign licenses and with the right of the airlines of a party to station staff in the territory of the other party to support its operations. In general, however (and as the text below makes clear), the national laws are controlling, and in the end determinative, with respect to which individuals get to do what kind of work and for how long.

5.3.1 US Regulations on Entry and Stay Procedures

The air services agreements of the United States contain an Article on “Commercial Opportunities” that typically contains the following language:

2. The designated airlines of each Party shall be entitled, in accordance with the laws and regulations of the other Party relating to entry, residence, and employment, to bring in and maintain in the territory of the other Party managerial, sales, technical, operational, and other specialist staff required for the provision of air transportation.

The current US Open Sky model agreement also contains the following passage in its Article on “Safety”:

1. Each Party shall recognize as valid, for the purpose of operating the air transportation provided for in this Agreement, certificates of airworthiness, certificates of competency, and licenses issued or validated by the other Party and still in force, provided that the requirements for such certificates or licenses at least equal the minimum standards that may be established pursuant to the Convention. Each Party may, however, refuse to recognize as valid for the purpose of flight above its own territory, certificates of competency and licenses granted to or validated for its own nationals by the other Party.

Elsewhere in the Agreement, provisions also make clear that foreign flight crews (along with passengers and goods transported) are subject to the national laws on customs and immigration upon entering US territory.

In the case of the United States, the governing law is the Immigration and Nationality Act (INA) of 1952 as amended. The INA in Section 101(a)(15) establishes rules and categories for the admission of “non-resident aliens” who may be granted terms of temporary stay. In addition to the tourists and business people (who draw no remuneration from US sources for their work on US soil) who make up the great bulk of visitors, the law enumerates a wide range of particular categories.

Several categories are or could be relevant for the staff of EU airlines who operate to and who might (under an OAA) wish to operate in the United States. Of these, the one most

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148 A status difference might only occur if the employer wished to transfer the employee to a third country. In this case, the employee would risk losing their permanent residency rights if they broke their US residence for a period in excess of one year.

149 The language of the two cited Articles has been taken over (verbatim in the case of Commercial Opportunities and with a minor procedural change in the case of Safety) in the EU-US Draft Air Transport Agreement agreed ad referendum on November 18, 2005.
familiar to Community carriers is the requirement that all their crew members (absent any US citizens/dual nationals they might be employing) possess individual US visas.\textsuperscript{150} Another visa category that applies to most airline expatriate staff assigned for management and operation of stations in the US is the so-called Treaty Trader visa. Below we review specific aspects of these visa categories as well as of the so-called Treaty Investor visa that would apply for relevant staff in the case of direct investment in a US carrier, as would become possible in an Open Aviation Area.

- **Visa category D. “Alien crewman”**. Applies to all flight and cabin crew who are aliens, do not have status as permanent residents of the US and who work in international transportation. In first instance “D” visa holders will be employees of foreign flag operators. Theoretically, however, a US airline (unless constrained by collective bargaining agreements) could employ aliens on its services between the United States and other countries. These would be eligible to apply for the D visa as long as they resided outside the US.\textsuperscript{151} However, the INA explicitly constrains the use of foreign crews by US carriers during labour disputes. See Section 214(d) INA.

- **Visa category E-1. “Treaty Trader.”** Treaty traders are qualifying foreign national employees of companies whose chief purpose in the US is to engage in international trade (a condition which any carrier primarily engaged in the exercise of international traffic rights presumptively meets) and who are needed to provide skills (such as ability to perform specialised work and communicate professionally in native languages other than English) not readily available in the US labour market.

- **Visa category E-2. “Treaty Investor.”**\textsuperscript{152} Treaty investors are foreign persons or businesses that create businesses in the United States. Regulations may set certain minimum financial thresholds for qualifying investment. Except for their principals, such companies do not enjoy any unique privileges with respect to bringing in employees beyond the entitlements of other US companies similarly situated to import temporary workers or trainees.\textsuperscript{153}

In the particular context of the EU-US relationship it is also important to understand the basic attributes of the US legal and bureaucratic process on admission and stay of temporary workers. First, one needs to be clear that the visa waiver policies, which the US Congress has authorised for temporary visitors for business and leisure from most European countries, do not cover the activity of the temporary workers described above. Thus all of them, including crewmen just staying overnight between flights, require visas.

\textsuperscript{150} This stands in sharp contrast to EU practice. See subsection 5.5.3.

\textsuperscript{151} Should a US airline employ locally-stationed mobile workers to work on route segments taking place entirely outside the US (as has in fact occurred in a number of cases) such workers would of course not require US visas unless they also entered the US. Depending on their function they might, however, require licensing by the FAA for any services on a US flag aircraft. Moreover, the ability of the airline to employ non-US domiciled staff might also be conditioned by its agreements with its US-based employee representatives.

\textsuperscript{152} The term “treaty” as applied to the E-1 & E-2 visas makes basic reference to FCN Treaties that regulate trade generally and which typically also provide (in the case of most industries) for national treatment of investors. While US ASAs are generally concluded in the form of Executive Agreements (i.e. are not submitted to the US Senate for ratification and therefore do not meet formal treaty status), de facto US practice has regarded ASAs (which do assure reciprocity for US carriers overseas) as sufficient implied context for treaty trader visas as long as the employing company keeps its business focus on international trade.

\textsuperscript{153} In addition to the categories mentioned above there are a number of specialised visas for which a foreign person might qualify and be temporarily employed. These include several categories of so-called “H” visas under which an employer petitions the US Department of Labor for the right to employ a person of unusual skills or for unusual needs; so-called trainee visas and visas to cover certain inter-company transfers (executive visas).
Entry into the US with a visa, moreover, is a two-step process. First the applicant must obtain the visa from a US consular officer, an officer of the US Department of State, at an embassy or consular post overseas. Then he/she must present the visa at the port of entry to an immigration inspector, an officer (formerly of the US Department of Justice) now of the new Department of Homeland Security who is required by law independently to verify the applicant’s admissibility.

The consular officer, if he or she determines that the applicant is eligible under the INA, will issue a visa valid for a certain term (as determined by the implementing regulations of the US Foreign Affairs Manual [FAM] and the judgement of consular officer). The visa will be granted for a certain term and may also be limited in the number of entries permitted. The immigration inspector if he or she approves entry will also approve a term of stay. Visitors who overstay without approval are subject to deportation and are likely to experience difficulties in future applications for visas.

Terms of stay can be extended or renewed (depending on currently governing implementation rules) by immigration officers. These officers, however (and unlike their counterparts in a number of other countries), cannot renew visas or provide re-entry permits to aliens who are not legal permanent residents. Thus an E-1 or E-2 visa holder, who may in fact reside and work in the US for a number of years, will need at various times both to renew the visa (at the nearest US consular office that will accept the application – this usually means the home country) and obtain extensions of stay in the US.

These are not trivial processes and they can become complex and time-consuming, especially since the Department of State, in the aftermath of September 11th, has revoked the so-called visas-by-mail procedure that allowed well and favourably known individuals or companies (on behalf of employees) to obtain visas routinely without personal appearance of applicants (who now must all be interviewed).

In sum, the spirit of deregulation (and “getting government out of the way”) which has infused the Open Sky air transport policy is not mirrored in the realities of meticulous travel control rules which the US, notwithstanding its historic and continuing openness to immigration, applies to temporary foreign workers in a services field like air transport. This is not to say that such workers cannot be employed but only to suggest that the administrative costs of doing so will (other factors being equal) clearly disadvantage their use vis à vis permanent residents and citizens of the United States.

5.4 REGULATION OF AIRLINE LABOUR IN THE EU

This section considers relevant labour and social regulations on the European side as they affect the operation of air services within the EU and services from and into the EU. We focus on areas of regulation or governing practice where one can:

a) reasonably deduce a general or predominant Community approach (even as implementation may remain a matter of Member State competence); and

b) where comparison to American rules and practice seems relevant and important.

Systematic and detailed examination of individual Member State rules and procedures, their history and current practice is beyond the scope of work of this report.

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154 We exclude here comparison to special guest worker programmes, for example, fruit and vegetable pickers recruited from neighbouring countries.
Thus our examination is necessarily selective and will be issues-focused. Areas to be examined and specific questions to be addressed are as follows:

- Regulations affecting the quality of work, the qualifications needed to perform it and the governing conditions with respect to working time as they affect mobile workers, including consideration of whether such controls and conditions are analogous to the US case

- A review of the rules and trends governing labour mobility within the EU including consideration of the recent performance of airlines who operate from multiple points of establishment within the Community

- Current circumstances and indicated trends with respect to the role of collective bargaining and organisation of labour representation, including the question of the emergence of European level works councils

- European standards for the settlement of labour disputes

- A comparison of rules governing termination of employment, that is “hire and fire” with some reference to current policy debate as epitomised in the term “flexicurity,” and including summary review of job security questions that arise incident to bankruptcies or mergers

- A discussion of the scope under Community and national laws for use of foreign labour (as in wet leasing) and access of foreign professionals to the EU labour market.

The legal setting for this analysis is not simple and simplistic judgements are dangerous. Both strong regulatory and deregulatory principles are involved. A core goal of the Community is to establish freedom of all EU citizens and lawful permanent residents to seek work anywhere within the EC.

An equally important goal is to enhance competition and high standards of quality control. Freedom of employees to organise and establish employment conditions is a basic right that is anchored in the constitutions of many Member States and supported by Community measures, as well as, notably, by the Charter of Fundamental Human Rights of the European Union.

Thus we must approach labour and social regulations from the perspective of a range of Community principles and policies. In addition, our analysis will be underpinned with references to international law and case law, and to other branches of law, including but not limited to the law on human rights, immigration regimes and tax laws. Specifically, we have focused our attention on:

- Regulations - principally in the form of Directives – affecting labour relations at the Community level, with special reference to issues affecting the air transport sector;

- Case studies involving national experiences with respect to hiring of foreign crew, posting of personnel for a limited period of time, and immigration regulations.

155 The legal status of the Charter, signed by Council, Parliament and Commission on 18 December 2000 is not entirely clear inasmuch as its adoption was foreseen as part of the proposed EU Constitution. However, at minimum it expresses basic and general consensus with respect to standards. Chapter IV “Solidarity” sets forth the basic principles governing employee rights, including inter alia: collective bargaining and action (right to strike); protection against unjustified dismissal; fair and just working conditions; social security, social assistance and health care.
This analysis recognises that the interface between labour conditions and safety standards has been unified by the JAR-OPS of the JAA, and by Community law (as to which see below). Bilateral air services agreements and other rules of international law also influence the regulation of employment in the civil aviation sector.

This said, national laws remain fundamental in the area of employment. While it is to be expected that the Community will continue to develop strategies for EC labour law and EU employment policy, the central issues like pay and trade union rights are excluded from Community competence. In addition, civil law and common law approaches in various EC states affect labour law and relations.

5.4.1 Quality Control Regulations (e.g. in the Area of Safety) and their Impact on Airline Labour

Safety regulation in the European Community has proceeded through several levels.

Prior to the advent of the Joint Aviation Authorities (JAA) in Europe, each sovereign state, based upon standards and recommended practices agreed and updated from time to time in ICAO, independently developed and implemented its own rules pertaining to the certification, maintenance and operations of aircraft and the licensing of employees working in aviation.

Under the JAA (whose membership includes all EC Member States), European states have adopted and updated so-called Joint Aviation Requirements (JARs) so as to harmonize their national rules. This procedure has produced a much more consistent method of safety management that did the former regulatory schemes based upon national regulation in that area. The structure of the JARs resembles that of the US-made FARs with the exception that the ordering takes on a more logical structure primarily because of their more contemporaneous creation.

Much emphasis is placed upon harmonising the JAA regulations with those of the USA. In fact, these regulations have contributed to harmonising safety rules with those of the US. Both JARs and FARS well exceed the minimum standards drawn up by ICAO.

Emerging role of EASA. In 2002, EC Member States have decided to transfer functions and tasks from the national and the JAA level to the European Community by the establishment of the European Aviation Safety Agency (EASA), as to which see also the next subsection.

5.4.1.1 Personnel Licensing Rules and Regimes for Flight and Cabin Crew

For the purpose of this study, licensing rules are particularly relevant. Minimum requirements for pilots operating in the member states have been laid down in JAR-FCL

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156 See Articles 136-145 of the Treaty.
157 The Joint Aviation Authorities (JAA) is an associated body of the European Civil Aviation Conference (ECAC) representing the civil aviation regulatory authorities of a number of European States who have agreed to co-operate in developing and implementing common safety regulatory standards and procedures. This co-operation is intended to provide high and consistent standards of safety and a ‘level playing-field’ for competition in Europe. Much emphasis is also placed on harmonising the JAA regulations with those of the USA. See: http://www.jaa.nl/introduction/introduction.html
158 See Regulation 1592/2002 “on common rules in the field of civil aviation and establishing the European Aviation Safety Agency”. The principal objective of EASA is the promotion of a high form of safety in the civil aviation sector, inter alia, by the implementation and application of common standards.
Parts 1-4. Part 1 concerns technical proficiency and licensing requirements of fixed wing aircraft pilots.\textsuperscript{159}

Part 1 defines a range of qualifications and licensing requirements for private pilots, commercial pilots (CPLs) and air transport pilots (pilots-in-command, ATPLs). Analogous to the US requirements established by the FAA,\textsuperscript{160} European pilots-in-command must have 1,500 hours in flight experience as well as possessing ratings for the type of aircraft to be operated and for requisite conditions of operation. Co-pilots must possess 200 hours of qualifying prior experience.\textsuperscript{161}

The JARs also define educational requirements as well as detailing procedures for ongoing training and maintaining of skills. They also set forth flight crew age requirements. CPLs must be 18 or older; ATPL’s 21. Pilots aged between 60-64 may operate as part of crew in which one pilot is less than 60. Persons aged 65 and older are not permitted to pilot commercial air transport aircraft.\textsuperscript{162}

**Cabin Crews.** JAR-OPS Subpart O sets forth a comprehensive set of detailed obligations of commercial aircraft operators to ensure that cabin staff are qualified to provide professional safety and emergency response services. Employees must be at least 18 years of age, medically qualified and undergo systematic training (and periodic retraining) in a range of areas and hold a “certificate of professional competence”.\textsuperscript{163} The regulations also specify qualification requirements for operations (in smaller commercial aircraft) in which there is a single cabin crew member and for the senior member of the cabin crew in operations of larger aircraft. The latter are more extensive, require training for supervisory responsibilities and at least one year prior experience as a cabin crew member.

The question of strengthening cabin crew professionalism has received increased emphasis in the EU in recent years. The European Commission has called for creating “minimum requirements for cabin crew” as a step “to improve aviation safety.” Such requirements would be addressed in the amendment of Regulation 3922/91 (see below).\textsuperscript{164} The European Transport Workers Federation (ETF), representing cabin crews, has welcomed the Commission’s initiative to recognise “the crucial role of cabin crews.”\textsuperscript{165}

Regulation 3922/91 (as variously amended) provides the basis for harmonisation of technical requirements and administrative procedures in the EU. EU Regulation 1592/2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency (EASA) has thus also become relevant. This regulation foresees the development, monitoring and application of safety standards by EASA not only in areas such as airworthiness but also in flight standards and operational procedures.\textsuperscript{166}

\textsuperscript{159} Part 2 concerns requirements for rotary wing aircraft. Part 3 deals with medical requirements. Part 4 covers flight engineers.

\textsuperscript{160} See Section 5.2.4 above.

\textsuperscript{161} See JAR-FCL Part 1, Summary, Section 1.

\textsuperscript{162} The JARs, it may again be emphasised here, while not having the ultimate legal force of EC Directives, function in a similar way in that signatories to the JAA Agreement are obliged to implement international law commitments in their national practice. Thus Member States enjoy scope to go beyond the common rules. For example, France enforces the age 60 rule more rigourously and does not waive it for individual flight crew members between 60-64 per the provision cited above.

\textsuperscript{163} See JAR OPS Subpart O Section 1.995 (c). The phrasing of the requirement leaves open as to whether the certificate is issued by the operator or by a competent regulator. The conventional practice has been the former.

\textsuperscript{164} See Communication from the Commission to the European Parliament 2000/0069 (COD).

\textsuperscript{165} See ETF ‘Press Area’ statement of 7 July 2006 at www.itfglobal.org/etf.

\textsuperscript{166} See Article 7: Air operations and flight crew licensing.
5.4.1.2 Safety Regulation of Working Hours: Flight Time and Duty Limitations

The subject of flight and duty time limitations has been on the agenda of EC policymakers since at least 1990, when the European Commission made its first proposals. Since then, it has been moved between the European Commission, the European Parliament, national policymakers, stakeholders, and the JAA. Labour and professional organisations, e.g. those who concluded the European Agreement on working time of mobile staff in civil aviation that was subsequently embodied in Directive 2000/79 (discussed below), have strongly participated in this debate on safety rulemaking.\footnote{The European Cockpit Association takes the position that FTL’s and questions such as the age limitation rules for flight crews should be determined on the basis of the best scientific evidence. Source: Discussions with the European Cockpit Association at Brussels, 28 February 2006. See also like positions as expressed by IFALPA, Glenn Francis, “EU Adopts Flight Time/Duty Time Limitations,” The Airline Pilot, February 205 at 34.}

The intended regulation stems from Sub Part Q of JAR OPS 1, which is attached to a Proposal for amending Council Regulation 3922/91. Unlike the US FARs (see subsection 5.2.4 above), which set forth flight and duty period (FDP) restrictions for US flight and cabin crews separately, the JARs speak of “air crews” as a general category basically covering both together. That said, several subsections of the Requirements make distinctions for “cabin crews” that allow such staff to have schedule times computed a bit differently. Importantly, Section F of Sub Part Q titled “Flight Duty Period Extension” in Subsection 1.2 states: “An Operator will agree with the Authority [the national regulator] the legal minimum in-flight rest required by cabin crew member(s) when the FDP [daily flight duty period] goes beyond the limitations in D above.”\footnote{Note: Section F also provides that in seeking any extensions of duty time, the Operator must demonstrate to the Regulator that safety would not be compromised. Rest time requirements (in Section F of Subpart Q) do not, moreover, distinguish between flight and cabin crew. The latter would not be permitted except to the extent that they have existed in previous national rules which the JARs grandfather as long as they remain consistent with safety and evolving scientific knowledge. However, pursuant to the proposed amendment of Council Regulation 3922/91, Member States will also be required to submit proposed extensions of FDP or reductions of rest periods to the Commission for review and approval. See Subpart Q, Section F (1.3.1) and Article 8a.}

The principal elements of Sub Part Q (as set forth in Section D “Maximum Daily Flight Period” and Section E “Rest”) are:\footnote{See also: www.ainonline.com/issues/01_05/01_05_euroflight_86.html}

- No more than 190 duty hours in any 28 consecutive days and no more than 60 duty hours in any seven consecutive days;
- A limit of 900 block time hours in a calendar year and no more than 100 block hours in any 28 consecutive days;
- A maximum of 1,800 hours of duty time per year;
- A maximum daily flight duty period (FDP) of 13 hours reduced to as low as 11 hours under prescribed conditions;
- Detailed requirements regarding minimum rest periods before starting an FDP as well as a weekly rest period minimum of 36 hours, including two local nights, so that there will never be more than 168 hours between the end of one weekly rest period and the start of the next.

\textit{“With regard to the basic principles, applicability and essential requirements for the fields covered by Article 1(1)(b), the Commission shall, as soon as possible, submit proposals thereon to the European Parliament and to the Council.”}
The above regulation is not expected to enter into force before 2007 (through an adoption of the amended version of Regulation 3922/91). We understand that application of its specific terms in the period to 2009/2010 will also be provisional in that review of its effect during a transitional period is foreseen. It follows from provisions of Council Directive 2000/79 (discussed below) that the amended version of Regulation 3922/91 incorporating Sub Part Q will henceforth form the basis for all regulation of flight and duty time limitations in air transport from the safety perspective.

Generally speaking, the proposed regulation for FDP appears consistent with the minimum requirements made under Directive 2003/88/EC. However, the proposed regulation for FDP includes a couple of variations, such as the increase of the FDP by one hour in case of special circumstances so that such FDPs may fall outside the minimum requirements set out in Directive 2003/88/EC.

Directive 2003/88, which replaces and repeals Directive 93/104/EC, would, however, not be governing where “other Community instruments contain more specific requirements relating to the organisation of working time for certain occupations or occupational activities.” Directive 2000/79/EC, as to which see the next subsection, is such a Community instrument, laying down more specific requirements for the air transport sector.

5.4.1.3 The European Agreement on Working Time of Workers in Civil Aviation

While the position of the safety regulator on a reform of key details of flight time limitations remains subject to some debate, minimum standards on working hours within the EC, both generally and with respect to air transport particularly, have been in effect for some years. For example, Council Directive 2000/79 implements an agreement of 22 March 2000 on the organisation of working time of mobile staff in air transport concluded between the European Airline Association (AEA), the European Transport Workers’ Federation (ETF), the European Cockpit Association (ECA), the European Regional Airline Association (ERA) and the International Air Carrier Association (IACA).

The agreement, which also provides for entitlements to safety and health protection, sets maximum annual work time at 2,000 hours, of which not more than 900 hours may be used for actual flying duties, including time for waiting and taxiing on runways prior to take off and after landing. Subject to other provisions of the agreement and local law, mobile staff may have at least 7 local days in each calendar month free of all duty and standby, and at least 96 local days in each calendar year.

The agreement does not lay down specific provisions on flight and duty time limitations, leaving that subject to future Community safety legislation (see previous subsection). The driving motive behind this agreement appears to be concern for sound and uniform health and social practice at the European level.

170 As we prepare this report the Council has approved a provision that EASA, assisted by medical and scientific evidence, is tasked to review the FTL’s as now set forth and make recommendations for their improvement which can then be adopted through Comitology procedures (without further formal reference to Council and Parliament) by the Commission. The regulation in July 2006 completed its 2nd Reading in the Parliament. Observers believe it will be formally adopted to become effective by the end of 2006. The Parliament also voted in Plenary that the scientific evaluation (which the European Cockpit Association believes will support modifications to rest period rules) is to be completed within two years (as the ECA had urged).

171 There are FDP-related provisions, which are sector specific that could appear to be in conflict with the minimum requirements, for example with respect to minimum daily rest periods, of Directive 2003/88/EC. Hence, the compatibility between Sub Part Q and the Directive 2003/88/EC may have yet to be determined, when the provisions of Sub Part Q have been definitely agreed upon.

172 See Article 14 of Directive 2003/88/EC.
5.4.2 The Right of Association and the Organisation of Employees in Air Transport from a Community Perspective

**General setting.** Trade unions in Europe, and the establishment of collective labour agreements, are still very much organised on a national basis. The same has been true until recently of works councils, an institutional and legal form not typical in the United States. However, institutional and legal changes appear to be underway in certain sectors.\(^{173}\) The influence of Community law on the subject is increasing, as symbolised by the effect and scope of the EU Charter of Fundamental Rights.

**Community law.** Though the EC Treaty itself does not regulate the right of association and the right to strike,\(^{174}\) Community laws implicitly and explicitly recognise such rights; for example, they expressly grant migrant workers equality of treatment in relation to membership of trade unions and the exercise of rights of association.\(^{175}\) Principles laid down in the EU Charter of Fundamental Rights (in this subsection also referred to as: the EU Charter) recognise at least three fundamental rights, namely:

- the freedom of association (see Article 12(1));\(^{176}\)
- the workers’ right to information and consultation within the undertaking (see Article 27);
- the right to collective bargaining and action (see Article 28).

Although the European Council approved the EU Charter at Nice in December 2000, it was limited to a political declaration and the Charter did not receive a formal legal status. However, if the Constitutional Treaty is ratified, the Charter will have legally binding force.

On the one hand, the EU Charter is also an independent source of rights, putting pressure on EU institutions to promote a European social model. On the other hand, laws and policies of the Member States may differ as to the scope of the above rights, such as the extent of trade union activities, the legal status for collective agreements, the right to strike and the formation of autonomous organisations.

Hence, Article 12 may include rights, which go beyond what is provided in national law. Similarly, national law may provide rights, which go beyond what is provided in Article 12.

Directive 2002/14, which establishes a general framework for informing and consulting employees in the EU, is designed to draw up a framework setting out minimum requirements for the right to information and consultation of employees in undertakings or establishments within the Community. The practical implementation for information and consultation procedures shall be made in national law, which may also designate the representatives of employees for this purpose. Thus, Member States have opted for use of the mechanism of the works council (see subsection 5.4.4 below), trade union representation, representation of employees made in general meetings, or a combination of such representations.

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\(^{173}\) As identified by Erika Szyszczak, EC Labour Law (2000), at 41, at which page the author mentions the European Metal Worker Trade Union.

\(^{174}\) See Article 137(5): “The provisions of this article shall not apply to pay, the right of association, the right to strike or the right to impose lock-outs.”

\(^{175}\) See Article 8 of Regulation 1612/68/EEC

\(^{176}\) “Everyone has the right to freedom of peaceful assembly and to freedom of association at all levels, in particular in political, trade union and civic matters, which implies the right of everyone to form and to join trade unions for the protection of his or her interests.”
Since Directive 2002/14 sets out minimum requirements, Member States may afford greater protection to workers in the context of such information and consultation procedures. In general, Community directives affecting employee rights contain articles making clear that their provisions are intended to create a threshold upon which Member States may add (but not subtract) protections. A typical provision (taken in this instance from Directive 2001/23 EC, see also subsection 5.4.7 below) reads:

This Directive shall not affect the right of Member States to apply or introduce laws, regulations or administrative provisions which are more favourable to employees or to promote or permit collective agreements or agreements between social partners more favourable to employees.177

5.4.3 European Regulations affecting Labour Organisation of Mobile Air Transport Services

Since the implementation of the Third Package of air transport liberalisation in the EU of 1992, a number of Community airlines have initiated intra-EU services from points outside their home Member State. In taking advantage of the rights granted by the Third Aviation Package, they act no differently than many providers of other services within the EU. As will be discussed below, these new service-providing establishments must conform to rules (which have been a matter of considerable recent debate) with respect to labour and social regulatory jurisdiction.

In this section we discuss Directives governing the provision of cross border services through new establishments with respect to their implications for airline labour. Inasmuch as there was some concern in recent years that the accession of new Member States (with significantly lower national wage rates) might lead to increase of such establishments for cost reduction purposes, we also consider issues of so-called “flagging out”. Issues for employees resulting from transfers of enterprise control will, however, be dealt with separately when examining regulations governing takeovers or with respect to employee rights in bankruptcy proceedings in Subsection 5.4.6 below.

5.4.3.1 The Law Applicable to Employment Contracts, taking into account Airline Licensing Conditions

On the one hand, the state responsible for licensing of air carriers and flying personnel (air crew), and grant of the AOC,178 will be the state in which the airline or the lessor has its place of business registry, which in most cases will be the principal place of business. However, Regulation 2407/92 on licensing of air carriers does not define the term “principal place of business”, which has been interpreted by the ECJ (as to which see below) and has to be determined under national law.179

It is appropriate at this point to introduce Article 6 of the Convention on the Law Applicable to Contractual Obligations (henceforth also referred to as: the Rome Convention, made in 1980) into the subject matter. This Article provides that in all cases where a choice of law has not otherwise been specified,180 the contract between employer and employee will be governed by:

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177 See Article 8 of the cited Directive.
178 As to which see sub section 5.4.1.1, above
179 Leaving that definition to national law; see Article 4(1)(a) of Regulation 2407/92
180 The Rome Convention addresses a full range of contractual issues; that is, employer-employee relationships are just one of the areas that it regulates. Inter alia it provides that parties to a contract may include a choice of national laws to
a. the law of the state in which the employee “habitually carries out his work in performance of the contract, even if he is temporarily employed in another country”; 

b. if the employee does not habitually carry out his work in any one state, by the law of the state in which the place of business through which he was engaged is located;

Unless it appears from the circumstances that the contract is more closely connected with another state, in which case the law of that state shall govern the contract. 181

Ground staff of an airline will habitually perform the contract in one state, whose laws are made applicable to the contract of employment between the two parties by virtue of the above paragraph (a). If airline staff is posted temporarily abroad— the Directive 96/71 on the posting of workers 182 may come into play, that is, if such airline staff are posted abroad in the framework of provision of services subject to the prerequisites set out by Directive 96/71. 183

Air crew will not habitually perform the contract in one state, especially if they are employed by airlines based in smaller states. If air crew would be hired to fly domestic routes only, they are subject to the above paragraph (a). However, as said before, in most cases air crew will fly abroad, so that the above paragraph (b) may be applied to their employment contract. Paragraph (b) determines that the law of the state in which the “place of business” is located through which the employee was engaged determines the applicable law.

As stated above, the terms “central administration”, “principal place of business” (as used in Regulation 2407/92) and “place of business” are not defined by the legal instruments mentioned in this sub paragraph. However, the ECJ has shed some light on their interpretation. 184 Hence, in the final analysis, courts will have to decide how these terms must be interpreted, taking into account the above considerations. Pursuant to their decisions, the law applicable to employment contracts can be clarified.

5.4.3.2 The Posting of Workers in another EC Member State

Directive 96/71, concerning the posting of workers in the provision of services (in this subsection referred to as: the Directive), is designed to facilitate the cross border provision of services and to protect the employee’s rights during the period of posting. The aim of the Directive is to reconcile the companies’ right to provide transnational services under Art. 49 of the EC Treaty, on the one hand, and the rights of employees temporarily posted abroad to when providing such services, on the other hand.

The ability to post employees in another EC Member State is a timely issue for European air carriers, especially the new low cost entrants. Such carriers, Ryanair and easyJet being

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regulate disputes, for example, that might arise under a contract. In the case of employees, however, this freedom of choice may, however, not be exploited to undercut minimum protections and rights as might generally prevail at locations where the work is to be performed (See Article 6(1) of the Rome Convention). EC Directive 96/71, examined separately below, deals explicitly with the position of posted employees in such situations.

181 See Article 6(2) of the Convention on the Law Applicable to Contractual Obligations (Rome 1980)

182 As to which see sub section 5.4.3.2

183 By virtue of Article 20 of the Convention on the Law Applicable to Contractual Obligations (Rome 1980), granting precedence of Community law

184 See, the cases C-81/97 Daily Mail, C-217/97 Centros, C-208/00 Überseering BV, C-55/94 Gebhard and C-476/98
primary examples, make significant use of the freedom to provide services anywhere in the European Union. The provision of such services may or may not involve the posting of workers from one Member State to another.\(^\text{185}\)

The labour law-related issues governed by the Directive, if they fall under collective labour agreements, concern the following:\(^\text{186}\)

- Maximum work periods and minimum rest periods;
- Minimum paid annual holidays;
- Minimum rates of pay, including overtime rates;
- Conditions of hiring out of workers;
- Health, safety and hygiene at work;
- Protection of employment of pregnant women;
- Non-discrimination related principles.

The Directive thus applies to employees normally located in one Member State carrying out work for a limited period of time in another Member State in the framework of the transnational provision of services. Taking into account the scope of this study, it is also important to note that the provisions of the Directive also apply to non-Community employers' employees, laying down the “national treatment” principle. Non-EC undertakings - airlines - may not enjoy more favourable treatment than undertakings - airlines - established in a Member State.

5.4.3.3 Practical Issues of Labour Law Jurisdiction: The Ryanair Charleroi Case

The question regarding the relationship between corporate choice of establishment, on the one hand, and the application of labour laws, on the other hand, is a topical one in the EC. This is evidenced by a case involving Ryanair, which has its biggest operational basis by far at London’s Stansted Airport (from where it flies to 88 destinations, compared with 52 from its original hub in Dublin). Yet Ryanair has its principal place of business in Ireland. Hence, it receives its operating licence and AOC from the Irish Aviation Authorities and Irish labour laws are applied to staff based in or operating from Ireland. This anomaly has created pressures for the application of the labour laws of other Member States to Ryanair staff who regularly work at such locations.\(^\text{187}\)

Pilots of Ryanair based at Charleroi, Belgium brought suit in Belgian Court claiming that social rights – pertaining to the length of their trial period, payment of irregular and supplemental working hours and compensation of travel costs – must be governed by Belgium law, which is the law of the EC Member state where they now carry out their work (that is, at, to and from the airport of Charleroi). Ryanair argued for their part, that the

\(^{185}\) The Directive defines posting as the assigning of workers for a “limited period of time” (Article 2); however, it does not explicitly define what is or is not a limited period of time, but it must be of a temporary nature. However, in general the Directive establishes a presumption that Member States on whose territory work is performed may ensure that their minimum standards are being met in all cases where the work qualifies as a posting in the sense of the Directive. Such authority however cannot be used to diminish the rights of the employee provided for in his or her contract with the home state employer.

\(^{186}\) See Article 3 of the Directive

\(^{187}\) See Andrew Clark, “Ryanair chief admits his airline is not really Irish”, The Guardian of 13 March 2006.
labour contract was made under the labour and fiscal laws of Ireland, where it has its principal place of business.\textsuperscript{188}

The Charleroi court found in favour of the pilots as the pilots perform their work based in Belgium.\textsuperscript{189} This could also mean that other Ryanair staff, now employed under the laws of Ireland but working at or out of other national locations, may be made subject to the labour laws of the UK and other relevant Member States. This consequence flows from Article 6 of the Rome Convention on the Law Applicable to Contractual Obligations of 1980 (see subsection 5.4.3.1 above), which provides \textit{inter alia} that a choice of law shall not deprive staff of protections of mandatory rules of law in the country where “the employee habitually carries out his work in the performance of the contract.”\textsuperscript{190}

We note that the above provisions of the Rome Convention are consistent with the practice followed in the United States (see 5.2.2.4 above) in that the Railway Labor Act foresees protection of all employees of airlines, foreign as well as American, working in the US. US unions have in fact organised representation of locally hired and expatriate ground staff of EU carriers.

\textbf{5.4.4 Trade Unions in the Airline Sector}

A report on \textit{Industrial relations in the airline sector} revealed that “trade union density is generally high in the airline sector as a whole.”\textsuperscript{191} Trade unions represent the interests of flight and cabin crews, ground support staff, and administrative staff. Because of the diversity of specialists involved, the workforce of an airline may be organised in a myriad of unions.

Employees of Community airlines are thus organised on the same “class and crafts” principle as in the US (see section 5.2 above). The unions in the EU still remain fundamentally organised at the national or local regional levels (e.g. Scandinavia). However, this situation is likely to evolve (see also European Works Council discussion below), and the key unions representing mobile workers have also established offices in Brussels – the European Cockpit Association (ECA) and the European Transport Workers Federation (ETF) – who respectively represent flight crews and cabin staff.\textsuperscript{192}

The relationship with the pilots’ trade unions is a most sensitive one for an airline. European practice suggests that they promote their interests independently from as well as in coordination with other trade unions. As also suggested in our discussion of the United States, pilots provide their companies with advisory services, critical quality control and operational supervision rather than simply driving planes. For that reason they are influential and positioned to exert strong claims to capture gains in service productivity.

\textsuperscript{188} It may be noted that Ryanair has also been in court in Ireland with regard to labour relations. In recent developments, in July 2006, the Irish High Court in rejecting legal efforts of Ryanair to enjoin certain forms of communication among its pilots awarded court costs at the level 1 million Euros to the defending pilots’ associations. See \url{http://home.eircom.net/content/irelandcom/topstories/8514314?view=Eircomnet}.

\textsuperscript{189} Decision of 21 March 2005, Tribunal de travail de Charleroi

\textsuperscript{190} See Article 6 (1) and (2)

\textsuperscript{191} See “Main recent restructuring exercises in the European airline industry”, laid down in a report made by Eironline, called “Industrial relations in the airline sector” (2005), under the heading “Social Partners” to be found at: \url{http://www.eiro.eurofound.eu.int/2005/08/study/tri0508101s.html}. Table 4 of this report provides the Main trade unions and employers’ organisations in the airline sector, by country.

\textsuperscript{192} It should be noted that theETF also represents flight crews as well as a range of ground-based workers in air transport, for example, air traffic controllers and ground handlers.
In the emerging era of global alliances, pilots may also engage increasingly in cross border coalitions. This development is evidenced by the support given by the pilots of eight airlines in the Sky Team alliance to their colleagues with Delta Air Lines, who were confronted with long term pay cuts and a revision of pension schemes.

5.4.5 Works Councils and Other Institutional Rights Established under Law

Though there are strong, practical inter-relationships, the Works Council or like institutions, as developed in several Member States (notably in Germany, as to which see below), is in most cases legally and functionally distinct from the trade union. These distinctions, which may be of some interest for the handling of social policy issues in specialised industries such as airlines, include:

- **Inclusive workplace/company focus.** The Works Council takes an industrial approach (as opposed to the crafts and classes approach of the airline industry) to employee organisation. That is, all employees are collectively represented. The focus begins at the workplace, as in the German example below, so that within a larger company there are likely to be works councils at particular work sites, as well as having general works council representation for the company as a whole.

- **Greater focus on working conditions as opposed to wages.** Unlike the US where collective bargaining is the general tool for dealing with both issues of working conditions and wages, countries with independent Works Councils possess an institution established under law with certain formal powers and responsibilities. These functions, however, while they will involve such things as individual case grievance settlement, do not as a general matter include wage and benefits negotiations, which remain the province of the unions.

- **Rights of information.** Conceptually, the Works Council is also to be understood as a consultative body that requires timely information on behalf of employees and also to assist management in the overall company interest. In the EC (see subsection 5.4.5.2 below), access to information via Works Councils or analogous institutions (that are required of companies of a certain size and scope) now becomes an employee right.

- **Co-determination.** In a few EC Member States, Works Councils or Unions are represented on supervisory Boards of Directors in companies beyond a certain size and organised publicly and thus participate in such matters as setting rates of senior management compensation. The legal definition and scope of co-determination is most systematically developed in Germany, where in certain categories of large

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193 As a reaction, unions in alliances join forces in, for instance, the Wings Pilots Coalition, the Star Solidarity Alliance or the One World Cockpit Crew Alliance. Strikes of pilots at Northwest may result into strikes of pilots of its partner KLM in order to maintain a balance between wages so as to avoid a shift of production from KLM to NW (or vice versa); see: Jan Ernst de Groot, quoted in footnote … (above), at 8-10.

194 As reported in Dow Jones Newswires, 9 March 2006, 1:17 p.m. EST: “Pilots From 8 Other Airlines Back Delta Pilots in Dispute”

195 Under Community law (Directive 2002/14) discretion exists to develop alternative instruments to meet Community requirements of employee consultation.

196 Other states having Works Councils established under law include Austria, Belgium, France, The Netherlands and Spain. In the case of Sweden, trade unions under law now have powers to exercise certain Works Council type functions. For example, The 1982 Employment Protection Act (lag om anställningsskydd, LAS, 1982) includes a number of important provisions on the rights of workplace union representatives. Sources: ILO and documents quoted on Wikipedia.

197 This rule is strongest in Germany but is also provided for to a lesser degree under Austrian law. Swedish law also provides for Labour Union representation on Boards.
companies employee representatives have half the seats on Boards and in others one third. While it is beyond the scope of this study to explore the significant policy and political questions co-determination raises, we should note that the German co-determination model has not been widely followed elsewhere. Though well-established there, the formal employee powers under the present German legislation have probably peaked.

5.4.5.1 The German Works Council Model

Legal and historical context. Work or Workers Councils have a long tradition in Germany, having existed in various forms since the 19th Century. Fundamental legal context today is provided by the Betriebsverfassungsgesetz of 1972 as amended. Under this law, in any enterprise employing five workers aged 18 or older, employees have the right (though not the obligation) to establish a Works Council. As a practical matter, virtually all medium and larger-sized German companies have such Councils that must stand for election every four years. The size of Councils is formally regulated by the law and relates directly to the number of employees.

All members of German Works Councils enjoy special additional protection against personal termination by employers, which can only occur under extraordinary circumstances. In companies with 200 or more employees at least one member of the Council must be permitted to devote his or her time entirely (at company expense) to their Council duties.

Duties of Works Councils are set forth in law. They include inter alia giving advice on all personnel matters, accepting and reviewing grievances and reviewing all proposed terminations. However, members of Works Councils are expressly enjoined not to organise strikes (though they may go on strike as individual participants in a collective action). In practice, while there is considerable practical interaction between Works Councils and trade unions, particularly in larger companies, under German law their respective roles are distinct.

5.4.5.2 The Establishment of a European Works Council

Council Directive 94/45/EC, the scope of which was extended to the UK by Directive 97/74/EC, provides for the establishment of European Works Councils in trans-national companies with more than 1,000 workers in employment in EU Member States where there are more than 150 staff in at least two Member States. Article 5 tasks “central management” of such a company “on its own initiative or at the written request of more than 100 employees in at least two undertakings or establishments in at least two different Member States” to establish a special negotiating body with appropriate representation from prescribed parties. Central management and this negotiating body can agree on the structure and functioning for the European Works Council or, pursuant to Article 6(3), “to establish one or more information and consultation procedures instead of a European Works Council.

The Directive also requires Member States to establish “subsidiary requirements” in their national legislation that “must satisfy” conditions as set for in the Annex to Directive 94/45. If the central management so decides, or if the central management refuses to start negotiations within six months of the request of at least 100 employees or their representatives, or if there is no agreement, these requirements apply to the establishment, composition and competence of a European Works Council. The Member States are also

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198 See Article 7.
enjoined (in Article 11) to ensure administrative and judicial procedures adequate to enforce the Directive.

In 1996, British Airways, Lufthansa, Aer Lingus and KLM had set up such European Works Councils through agreement, followed by Air France in 1997. Air France and KLM having merged in 2003, a new Air France-KLM European Works Council (EWC) was set up on 14 February 2006.

5.4.5.3 The AF-KLM EWC

The agreement on the establishment of an Air France-KLM European Works Council (EWC) states that this EWC will inform and consult workers about all matters concerning the Air France-KLM Group as well as issues of a trans-national character. The EWC will not replace the staff representative bodies in each company and in each country, which will retain their respective scope of activity. The EWC will consist of 37 members, appointed or elected in February/March 2006 for a period of four years. There will be 10 French members, 6 Dutch members and 21 members from 16 other European countries. The conditions governing their appointment will comply with the current rules applicable in each country.

The EU Works Council of the Air France-KLM Group is designed to protect the (social) interests of employees of the undertakings belonging to Air France-KLM Group, established in Europe. Its principal task concerns the provision of information to all employees concerning to the operation of the entire group, including its daughter companies and Air France-KL affiliates, as well as on “transnational” issues. The information focuses on the development of the structure, the economic and financial situation, and shifting of production and other essential changes affecting the Air France-KLM Group.

The EU Works Council complements the national works councils of the daughter companies Air France and KLM in France and the Netherlands respectively. It meets twice a year, either in Paris or in Amsterdam.

National works councils discuss with the management of the daughter companies Air France and KLM the domestic questions pertaining to the (daughter) companies, which are, in fact, the operating companies, that is, where the production of air services is made. Obviously, they are subject to local laws and regulations, which differ between France and The Netherlands.

These developments further demonstrate that employee representatives at EU airlines are likely increasingly to scale-up their efforts and to organise in a way that will also lead to increasing dialogue with international colleagues such as the US unions.

5.4.6 European Standards for Settlement of Labour Disputes

Like the organisation of trade unions and the establishment of collective labour agreements, the settlement of labour disputes in Europe is very much a national affair. For instance, the United Kingdom, France, Belgium and the Netherlands have drawn up acts designed to settle labour disputes, or make legislation, like the Conciliation Act 1896 of the UK, and the French conciliation and arbitration acts, applicable to the solution of labour disputes. It appears that, next to the “traditional” role of courts, mechanisms like conciliation, mediation, adjudication and arbitration play an important role in such processes.\textsuperscript{199}

\textsuperscript{199} For a more detailed study, see, Annie de Roo and Rob Jagtenberg, Settling Labour Disputes in Europe (1994)
There are no European institutions analogous to the US National Mediation Board, which have as a task the settlement of labour disputes. However, parties may use a number of European law based general standards. They include but are not limited to:

- The right of access to a court;\(^{200}\)
- The right to appropriate conciliation machinery.\(^ {201}\)

Solution of labour disputes in EC Member States appears to be characterised by achieving consensus. Institutional and substantive provisions, as well as practice, underpin this conclusion.

5.4.7 European Regulations on Intra-EC Investments, Takeovers and Bankruptcy Reorganisation as they Affect Labour

5.4.7.1 Employment Rights on the Transfer of an Undertaking

In case of transfer of undertakings, employers’ rights are protected under Directive 2001/23/EC,\(^ {202}\) (in this subsection also referred to as the Directive). The Directive provides minimum requirements\(^ {203}\) and at least transitional employment rights to employees where their employer changes as a result of a transfer of undertaking, so as to avert dismissal of employees. For example, the Directive inter alia provides:

- For continuing validity of existing collective bargaining terms and conditions for at least one year (unless contracts expire sooner);\(^ {204}\)
- that Member States adopt measures to protect immediate or prospective entitlements to old age and survivor benefits of retirees under pre-existing company plans of the transferor;\(^ {205}\)
- the responsibility of the employer for termination of the employment contract (and attendant legal consequences) if the transfer involves a substantial change in working conditions to the detriment of the employee;\(^ {206}\)
- a duty on the transferor employer and the transferee employer to supply information about the transfer to their respective employees and their representatives or representative organisations (a requirement made clear in several areas of the Directive);
- special provisions in cases of insolvency of the transferor;
- safeguard clauses regarding the proper representation of the transferred employees during the period necessary for the reconstitution or reappointment in case the undertaking or part thereof does not preserve its autonomy in the context of the transfer.

\(^ {200}\) Article 6 of the above mentioned ECHR
\(^ {201}\) See Article 6 of the European Social Charter
\(^ {202}\) Consolidating Directive 77/187/EEC as amended by Directive 98/50/EC
\(^ {203}\) See Article 8 of the cited Directive.
\(^ {204}\) See Article 3. Note: Provision does not apply in the case of liquidation under bankruptcy proceedings.
\(^ {205}\) See Ibid. (Para 4b)
\(^ {206}\) See Article 4
A transfer coming under the terms of the Directive concerns any transfer of an undertaking, business or part of an undertaking or business to another employer as a result of a legal transfer or merger. To qualify as a business transfer, the identity of the employer must change. The precise definition of a transfer falling under the terms of the Directive will have to be decided by courts, taking into account the facts of each case.

The ECJ has been asked to explain the term in a case involving employees employed by a German security company doing business at the airport of Düsseldorf. The employees asked the court to confirm that their employment relationship with Securicor continued with another security company named Kötter pursuant to (Paragraph 613a) of the German Civil Code, implementing Directive 2001/23 in German law.

The ECJ held that for Directive 2001/23 to be applicable the transfer must relate to a stable economic entity whose activity is not limited to performing one specific works contract. In order to determine whether the conditions for the transfer of an organised economic entity are met, it is necessary to consider all the facts characterising the concerned transaction.

The Directive's scope does not exclude its application to non-Community companies and non-Community nationals. Thus, it must be deemed to apply to any transfer of an undertaking or business entity established in the Community, irrespective of nationality criteria of the entity and persons involved.

5.4.7.2 Protection of Workers and Their Entitlements in Case of Insolvency

Bankruptcies are increasingly taking place in the airline sector. Neither general air law nor European air law regulate bankruptcies of airlines as a special case. Consequently, European airlines and their employees are subject to the generally applicable rules for undertakings in these circumstances, which are governed by the laws of the Member States.

Again, the subject matter is very much organised on the level of the national laws, as recognised by Council Directive 80/987 on the approximation of laws of the Member States relating to the protection of employees in the event of insolvency of their employer, as amended by Directive 2002/74, (in this subsection also referred to as: the Directive). While the Directive recognises that differences remain between the Member States, it is designed to provide for a guaranteed level of payment of their outstanding claims, including those pertaining to supplementary pension benefits.

However, Member States may, by way of exception, exclude claims by certain categories of employee from the scope of the Directive (by virtue of the existence of other forms of

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207 Joined Cases C-232/04 and C-233/04, Nurten Güney-Görres and Gul Demir versus Securicor Aviation (Germany) Ltd and Kött Aviation Security GmbH & Co. KG, Decision of the ECJ of 15 December 2005

208 See also the ECJ decision in the case of Case C-460/02, Commission versus Italy in a ground handling case

209 Including, in particular, the type of undertaking or business concerned, whether or not its tangible assets, such as buildings and movable property, are transferred, the value of its intangible assets at the time of the transfer, whether or not the majority of its employees are taken over by the new employer, whether or not its customers are transferred, the degree of similarity between the activities carried on before and after the transfer, and the period, if any, for which those activities were suspended. The national court must take into account the type of undertaking or business concerned. According to the ECJ, it follows that the degree of importance to be attached to each criterion indicating a transfer within the meaning of Directive 2001/23 will necessarily vary according to the activity carried on, or indeed the production or operating methods employed in the relevant undertaking, business or part of a business.

210 See Consideration 9 of EU Directive 2003/41 on the activities and supervision of institutions for occupational retirement provision: “In accordance with the principle of subsidiarity, Member states should retain their full responsibility for the organisation of their pension systems …”

211 As amended by Directive 2002/74; Directive 80/987 is in this sub section also referred to as the Directive.
guarantee), if it is established that these offer the persons concerned a degree of protection equivalent to that resulting from the Directive. Whether EC Member States rely upon this exception – which must be interpreted in a restrictive fashion – can only be determined on a case-by-case basis.

For the air transport sector as it develops by airlines creating multiple locations of establishment or employment within the EC, Article 8a of the Directive may be relevant. This provision foresees payment of outstanding claims by the institution that is located in the Member State in whose territory the employees work or habitually work.

In this context we may refer again to Article 6 of the Rome (I) Convention on the Law Applicable to Contractual Obligations of 1980 (see also Subsection 5.4.3), which provides inter alia that a choice of law shall not deprive staff of protections of mandatory rules of law in the country where “the employee habitually carries out his work in the performance of the contract”\(^{212}\) and the Ryanair scenario discussed in sub-section 5.4.3.3.

A trend in this field is to enhance protection of entitlements. The amended version of the above Directive (dated 23 September 2002) contains provisions concerning “transnational situations” by prescribing that the institution responsible for meeting employees’ outstanding claims shall be that in the Member State in whose territory they work or habitually work.\(^{213}\) A decision made by the European Court of Justice has paved the way for the regulation of such “trans-national situations.”\(^{214}\)

### 5.4.8 Rules and Practices Governing Termination or Layoffs of Employment

As we have made clear above, laws regulating termination of employment, while subject to certain Community standards especially in areas such as non-discrimination, remain fundamentally a matter of national policy as well as national regulation within the EU. While there is general agreement in law and policy that terminations (except perhaps in small enterprises not of relevance for this study) may not be made arbitrarily, there is also considerable debate regarding the best social approach to the subject.

The perceived risks and opportunities of globalisation very much affect the debate that is perhaps best captured in the term “flexicurity” (see further discussion below). On the one hand employees seek the security of dependable if not durable understandings with their employers that will protect them against termination as long as they perform effectively and in good faith. On the other hand, employers cannot retain employees if they are not able to adjust their production of goods and services flexibly to a market increasingly shaped by global as well as national and regional competition. Flexicurity may be of particular relevance for cyclical industries. In the face of periods of falling demand, the rational economic response of firms is to reduce variable production costs and therefore to make labour, as much as feasible, a variable cost.

All Member States of the EU recognise these realities, such as situations of force majeure, in their national laws, while at the same time seeking in significantly different ways to protect the individual rights and social interests of employees in the mergers, restrukturings or

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\(^{212}\) See Article 6 (1) and (2).

\(^{213}\) See Article 4(4) of Directive 2002/74

\(^{214}\) See the case of Carina Mosbaek v. Ostre Landsret – Denmark, Case 117/96; decision of 17 September 1997; see also the Commission’s action to tackle discrimination against pension funds in six Member States, Press Release IP/03/179 dated 5 February 2003
failures of companies that go on all the time. These differences make it impossible in the framework of a general, European-level study to offer an authoritative policy or legal answer. On the same basis, however, we can say that any general assumption that laying off professional staff in “Europe” is much more costly or less costly and difficult than in the United States, for example, is superficial if not outright wrong.

In Europe, national legal constraints or conditions regulating employer ability to lay off employees range from extensive in countries like France, Portugal and Germany (at one end of the spectrum) where many employment contracts enjoy explicit protection against notice of termination (Kuendigungsschutz) to countries such as Denmark, Norway, the Netherlands, Spain and the UK where employers enjoy more or considerable flexibility in managing the size and composition of their labour force. The UK is at times spoken of (a bit pejoratively) in the same breath as the US as embodying the “Anglo-Saxon neo-liberal” philosophy of management.

Such stereotypes are not useful. In looking at the actuality of circumstances it may, however, be germane to observe that labour representation at airlines in the UK bears considerable analogy to the US, with strong craft unions and the use of collective bargaining tools to regulate seniority, which also enjoys recognition under English law as a standard to be used by employers when implementing layoffs. Since the UK is by far the most important single Member State air transport market on the North Atlantic this convergence in situation may merit particular note.

A much smaller state and market, Denmark, may, however, offer the most interesting comparative example.

5.4.8.1 The Danish Flexicurity Model

Denmark enjoys one of Europe’s lowest unemployment rates, perhaps Europe’s highest employment rate and at the same time it offers employers exceptional flexibility to vary the level of working hours or lay off staff. According to an Index reportedly established by the World Bank (as cited in the International Herald Tribune) measuring the difficulties under general law (that is, without consideration of collective bargaining agreements in individual industries) of terminating an employee, on an ease-difficulty scale of 0-100, Denmark scored 10, as did the US, the UK and Switzerland.

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215 We note for example that Directive 2001/23 (see 5.4.7.1 above) in its chapter on “Safeguarding of employees’ rights states that its provisions against dismissal of transferred employees “shall not stand in the way of dismissals that may take place for economic, technical or organisational reasons entailing changes in the work force.” See Article 4.

216 We should note that different analysts use different standards for estimating the flexibilities of management and labour. For example, in some EU countries the use of shorter term contracts to minimise obligations under tenured contracts is much heavier than others. Thus Spain, for example, is considered very flexible by Prof. Wilthagen but inflexible in the Survey cited in footnote 219 below.

217 Under UK labour law, employers are required to be “fair” and “reasonable” in administering redundancies. The 1994 Deregulation and Contracting Out Act emphasised the fairness standard while the 1996 Employee Rights Act accorded employees rights to reasonable treatment. These types of standards imply that the case law, which we cannot examine meaningfully in the scope of this study, will play (as it does interestingly in the US as well) a very important role in distinguishing arbitrary and capricious forms of termination from those that follow customary procedures and can be deemed reasonable and fair. Here obviously collective bargaining standards can help employers as well as employees in providing legal clarity and certainty.

218 From a social policy perspective, the rate of gainful participation within the relevant age groups in the overall population may be a more revealing statistic than the percentage of those seeking work who do not find it.

219 For a characterisation of the Survey and an analysis of the Danish model, see Bruce Stokes, “Danes can show Europe the way,” International Herald Tribune, May 23, 2006. For data citations see also the full tables and description of the research methodology at http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/. An OECD average
In a certain sense analogous to the US approach toward transportation work as expressed in the Railroad Labor Act, the philosophy of the Danish policy identifies a three-part interest – of the general society as well as of labour and management. That is, the public sector provides unemployed workers both very substantial unemployment benefits as well as retraining and outplacement (which they are required to pursue to retain benefits). This has led to re-employment rates of 70% within a year. Thus Denmark has adopted (at some expense) a national policy to remain competitive internationally while also promoting social justice at home. Its model is being widely discussed in countries such as Germany, which has more rigid rules and has been suffering from double-digit unemployment for a number of years.

Finally it may be noted that Denmark also enjoys a long tradition of work council-type coordination between management and labour, although this is voluntary and not formally fixed in law. This coordination has been expressed in various structured institutional forms going back to 1899. Workplace employee representation is now regulated by the main social partner organisations, the Danish Employers' Confederation (Dansk Arbejdsgiverforening, DA) and the Danish Confederation of Trade Unions (Landsorganisationen i Danmark, LO), on the basis of their basic agreement. The Danish equivalent of the works council is the 'cooperation committee' (Samarbejdsudvalg).

5.4.8.2 The European Debate

The Danish example, initiatives in other countries and critical attention by the Commission as well as academic institutions, which we cannot begin to describe adequately in this aviation market study, demonstrate that hard thinking about competitiveness is taking place. We refer, to a very thoughtful recent paper by Prof. Ton Wilthagen and his colleague Martijn van Velzen of Tilburg University in the Netherlands that surveys the European job security debate and outlines a range of alternatives designed to provide employees with security and employers with flexibility.

The key messages for our purposes are two: 1) that there is no single European solution on the issue; while 2) there is a growing sense of agreement that both flexibility and security are important and that in well-designed system they must reinforce each other. Thus firms will not be forced to retain or employ more staff than they need while at the same time feeling free to hire and retain useful staff at the margin (rather than preferring tight staffing and heavy use of overtime in order to avoid creating costly job tenure situations). Meanwhile employees will receive protections both from collective bargaining agreements that recognise and protect their professional and human interests and public programmes that will protect their incomes and assist them to re-enter the active labour force in the event that layoffs are unavoidable.

5.5 EU REGULATION OF THE USE OF FOREIGN LABOUR IN AIR TRANSPORT

The ability of third country nationals to work within the EU can be examined at several levels. First there is the question of being able to take up work and/or residence in an individual Member State; second, the rights of an alien so admitted in one State to enjoy the...
freedom of mobility provided under the EC Treaty within the EU as a whole; third, the question of whether work and residence issues can be separated – whether an American citizen, for example, who retains residence outside the EU, can work for temporary periods within the EU?

For the purposes of this study we shall essentially pass over the issues of third country nationals who have established legal residence. Such persons of working age either will or can acquire rights to work subject to national or Community laws, including those governing professional licensing. We shall rather focus on the scope of employment opportunities provided to non-resident aliens holding third country licences such as could be the case with wet-leased aircraft or in any form of cabotage operation.

While the scope of this study does not enable a systematic examination of immigration laws, the most salient general point is that these laws within the EU have enabled foreign airlines, notably from the United States, to station air crews for defined periods to operate their own aircraft either directly or under wet lease on services between cities within the EU.

The following subsections will briefly review conditions for longer and shorter (respectively) stays in an EC Member State for a defined period of time, with special reference to the position of US air crew. We will identify the basic requirements that have to be met from an immigration and labour law perspective, which vary according the length of the stay and the way the employment is arranged in that EC Member State.

5.5.1 General Conditions for Stays of a Defined Temporary Period of Time

When an individual applicant requests a stay for a defined period of time, he/she must indicate the reasons for his/her stay, which may be made subject to restrictions. The defined period of time may last up to five consecutive years, which may not be extended. Of course a permit for a defined temporary period of time may also be replaced/superseded by an approval of permanent residence.

Unless a Third Country National carries out work on an incidental basis for a short period of time and other requirements are met (as specified in the next subsection), he/she must at all times possess a Working permit. The employer must submit a request for such a permit to the competent national agency. The agency will take into account priorities, which are based on the achievement of national policy objectives and Community law provisions.

5.5.1.1 Longer Term Stays, with Employment Contract

We will take the legislation of one Member State, to wit, the Netherlands as a case study, with special reference to the position of US aircrew desiring to be employed by a Netherlands based air carrier. In the Netherlands, a longer-term stay means a stay of more than three months. This period may vary from one Member State to another.

US citizens are not obliged to have a visa; they should apply for a permit to stay.

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223 Illustratively, UPS US-registry aircraft operated by US crews and stationed for periods of time at CGN have provided a significant number of connecting services for the UPS European network. These aircraft (type examples B-757F and A-300F) are dedicated to regional use and are not used to provide intercontinental services.

224 Inasmuch as the Netherlands is an original signatory of the Schengen Convention, which in turn drew on Benelux experience in order to establish harmonised entry rules that are also drawn on in the movement to Community standards in this area, we believe that its procedures provide a useful model case.

225 In Dutch: “verblijfsvergunning”
In addition, the employer must be able to obtain a Permission to work in the Netherlands, issued by the competent authority in order to employ the employee.\textsuperscript{226}

5.5.1.2 Short Term Stays of Foreign Air Crew in EC Member States

This option is the most relevant one for the purposes of this study. The following subsections consider that position from an immigration and labour law perspective. Again, we will take the legislation of one Member State, to wit, the Netherlands as a case study, with special reference to the position of US air crew.

5.5.1.3 “Transit” Stays

For very short stays of air crew possessing a “Crew Member Certificate” which is issued in accordance with the provisions of Annex 9 of the Chicago Convention, there are no passport and visa requirements as long as a member of the air crew stays in:

- the international transit area of the airport;
- a city which is located in the proximity of the airport;
- the “Schengen area” (as to which see subsection 5.5.4 below).

Consequently, a US crew holding “crew member certificates” is not even obliged to have US passports and can be allowed to stay in the “Schengen area” for a period of up to 3 months within a period of 6 months.\textsuperscript{227}

5.5.1.4 Short Term Stays (up to Three months under Dutch Law)

If a member of a US air crew wishes to enter the Netherlands and stay there for less than three months, he/she must, however, be in possession of a valid passport. As stated above, US citizens do not require a visa. A US air crewmember is entitled to work during his/her short-term stay for a Netherlands-based airline if the following requirements are met:

- he/she does not stay longer than three months;
- he/she has his/her permanent residence outside the Netherlands;
- he/she does not have a labour contract with a Dutch employer;
- he/she works exclusively on aircraft registered outside the Netherlands used on international services;

In addition, he/she has, upon application therefore, received a permit for any work in the Netherlands. As working during the short term stay of up to three months will have to be considered as “incidental” in order to be allowed, the competent authority (in the case of the Netherlands: the CWI) will have to assess, to begin with, whether the employment in question is actually to be considered as “incidental”.

If one of the above-mentioned conditions is not met or if during the short-term stay it is indicated (in one way or the other) that the crewmember will be employed for a period longer than 3 months, he/she will have to apply for a residence permit. Again, the

\textsuperscript{226} In Holland, the CWI, meaning Centrale organisatie voor Werk en Inkomen (Central organisation for Work and Income)

\textsuperscript{227} See Art. 20 of the Convention Implementing the Schengen Agreement
employer will have to address himself to the CWI in order to obtain a working permit, the application of which will be assessed on considerations of national treatment.

If one of the above conditions is not met, the persons involved will have to apply for a permit to work (in the Netherlands), and a permit to stay (in the Netherlands).

5.5.4 Visa Requirements

Visa requirements are made and enforced at the level of the EC Member States. However, there a number of Community measures of which the following are relevant for the purpose of this study:

- **Council Regulation 574/1999** determines the third countries whose nationals must be in possession of visas when crossing the external borders of the Member States. The mentioned countries are listed in the Annex to this Regulation containing about one hundred countries, but it does not include the US. The Regulation goes on to say “Member States shall determine the visa requirements for nationals of third countries not on the common list.” Hence, visa requirements, if any, regarding US nationals are made at the level of the Member States. The Regulation also allows Member States to exempt “flight crew and attendants on emergency or rescue flights” from the imposition of visa requirements. Visa is defined as an authorisation given by a Member State for an intended stay in that Member Stay of no more than three months in all, for transit through the territory of that Member State or Member States, except for transit through the international zones of airports and transfers between airports in a Member State.

- In accordance with the **Convention Implementing the Schengen Agreement**, a third country national, including obviously US nationals, with a residence permit valid in one state party to the Schengen Agreement may travel on a valid passport, without the requirement of a visa, for up to 90 days per six month period to other Schengen states. A visa with no territorial restrictions granted to a third country national by one Schengen state entitles that third country national, for the same purpose and for the duration of the visa’s validity, to enter without border checks other Schengen states as well. As a corollary of the “Schengen regime”, people travelling within the “Schengen area” are separated in air terminals from those arriving from countries outside this area. In addition, Schengen states have harmonised their visa policies.

- The Community has laid down a uniform issuance format for visas. For security reasons, visas must meet very high technical standards, and they must also contain the necessary information on the bearer of the visa.

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228 See Article 2(1)
229 See Article 4(1)
230 See Article 5, which exception is governed by the provisions of Annex 9 of the Chicago Convention on Facilitation.
231 The following European states have adopted the above “Schengen regime”: Austria, Belgium, Denmark, France, Germany, Greece, Iceland, Italy, Luxemburg, the Netherlands, Norway, Portugal, Spain and Sweden.
232 See Council Regulation 1683/95 laying down a uniform format for visas.
5.5.5 The Ability of Foreign (US) Carriers to Bring Staff into the EU under Bilateral Agreements

5.5.5.1 The ‘Commercial Opportunities’ Clause in Bilateral Air Agreements

Bilateral air services agreements only marginally regulate labour relations. Under the heading “Commercial Opportunities” it is, however, typical to find the clause cited in subsection 5.3.1 or a text with the same essential content, which means that posting of personnel of US designated airlines in the territory of an EC Member State is:

1) subject to the national laws pertaining to immigration, residence and employment;

2) restricted to personnel “required for the provision of air transportation”.

The limitation mentioned under (1) has been discussed above. We have not analysed all the national laws of the EC Member States on the mentioned matters (entry, residence and immigration). Obviously, such laws include EU Regulations and implementation of EU Directives in national regulations.

5.5.6 Conclusions: Fewer Formal EU Controls on Temporary Use of Foreign Mobile Workers

In summary neither Community nor, we believe, few, if any, Member State laws impose barriers on the temporary activities of foreign flight crews at a like level to the US. US crews:

- Do not need to have visas (whereas all Community crews do when entering the US)
- Can in general settle documentation requirements (such as temporary work permits) through one stop shopping; that is, they can go to a single authority (whereas in the US they must apply to and/or appear before State Department, Homeland Security and possibly Department of Labor authorities)
- May not require an independent national labour needs determination as is required by US statute for non-resident temporary workers (see Subsection 5.3 above).

Under these circumstances, commercial factors such as wage and benefits expectations being equal, an OAA that liberalised market access rules would make the employment of US crews in the EU easier than the inverse situation of employing EU crews in the US.

5.6 IMPLICATIONS OF LABOUR REGULATIONS FOR THE LIBERALISATION OF MARKET ACCESS

In this section we shall explore the degree of regulatory convergence in the EU and US labour and immigration regulations and governing practices described above. We consider whether liberalisation of market access restrictions in areas such as cross-border investment, wet leasing or cabotage rights – as well as phasing-out of differences in rules on flight time limitations – could lead to benefits or penalties for employees.

Professional groups have become vigilantly concerned that the removal of traditional market access controls in international aviation markets not launch a “race to the bottom,” and that international aviation avoid the fate of the maritime industry and the expatriate flagging-out of flags of convenience. A subtler question is whether differing national job protection rules in a market of developed economies can lead to situations in which less
productive employees from one country get substituted for more productive employees from another country because the former enjoy stronger job tenure. That is, if their national system makes laying them off so difficult that, from the management perspective, their wages and benefits must be regarded as a fixed as opposed to a variable cost.

In the case of hypothetical joint ventures in the provision of North Atlantic services (considered in case study format below), what are the probabilities that lucrative long haul international flying assignments would be reallocated from the aircraft of one registry to those of another in order to layoff the pilots whose contractual situation permitted the most flexibility?\(^{233}\)

The US labour parties, who have made comments in the DoT Docket proceeding on reforming the regulatory standards for foreign investment,\(^{234}\) seem to have focused on the risks that foreign (European) control of economic decision making of US carriers could lead to the emigration of US work and jobs. Such concerns can be seen in two contrasting lights as expressions of:

1. **Protectionism** – that is, the fear that present or future ability (and power) of American employee representatives through collective bargaining under the RLA to control access to jobs and to influence working conditions (such as FTL’s) that affect the productivity of mobile workers would be undermined. Multi-national managements would shift work within the networked firm to crews and aircraft working under the most flexible and productive rules at the most competitive wage rates.

2. **Competitiveness** – that is, should US labour now or in future be more competitive, fear or belief exists that EU workers do or could enjoy greater job tenure under their laws and contracts than do Americans. Consequently, especially during a downturn, firms would lay off American workers first, even if they were more productive and it would be the Europeans who benefited from protectionism.

These concerns obviously raise economic as well as social policy issues. We address the former in other chapters of this report. However, any social impact analysis depends on certain economic or market assumptions. These might include:

- **The implications of open entry on North Atlantic routes.** Even without the further liberalisation of an OAA, firms are able to initiate new services quite freely today. This means that the ability of any national regulatory regime and the controls on access to the labour market (e.g. through collective bargaining) that might be established under it are doomed to failure if they work to impose noticeably higher operating costs. In short, the supply curve is not controllable at the level of the state, much less the firm. Thus an OAA, conceived of as a balanced social and economic approach, would be more likely to improve the bargaining position of employees and/or to create scope for such improvement in comparison to maintaining illusory national restrictive powers.

- **The existence of dynamic factors.** As presented in chapter 9, we can say that, at this point in time, the competitive position of American crews is good. Indeed, there have been press reports of US pilots increasingly accepting expatriate positions in various countries (that are available under more liberal foreign employment rules than prevail in the US). This said, we must recognise that conditions are dynamic.

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\(^{233}\) International assignments are likely to go to more senior flying officers. In the American case we may also recall that the traditions of Rule 83 (discussed in 5.2 above) of including a mileage component in determining compensation levels may still make long haul flying more economically attractive under at least some contracts.

While few predict a near term rise in the US dollar, if US aviation demand grows faster than in other economies then wages for US crews could recover rapidly. Thus at any point in time the comparative position of workers within and between different economies will shift.

- **The existence of stable factors.** While US airlines and their employees have experienced considerable turbulence during US airline deregulation, certain constants can also be observed. For example, our economic analysis in chapter 9 and discussions we have conducted with stakeholders suggest that productivity is indeed the key variable in airline labour competition. Successful US carriers such as Southwest, Federal Express and UPS, for example, pay industry-leading salaries to their pilots but remain competitive because of their high productivity. This situation reflects the fact that even though transportation services are often spoken of as a commodity, producing them requires highly specialised labour whose supply does not possess commodity characteristics and which therefore tends to be relatively inelastic.

- **Long term strength of high quality positions.** While automation and outsourcing seems likely to reduce employment in lower value-added positions, the foregoing assumption implies that the negotiating position of key air transport specialists like pilots will in the foreseeable future remain very strong on the up cycle, perhaps even strong enough (in economics terms) to extract “rents,” whereas on the down cycle the weaker companies in particular would need to cut back – either reducing wages and benefits and/or the level of staffing.

Without going further into economic analysis in this chapter, we may note that many observers of the airline industry share the general view briefly outlined above. Arguably this hypothesis is also reflected in a range of organisational and institutional conditions that characterise airline operations and their regulation in the developed modern economies we have been considering. As previously outlined above, we may recapitulate these as:

- Stronger organisation of specialist groups (also characterises controllers, machinists and other smaller groups of specialists in addition to mobile staff) in the airline industry than in most other industries;

- Strong focus by these groups on professional standards as well as on social issues;

- Interest in and support for coordinated global standards in technical areas while (still) taking narrower (national or even local) perspective in social and economic issues.

Under these circumstances, it is not surprising that the collective bargaining situation is deemed critical by airline employees – in our judgment equally so in Europe as in the US. This being the case, a general question facing both regulators (representing the public interest), management and labour is: to what extent should convergence be seen a matter for regulators, or should it not, in this field, depend at least as much on dialogue among the professionals and employees themselves across borders?

In the remainder of this section we will:

- First, recapitulate the degree to which convergence or divergence *de facto* appears to exist.

- Second, look at the employment implications of the liberalisation of investment issue through the perspectives of four hypothetical cases: 1) Network integration of an EU and a US major international carrier; 2) Establishment by an EU carrier of a US
domestic feeder operation; 3) Cross-border development of specialist operations such LCC or all-business class services; and 4) Investments by a US Integrator.

- Third, recapitulate the employment issues arising under wet leasing and cabotage with respect to foreign temporary workers.

- Fourth, consider the specific question of Flight Time Limitations and the issue of concerted regulation of this area in the context of an OAA – a matter of some interest to European industry.

5.6.1 Practical Convergence of US and EU Labour Market Systems

In the foregoing sections of this chapter we have demonstrated that social and employment rights are extensively regulated in both the EU and the US but in fairly divergent ways. On the other hand, significant similarities exist with respect operational regulatory context that governs the airline labour market with respect to:

- Collective bargaining rights
- Reliance on the “crafts or classes” form of employee representation
- Procedures and standards for the licensing and qualification of mobile workers driven by safety concerns
- Existence of rules on duty hours governed by safety considerations
- Issues with respect to social and fringe benefits in areas such as health insurance and pension benefits.
- Status and incomes of the relevant professional groups (see also chapter 9).

5.6.1.1 Areas of Difference

We have already spoken of the general structural differences between the US and the EU in that the US States have almost no role in air transport regulation, whereas the Member States of the EU still play key roles in most areas affecting employment policy. Another difference in the case of the US is the scope of public sector responsibility; institutional arrangements such as the compulsory mediation rules established under the Railway Labor Act do not correspond to European practice. In Europe, the state in general does not intervene in labour-management disputes except perhaps under conditions of severe national emergency.

US federal laws with respect to admission of foreign workers also appear to be both more encompassing and detailed than is typical in the case of Europe. US flight and cabin crews face fewer regulatory hurdles in entering the EU than is the case of their European counterparts entering the US.235 In both cases, however, the jurisdictional roles and relationships of transport regulators on the one hand and immigration regulators on the other do not seem entirely clear and further study is needed to clarify the boundaries between internationally agreed rights and national rules that may constrain their implementation.

235 As set forth in section 5.3 above, US legislation that waives visa requirements for temporary visitors from certain countries is limited to tourists and businesspeople. Crew members (even though their stays are invariably far briefer than other visitors) are not covered by the waiver legislation. Conversely European rules on visa-free visitation are far broader and generally tend to cover all visitors from qualifying countries who stay <90 days and are not locally employed.
5.6.1.2 Implications for OAA Market Access Goals

The European side, as an element of its definition of an Open Aviation Area, calls upon the US to remove traffic rights restrictions and permit rights of establishment (national treatment). It also points out the practical as well as philosophical asymmetry of market access that occurs when US carriers are free to operate between individual Member State markets while Community carriers cannot establish their own direct networks behind US gateways.

US operators also enjoy greater ability to lease their aircraft with crews (wet leases) to Community carriers than vice versa. US national rules on wet leasing may tend to be a bit narrower than EU rules from a technical regulatory perspective. More importantly, from an economic regulatory perspective, US regulators would view wet leasing of foreign aircraft for operations on US territory as cabotage whereas in the European case the general regulatory position is that the wet-leased aircraft is a company-to-company transaction. That is, Community carriers can lease in foreign aircraft with foreign crews as long as they comply with the “short term”, “temporary” and “exceptional” conditions stipulated in EC law.

5.6.2 Social Policy Issues Raised (or Not Raised) by the Right of Establishment

Though the two are sometimes conflated in liberalisation discussions, in labour market terms the foreign investment issue seems diametrically opposite to the cabotage issue (discussed at 5.6.3 below).

Under cabotage, foreign labour is brought to the domestic market to perform work that is inherently local. Under investment, capital is brought to a national market to have work performed there and perhaps also between that market and other markets.

US labour and professional groups have nonetheless been concerned from an employee welfare standpoint about the risks of foreign investors taking controlling positions in US carriers or even founding new airlines. In the EU we have not detected a like level of concern about possible US investors in airlines. However, to be fair as well as accurate, European politicians and interest groups are very much alert to and concerned about foreign investor behaviour as a more general matter. A key difference is that we perceive the EU concern as much more case-focused, that is, looking at the economic and social implications of particular transactions rather than being wedded to traditional and categorical concepts based on percentages of ownership.

In this spirit we identify and summarise four types of cases below and consider their social and regulatory implications. We make clear that some if not all of them would be subject to serious forms of regulatory review, even if the traditional ownership and control restrictions were eliminated.

After identifying the structural and marketing assumptions to be associated with each venture, we specifically consider the issues and scenario it might face in dealing with its employees during a downturn in demand that required cutbacks in service levels or pay.

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236 As discussed in 5.3 above, US law excludes persons documented as “foreign crewmen” from acting as crew on domestic operations in the US. See INA 214(2) cited above.

237 See Regulation 2407/92, Article 8.

238 In the past year, for example, political concerns have been expressed in Germany, France, Italy and Spain about investors from other countries (including from other EU Member States) taking control of larger national enterprises in manufacturing or public utility sectors. In Germany, the political rhetoric also included reference to “locusts,” that is, private equity funds that might buy up cheaply companies in trouble and then strip assets and liquidate jobs.
Many of these assumptions are similar. Certain legal assumptions, moreover, would apply equally to all cases and we begin with a summary of these, looked at from the standpoint of social protection.

5.6.2.1 Legal Assumptions Regarding Social Protection Issues for Joint Ventures

Several assumptions lie behind our analysis of social protection issues:

- Governing national laws, conditioned in the case of the EU by Community standards that establish minimum thresholds of social protection, will tend to be those of the state where the employee is domiciled and/or employed.

- Thus, any airline that establishes or invests in airlines or subsidiary enterprises outside its own state of registry must conform to the applicable national laws where the employee has his or her residence.

- No state on the North Atlantic provides an absolute protection of employment in the private sector, and there are no airlines whose employees enjoy civil servant status, even though governments still own partial or controlling shares in some airlines.

- All states, directly as well as indirectly, provide protections against “at will” termination by employers, making arbitrary selective dismissal difficult if not impossible, especially in the airline industry.

- Differences among states remain significant; however, it is wrong to characterise these differences as EU vs. US differences.

- In individual Member States of the EU legal restrictions on laying off staff may even be less than in the US. For example, under the flexicurity concept (see subsection 5.4.8) unemployment insurance and outplacement systems that serve the individual provide an alternative to constraining companies from releasing employees under downturn conditions.

5.6.2.2 Case 1: Major North Atlantic Systems Integration

Basic Assumptions/Description:

1. A major European combination carrier, for whom North Atlantic services constitute a significant share of its business, invests in/acquires a major US operator who is similarly positioned.\(^{239}\)

2. The goal of the investment/merger is to integrate networks and establish joint branding on the North Atlantic and in third country markets. If the venture is not a full merger its terms will require anti-trust immunity (ATI).

3. If an acquisition of a major company, the investment can or will also be made subject to appropriate national security reviews.

4. Because of its scope, the proposed investment and its effect on competition will be reviewed by competition authorities who will not approve arrangements that appear to create the risk of a dominant market position that other, competing airlines could

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\(^{239}\) For purposes of this analysis, the term “invests in/acquires” is intended to imply the establishment of commercial policy influence to a degree that the invested-in firm’s business planning remains a dependable element of the overall venture as long as agreed and required conditions are complied with.
not contest. A formal or docketed proceeding is likely to result that will give interested parties opportunity to support or oppose the proposed venture.

5. Thus the investment could not be made on the expectation of acquiring scarce traffic rights in the OAA area that would not contestable by others.\textsuperscript{240}

6. The investment, therefore, has to be made on the assumption that it would either expand access to markets and control and/or lower unit operating costs in order to establish and retain a greater market than would be the case if the investment were not made (economics of scope).

7. The investment could result in staff savings, for example, by rationalisation (spreading) of overheads and supporting services (economics of scale). However, its growth objectives imply a positive employment effect.

8. Both EU and US airlines have employee representation through a number of trade unions and in the European case also through works councils. Nothing hinders collaboration among employee representations. Historic contracts (unless expiring in the European case) remain in effect unless superseded through renegotiation or by court order (in case of a future bankruptcy). These govern working conditions as well as rates of pay and will continue to regulate job access through seniority rules unless otherwise agreed.

Possible Developments in a Downturn

1. Contraction of current or anticipated demand forces either reduction of service levels or lowering of prices.

2. The venture will prioritise its most productive routes where it enjoys the strongest market presence. It will think long and hard before replacing a national with a foreign brand in a down market and not wish to sacrifice any first mover advantages to competitors.

3. It will also not wish to sacrifice cost advantages to competitors. To the degree possible under its contracts it will try to retain the most productive staff and release the least productive staff.

4. The need to reduce employment or lower employee incomes (through wage reductions) will be discussed with employee representatives. Absent bankruptcy and/or receivership any layoffs or reductions of income can only occur through foreseen procedures and mutual agreement.

5.6.2.3 Case 2: North American Feeder Operations

Basic Assumptions/Description

1. A European transatlantic operator invests in/acquires/establishes a US carrier in order to establish market access to internal US points and possibly also efficient

\textsuperscript{240} Here we wish to distinguish the case of markets where regulations create scarcity of access. Under an air services agreement that limits capacity and designation the incumbent holders of such rights could possess a scarce resource attractive to an investor or acquirer (assuming regulators would agree to the transfer of traffic rights basically belonging to the state). An OAA, however, would eliminate all traffic rights exclusivities in the US-EU market. Outside the area of traffic rights per se, slots or other facilities owned or leased at congested airports could of course be a meaningful part of an investment/acquisition strategy; however, any such transfers for consideration (in the case of the EU airports where the congestion issues exist) would also be subject to regulatory review in one form or another.
narrow-body connecting services to points in Canada, Mexico, the Caribbean and Central America.

2. The US partner has not operated on the North Atlantic in its own right. It does, however, operate (or plans to operate) a significant level of local or intra-region services so that its business plan stands on two legs. Indeed the domestic operation may be the dominant part of the business.

3. Especially if it is a major domestic operator that is being acquired, many if not all of the governmental reviews described in Case 1 will also take place, especially those of US authorities, and Commission review is also not to be excluded.

4. While terms of the venture do not exclude future trans Atlantic operations under the brand of the US company, the basic assumptions are of an end-to-end collaboration; that is, there have not been and/or are not planned to be any parallel operations: the European partner will not fly beyond the continental entry gateway and the US partner will not fly transcontinental services.

**Possible Developments in a Downturn**

1. Each side of the venture will have to deal with the contraction as it effects its part of the market while at the same time attempting through cooperation to minimise negative and maximise positive knock-on effects for the other.

2. This means that joint venture partners will require assurances that neither national nor international flight segments will have services canceled or reduced without consultation if not agreement.

3. Should the impact of the downturn not be general but significantly different between the two markets, indeed if one remains robust, then a social benefit of this situation could be, assuming the OAA rules by then permit this, that professionals furloughed in one enterprise could be employed temporarily in the other.

5.6.2.4 Case 3: Specialist Operations

**Basic Assumptions/Description**

1. In recent years in both Europe and North America new forms of operations have appeared which cannot be comprehended under a single product concept. That is, even in the Low Cost Carrier arena, operators like JetBlue in the US, West Jet in Canada and easyJet in Europe have different service profiles. In addition, there has also been a modest trend to all-business class services, particularly in transatlantic services.

2. Such niche concepts are neither inherently local nor national concepts. That is, development of such businesses might depend on access to a small or moderate slice of a lot of city pair markets in order to truly establish brands. Liberalisation of ownership and control criteria could be a *sine qua non* for such service development in the OAA context. Even acceptance by the US simply of Community designation could create interesting new opportunities for such services especially in a context in which legacy carriers (under Cases 1 & 2 above) were still being held back.

3. A new entrant form of cross-border investment would mean job creation effects, certainly within the new firm if not across the market overall. It would add competition to the market. As service innovation we may assume that it would be
welcomed in first instance by regulators on both sides of the Atlantic and that it would not face regulatory hurdles, at least in the economic regulatory area.\textsuperscript{241}

4. On the other hand, from the perspective of employee organisations, this type of venture might create more issues than any of the others being discussed. The venture might begin without organised employee representation. And even if labour organisations, under the rights granted them by the laws described in this chapter, then were able to organise such companies, these would still be firms that lacked the so-called “legacy” costs of the traditional and established competitors.

Possible Developments in a Downturn

1. If they were cost and product competitive, the specialist carriers might suffer a lot less in a downturn; that is, with lower burdens of fixed costs and perhaps greater flexibility in their labour relations they might even gain relative market share and improve positioning for the upturn.

2. On the other hand, if thinly capitalised and highly geared (leveraged), they would also be vulnerable especially if they had a recent history of rapid expansion. The many bankruptcies of startup operators under US deregulation, for example, bear testimony to this risk.

5.6.2.5 Case 4: Major Integrator All-cargo Expansion

Basic Assumptions/Description

1. The integrators have an established history of creating networks. Conceivably, under an OAA, one of the big four might want to acquire one of the others, which would raise competition review issues on both sides of the Atlantic. At a lower threshold, other, smaller scope investments by integrators in specialised operators could also be significant. As shown, for example, in chapter 4, a range of strong medium-sized all-cargo operators has emerged in North Atlantic markets. These also could be interesting partners or subsidiaries in third country operations.

2. In the case of an EU integrator investing in/acquiring a US firm of the latter description, continuing participation in the CRAF program could be a consideration – indeed possibly a positive one from the standpoint of the North Atlantic investor – since the airlift business of the US military is considerable. Traffic rights in the western hemisphere or other third country markets might also be helpful if not valuable.

3. In the case of a US integrator investing in/acquiring a European operator, network support in Europe as well as services into 3\textsuperscript{rd} country markets could be valuable.

Possible Developments in a Downturn

1. Numbers of staff laid off could be less than with combination carriers. Mobile workers in all-cargo aircraft are also fewer, since cabin crews essentially are not required. This industry historically has also experienced less cyclical effect (at least the express services part of it) than the combination airlines.

\textsuperscript{241} The technical regulators, the FAA, EASA, etc. would of course also be reviewing all operations and might give stronger scrutiny to new entrants who would also most probably rely on twin engine equipment for long haul operations.
2. Further internationalisation (globalisation) of the business through acquisition of subsidiaries with strength in additional markets could also add the resilience of the firm in weathering any downturns that were not general but only significant in some of its markets.

3. Since the bargaining position and status of flight crews in these enterprises has been strong, employee representatives would certainly be closely involved in any needed steps to retrench.

5.6.2.6 Summary Conclusions on Rights of Establishment

While cross-border investment rights could expose US and EU employees to new challenges, our considered view is that the opportunities far outweigh the risks. Most importantly, granting rights of investment would not remove a single existing employee legal protection. It could, however, challenge employee representatives on both sides of the Atlantic to coordinate their efforts to promote fairness and opportunity.

5.6.3 The Cabotage (and Wet Lease) Issue

From the standpoint of the social impact analysis (which is the focus of this chapter), there is a high correlation between “wet’ leasing (i.e. the leasing of crews as well as aircraft) and cabotage as OAA issues. Both of these market access issues confront a particular problem, namely not only the question of access to new forms of traffic by the companies but also the use of international crews in national transportation. As is well known, most countries have rules or constraints against this practice. Nevertheless, many countries will also have legal tools available to authorise use of foreign registry and crewed aircraft in providing commercial services in national or regionally integrated markets on an exceptional basis.

We will not review here the general position of cabotage under international aviation law. We do note, however, that in all US agreements the phrasing carefully makes clear that nothing in the air services agreement can be deemed to confer this traffic right. Thus a precise reading suggests that it can be approved as an ex bilateral right. That is, a state may approve such operations unilaterally and indeed, if it wishes, on the basis of known and stable criteria.

This said, it is clear that under US law and regulation both cabotage and wet leasing of foreign aircraft for purposes of domestic operations face high hurdles. Among the issues considered in this chapter we can also confirm that the regulatory positions here (even though EU scope for 3rd party wet leasing is also limited) are probably the most divergent.

The key employment constraints here lie in the immigration laws and other regulations as they might affect ability to employ non-resident aliens either generally or in the specific function of aircraft crews. As discussed in subsection 5.3 above, US law expressly forbids issuance of crew visas for the purposes of providing domestic transportation. Labour issues as well as protection of national airlines have been a basic consideration with respect to cabotage laws and policy. Thus companies wishing to carry domestic traffic in a country like the US face two regulatory hurdles: first, the aeronautical authorities will need to approve the operations from an airlift standpoint – e.g. is there a qualifying condition that justifies it; second, the immigration authorities will need to determine whether the crews can be documented under the governing national laws.

242 This language is also included in the draft Grant of Rights Article of the November 18, 2005 ATA. We may note that this same text also exists in numerous agreements of Member States with other third countries.

243 This restriction may be overcome by petitioning the US Department of Labor for temporary work authority based on unavailability of qualified Americans to do the work.
By contrast, as discussed in subsection 5.5 above, the prevalent procedures in the EU are far more flexible. As a broader market access matter, US crews visiting less than 90 days do not need visas at all, whereas all crews of Community carriers need visas (requiring personal appearances before consular officers) even for overnight stays at the US port of entry. Present US visa waiver legislation is limited to tourists and business visitors.

A second area of regulatory divergence is greater flexibility and simplicity of American crews to work in Europe as individuals as well as in wet leasing operations on a temporary basis. While the US throughout its history has been and continues to be an immigrant receiving country, the freedom of aliens to work temporarily is carefully and complexly regulated.

Finally, should the legal framework under the immigration laws and air transport economic regulation be liberalised, there could still be an issue in the area of technical qualification and certification. While FAA regulations and procedures provide for recognition of foreign licences (that have been issued in accordance with ICAO criteria), such recognition has until now essentially been related to the provision of international transportation.

Under the circumstances we conclude that in the case of cabotage operations specific steps of regulatory convergence (through US Congressional action) will be needed as a precondition to the liberalisation of the traffic rights, at least with respect to meaningful and predictable exercise of such rights.

5.6.4 Flight Time Limitations

As presented above, some differences exist between the FTL rules issued by the US FAA and those that have prevailed until now in Europe. As foreseen in the new Europe-wide regulations (see Subsection 5.4.1 above), such inconsistencies seem likely to continue at least in the near term. However, on both sides of the Atlantic it is evident that regulators see FTLs first and foremost as a safety and not as a social issue.

Stakeholders have, however, described to us economic consequences of this inconsistency. European airlines believe that, while the US rules may facilitate more productive flying on short haul sectors, that the FAA 8 hour duty limitation on long haul flying is a costly constraint for which they do not see a clear safety case. Both the airlines (as well as pilots) stress that changes in policy should be based on medical findings rather than on commercial considerations. 244

Thus the European stakeholders with whom we have spoken see this issue as one that should be settled on the basis of safety criteria. Once the regulatory processes currently underway in Europe to adapt and adopt JAA provisions into EC law described in Subsection 5.4.1 are completed (as is anticipated within the coming months), EU-US and/or FAA/EASA discussions of the issue would seem to us reasonable and logical.

What seems illogical, just from a safety perspective, is that there should be divergent rules under an OAA governing persons operating the same types of aircraft over the same routes under the same operating conditions. Current and comprehensive scientific analysis of the

244 The age 60 rule that requires pilots to retire, which is hotly debated also in the US, is another case where medical findings are called for to revaluate the current regulation. Now that the ICAO Council has adopted a new Standard in Annex 1 extending the maximum age to 65 states such as the US and France who have been among those resisting increasing the maximum must decide whether they wish to notify differences to the new rule which becomes effective in November, 2006. See also Subsection 5.2.4.3 above. Clearly a uniform approach among the North Atlantic parties would be a desirable outcome.
health and safety issues should be of relevance to both parties (and also with respect to timely review of age restrictions).

5.7 CONCLUSIONS ON EMPLOYMENT AND SOCIAL ISSUES

In this section we recapitulate our findings and seek to answer in summarised form two questions:

1. What an Open Aviation Area would mean or not mean with respect to existing rules and practices on the North Atlantic that govern employee rights and market access in air transport; and

2. To what extent the differences in such laws and practices create either possibility or likelihood that distortions of competition might arise to the advantage or disadvantage of either party?

5.7.1 Implementing an OAA under Today’s Rules on Airline Employment

The ATA of November 18, 2005 adopted the classical provisions making stationing of staff in the territory of the party subject to the national laws of the respective parties. Thus nothing in this draft agreement overrides immigration and labour laws that limit or define access of foreign nationals to national job markets or the technical quality and personnel licensing controls the parties impose with respect to the performance of aviation functions in their respective territories.

Full implementation of an OAA as envisaged by the EU would require changes in a number of such laws, especially but not only in the US. Immigration laws and regulations would need to be amended and/or standardised to provide the necessary underpinning to permit efficient and dependable exercise of cabotage or certain wet leasing operations if subsequently exchanged as traffic rights. What an OAA, as an exchange between sovereign partners in the specific area of air transport services, would, however, not need to include would be:

- Any general liberalisation of the labour market. That is, the basic expatriate labour requirements for cabotage-type services apply only to air crews.\(^{245}\)

- Liberalisation of outsourcing beyond wet-leasing freedom. That is, nothing in the OAA would affect one way or another questions such as use of foreign repair stations, sub-contracting for catering services, ground handling, etc.

- Any modifications of current employee social and labour protections as a consequence of investment liberalisation. Both US and Community law recognise rights of employees to seek protections under the laws where they live and work.

- Any change of the rights of labour organisations to represent employees. Should more Americans be employed in the Community, more EU citizens in the US or (more realistically) US carriers employ more Europeans in Europe and EU carriers more Americans in the US; such employees could freely seek representation under the governing national laws.

\(^{245}\) Local national employees could also, at least in part, provide cabin staffing. We know of instances in which EU airlines have used non-Community nationals as cabin crew on international services. This legal possibility is also given under US law (see 1.3 above).
5.7.2 Similarities and Divergences of Practice and Situation of Airline Employees under Current Law and Regulation

As outlined at the beginning of this chapter and subsequently discussed, airlines on both sides of the Atlantic have known and continue to experience similar concerns and issues in management-labour relations. In the EU as well as the US:

- Employees of airlines enjoy high levels of collective bargaining representation;
- Such representation is organised along craft-lines; that is, rather than having one union for the entire company, a number of unions will represent particular employee groups;\(^\text{246}\)
- Collective bargaining agreements (as well as laws that provide legal protection for employment contracts) establish procedures to be followed such as seniority rights under conditions that result in redundancies or temporary lay offs;
- Hours and working conditions are fixed in law and, in the case of mobile workers, are influenced in first line by safety standards (while also being shaped by collective bargaining agreements as well as more general framework legislation from a social perspective);
- Mobile workers, especially pilots, face rigorous qualification standards. This means that the supply of such skills in the labour market tends to be relatively inelastic as long as regulators as well as management see the need for highest levels of safety assurance as critical.
- Thus, while the economic position of pilots can suffer significantly in a downturn their importance to airlines is such that they are positioned to recover in an upturn.
- Both US and EU/Member State legislation provide in various ways for collateral benefits such as health insurance, unemployment insurance and retirement pensions.

As discussed in some detail above, we believe that it is not possible to make a judgement that either American or European airline employees enjoy a more favourable position under law and regulation. Rather, the evidence overwhelmingly suggests that it will be differences in performance of individual companies rather than divergences in levels of social protection that more decisively shape prospects and welfare of employees of US and Community airlines.

From the perspective of the employers the same is true. To the extent that some employers enjoy more flexibility under law to adjust their staffing levels than others, this is not an US-EU issue. As discussed in subsection 5.4.8, there may be greater divergence within the EU than with the US on this matter, as Member States seek to establish a dynamic balance between the goals of international competitiveness and social justice as embodied in the widely discussed “flexicurity” concept. This means giving employers flexibility to hire and fire in response to objective market conditions under non-discrimination standards while at the same time ensuring employees fair treatment with respect to severance, unemployment insurance and re-employment opportunities.

Finally, in a highly competitive market, any conduct motivated by protectionism, whether European or American, would be self-defeating. Static national market shares are in any

\(^{246}\) In addition in Europe, there may also be formal works councils that represent the employees as a whole.
case disappearing. They cannot be retained much less restored by ownership restrictions in markets where designation, route and capacity restrictions no longer exist.
6 ECONOMIC BENEFITS AND APPROACH TO IMPACT ANALYSIS

6.1 ECONOMIC BENEFITS OF AVIATION

Against this policy background, this study seeks to assess the economic benefits stemming from a closer aviation relationship between the EU and the US. The analysis proceeds from the basis that increased aviation activity generates additional economic activity.

6.1.1 A Virtuous Circle of Growth

Air transport services can be both a driver and a consequence of growth and have wider impacts than simply the effects on airlines and airport operators; this is known as the “virtuous circle” of air travel: an air passenger not only pays for his ticket but also spends on hotels, taxis and thus contributes to the development of commerce; an airline carrying more passengers spends more on catering and other support services; the growth in these industries thus leads to greater economic growth and increased demand for travel.

Given these increased impacts of the aviation sector, administrators may be expected to consider the likely impacts on the wider economy of any policy developments they are pursuing which may serve to either increase or diminish the number of services operating in the markets under their jurisdiction.

![Image of the Virtuous Circle of Air Transport](image)

**Figure 31: The Virtuous Circle of Air Transport**

Air transport’s impact on economic growth and the reciprocal boost provided to air travel by the overall economic conditions is illustrated by the correlation between propensity for air travel and Gross Domestic Product.
However, the relationship between air transport and the economy is not homogeneous, some types of economic activity or industry are more aviation intensive than others – resulting in some states or regions generating more air traffic and others less than would be expected from GDP considerations alone. The following figure uses expenditure on air transport per employee as a metric to illustrate the relative degree to which different types of economic activity rely on and, therefore, support air transport of passengers.\(^{247}\)

\(^{247}\) Note: This illustration does not include tourism since when people travel as tourists it is a leisure rather than a business activity. Clearly tourism is a major driver of air transport, and should be considered in addition to the industries listed.
From Figure 33, we could conclude, for example, that an economy with strong insurance and mineral extraction sectors will drive demand for air transport more strongly than an economy of equivalent size that is based on enterprises engaged in the manufacture of precision instruments and in research and development activities. However, these industries may – depending upon the nature of the commodity in question – drive demand for air cargo services to a greater degree than would insurance and mining sectors.

Note, that the chart only considers industries with direct expenditure on air travel. Therefore it does not include the impact of tourism nor does it take account of the impact of expatriate communities who may provide significant volumes of passenger traffic.

6.1.2 Importance of Air Transport to International Trade Overall

The efficiency and economy of air connectivity between the EU and the US is essential to the trade activity linking the two regions. As implied above, air transport of passengers and cargo supports and stimulates international trade of both merchandise and services. Passenger airline services are a necessary component of travel and tourism services trade, and also facilitate other services trade particularly for the business services sector. Air cargo services handle an increasingly important share of foreign merchandise trade including over one-half of US export trade value to overseas markets in 2004 (excluding Canada and Mexico). Air passenger services also support sales, promotion, and support activities related to merchandise trade.

6.1.2.1 Air Transport Stimulus to Trade in Services

Air services between the EU and the US not only generate direct services trade between the two regions through their airlines’ revenues, but also facilitate and promote trade in other services and merchandise. The current level of trade between the EU and the US totals an estimated €708 billion ($880 billion) including €504 billion ($626 billion) of merchandise trade and €204 billion ($253 billion) in 2005\(^{248}\) of services trade in both directions. The table below shows that as a share of the total trade (services and merchandise combined) services trade accounts for 29%, up from 26% in 1990 during a period when trade increased 7.4% annually, compared to 6.6% for merchandise trade. Services trade levels increased at a higher rate than merchandise trade for the period 2000 to 2005 (6.7% vs. 5.5% per year).

\[
\begin{array}{|c|c|c|c|c|c|c|c|c|}
\hline
\hline
\text{Services} &  &  &  &  &  &  &  & \\
\text{Passenger Fares} & $9,992 & $12,280 & $18,674 & $16,566 & $14,890 & $15,438 & $17,397 & $18,707 \\
\text{Travel} & $21,407 & $32,672 & $44,814 & $38,678 & $36,746 & $36,284 & $42,762 & $47,215 \\
\text{Military-Related} & $13,275 & $7,867 & $8,909 & $9,514 & $9,841 & $13,368 & $12,923 & $11,779 \\
\text{All Other} & $41,786 & $65,928 & $110,316 & $113,555 & $125,164 & $139,206 & $154,099 & $175,395 \\
\hline
\text{Total Services} & $86,460 & $118,747 & $182,713 & $178,313 & $186,641 & $204,296 & $227,181 & $253,095 \\
\hline
\text{Share of Total} & 26% & 27% & 26% & 28% & 29% & 29% & 29% & 29% \\
\hline
\hline
\text{Combined total} & $328,074 & $441,164 & $662,481 & $646,451 & $651,178 & $703,241 & $791,147 & $879,566 \\
\hline
\end{array}
\]

* Estimated based on year-to-year growth for first three quarters. Figures in US$ millions

Table 31: US-EU25 Merchandise and Service Trade

Airlines fares worth €15 billion ($18.7 billion) make up 7% of the trade in services between the two. However, airline services trade is primarily responsible for almost all of the travel

\(^{248}\) Figures for 2005 are estimated based on the twelve months to September 2005
services trade, worth €38 billion ($47.2 billion), and partially responsible for the over €141 billion ($175 billion) in non-military non-travel related services trade, which is the fastest growing sector. On this basis, airline services are arguably essential to over 25% (€53 or $65.9 billion) of trade in services between the two regions (not including the non-military other sector). The figure below shows the breakdown of EU-US services trade.


The relationship between air transportation and services trade can be shown by comparing total trade in business, professional and technical services (the latter being probably the most “air-dependent” of the services trades) with air transportation “services” trade (as represented by the combined total of foreign travel on US carriers and US travel on foreign carriers). The passenger fare trade averaged 4.6% annual growth between 1991 and 2004 (in current dollars), matched by 8.8% annual growth in air-dependent business services trade. The ratio between the two trade measures (business service trade to fare trade) increased from 0.45 to 0.75 over the same period.

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</thead>
<tbody>
<tr>
<td>Passenger Fares</td>
<td>$9,689</td>
<td>$12,280</td>
<td>$18,674</td>
<td>$16,566</td>
<td>$14,890</td>
<td>$15,438</td>
<td>$17,397</td>
<td>4.6%</td>
</tr>
<tr>
<td>Business Services*</td>
<td>$4,395</td>
<td>$5,847</td>
<td>$11,614</td>
<td>$10,241</td>
<td>$10,316</td>
<td>$10,818</td>
<td>$13,099</td>
<td>8.8%</td>
</tr>
<tr>
<td>Ratio to Fares</td>
<td>0.45</td>
<td>0.48</td>
<td>0.62</td>
<td>0.62</td>
<td>0.69</td>
<td>0.70</td>
<td>0.75</td>
<td></td>
</tr>
</tbody>
</table>

* Business, professional and technical services. Figures in US$m


Table 32: US-EU25 Passenger Fares vs. Business Services Trade (Millions US dollars)

6.1.2.2 Air Transport Stimulus to Merchandise Trade

The expansion of air transportation services has also stimulated merchandise trade by enhancing the connectivity between world production and consumption centres. Air transportation is an increasingly vital link in manufacturing systems, particularly those

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249 Since this data records trade the values are limited to fare revenues paid by foreign pax on US carriers (US receipts or exports) and by US passengers on foreign airlines (US payments or imports) for international flights only. While it therefore underestimates the total value of the market it nevertheless provides a valuable indication of the volumes of services trade, the change over time and the importance to overall commercial and trade activity in the transatlantic market.

250 This measurement is used to represent the total value of international passenger travel.
dependent on just-in-time distribution and multi-national sourcing of raw and intermediate materials. Consumer markets have also increased dependence on air distribution systems, particularly for perishables, seasonal or fashion-based items, or high value technology items that lose value with extended delivery times. The advent of Internet-based e-commerce has benefited from the expansion and enhancement of air delivery services. Ultimately, a region’s trade growth depends on its air transportation network which stimulates activity by existing companies and attracts new investment through efficient access to world markets.

While handling a relatively low share of import and export shipment weight, air transportation accounts for nearly half of the total trade by value between the US and EU, generating €184 billion ($229 bn) of two-way trade in 2005. The air trade flows are relatively balanced compared to overall trade, with eastbound trade at €84 billion ($104 bn) and westbound trade at €100 billion ($124 bn). While combined air trade increased over 2000 trade levels (albeit in current dollars), the modest growth between 2000 and 2005 (mostly due to the 9/11 disruptions and the US recession) reversed a long-term shift to air transport. Between 1995 and 2000, air trade averaged 11% annual growth compared to 9% for overall trade including 14% annual growth for EU exports to the US. After declining from 2000 to 2004, eastbound air trade growth returned to historical levels in 2005 with an increase of 10% in value.

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</tr>
</thead>
<tbody>
<tr>
<td>US-EU25</td>
<td>Air</td>
<td>$62,501</td>
<td>$96,919</td>
<td>9%</td>
<td>$103,831</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>$125,849</td>
<td>$167,945</td>
<td>6%</td>
<td>$186,342</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Air Share of Total</td>
<td>50%</td>
<td>58%</td>
<td>56%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU25-US</td>
<td>Air</td>
<td>$51,672</td>
<td>$98,988</td>
<td>14%</td>
<td>$123,975</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>$134,224</td>
<td>$227,249</td>
<td>11%</td>
<td>$308,769</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Air Share of Total</td>
<td>38%</td>
<td>44%</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined Total</td>
<td>Air</td>
<td>$114,173</td>
<td>$195,908</td>
<td>11%</td>
<td>$227,806</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>$260,073</td>
<td>$395,194</td>
<td>9%</td>
<td>$495,111</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Air Share of Total</td>
<td>44%</td>
<td>50%</td>
<td>46%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Table 33: US-EU25 Merchandise Trade – by Air and Total

The relative importance of air trade to particular EU markets illustrates the variance in their industrial sectors and geographical conditions, as well as the importance of direct air services. Figure 35 compares the share of total trade value moving by air in 2002 for both the US market and all extra-EU markets. As shown, air transport accounts for a higher share of US trade than total external trade for every country except Luxembourg, often by significant margins. The top member states in terms of air dependence for both US and total external trade was Ireland with 87% of US trade moving by air and 64% of total extra-EU trade by air. Other states with high use of air include the UK, Luxembourg, Belgium and France. Greece, Spain, Portugal and Austria have the lowest shares of air use for both US and extra-EU trade.

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251 The identification of air trade is based on the mode of transport used to exit or enter the trading partner country, so the statistics should include traffic that is flown via a third country.

252 The extra-EU trade statistics were derived from Extra EU Trade of Member States by Mode of Transport, Eurostat Statistics in Focus (February 2004) which excluded the ten new member states.
While total trade statistics for the new member states were not available, there is a similar variability in air dependence shown by patterns for US trade. As shown below, Malta was the top state with 86% of its US trade moving via air followed by Hungary (59%), the Czech Republic (46%) and Slovenia (38%). The Baltic states of Latvia, Lithuania and Estonia had the lowest use of air.
Air transport is less important relative to other modes in intra-regional markets (to include both intra-US and intra-EU) based on the ability to utilise truck services to obtain expedited transportation over relatively shorter distances. In the US domestic market, trucking services now account for the majority of traffic moving less than 1,000 miles as both integrated and general trucking carriers can provide services that are fully competitive.

As an indication of the relative importance of air for these markets, air accounted for just 4.5 percent of US trade value with Canada and Mexico in 2004 compared to nearly half of the US-EU trade value. Based on 2002 statistics for US domestic transportation (including domestic portions of export shipments), air accounted for 3.2% of total value while the combination of air and postal/express (which includes some ground traffic) accounted for 15%. As indicated below, air transportation is most important for long-haul high-value shipments. Air shipments averaged $78 per kilogram compared to less than $1 per kg for all shipments. The average air shipment travelled 1,919 miles compared to 546 miles for all modes. The mix of air and ground services for the postal/express mode is indicated by average value and distance statistics that are less than the pure air averages, but still significantly above the overall average for all modes.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total</th>
<th>Air</th>
<th>% of Total</th>
<th>Postal/Express</th>
<th>Combined</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipment Value ($m)</td>
<td>8,397,210</td>
<td>264,959</td>
<td>3.2%</td>
<td>987,746</td>
<td>1,252,705</td>
<td>14.9%</td>
</tr>
<tr>
<td>Shipment Weight (t '000)</td>
<td>10,585,067</td>
<td>3,411</td>
<td>0.0%</td>
<td>23,145</td>
<td>26,556</td>
<td>0.3%</td>
</tr>
<tr>
<td>Ave Value per Kg</td>
<td>$0.79</td>
<td>$77.68</td>
<td>$42.68</td>
<td>$47.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Miles/Shipment</td>
<td>546</td>
<td>1,919</td>
<td>894</td>
<td>1,026</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, Bureau of Transportation Statistics, Commodity Flow Survey 2002

Table 34: Commercial Freight Activity in the United States by Mode of Transportation: 2002

The increased competition from surface modes is indicated by the pattern of change between 1993 and 2002 CFS statistics. The average distance of air shipments increased over 500 miles from 1,415 to 1,919 while the average shipment by all modes increased just over 100 miles. The average value of an air shipment increased by 59 percent from $49 to $78 per kg while overall average value increased just 19 percent.

The lack of comparable data for the intra-EU market makes it difficult to measure the relative importance of air versus other modes, although smaller geographical region when compared to the US suggests it would be somewhat less. Weight statistics indicate that intra-EU air traffic is still significant. As shown below, air freight and mail moving within EU countries totalled over 753,000 tonnes in 2004, while traffic between EU countries exceeded 1.4 million tonnes.253 The combined total of 2.2 million tonnes compares to 8.4 million tonnes of extra-EU traffic of which North America accounts for 2.6 million tonnes. As with the intra-US market, the intra-EU traffic is probably concentrated on higher-valued and longer distances. As an indication of the ability to serve expedited traffic with ground routings, one of the primary express carriers for the intra-EU market, TNT, reports that only 30 percent of their traffic requires any air transport based on their central hub locations in Belgium.

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253 These airport-based statistics exclude double-counting for traffic between EU airports.
<table>
<thead>
<tr>
<th></th>
<th>Tonnes</th>
<th>% of Total</th>
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<tbody>
<tr>
<td>National</td>
<td>753,460</td>
<td>7%</td>
</tr>
<tr>
<td>Intra-EU</td>
<td>1,466,329</td>
<td>14%</td>
</tr>
<tr>
<td>Extra-EU</td>
<td>8,450,237</td>
<td>79%</td>
</tr>
<tr>
<td>Total</td>
<td>10,670,026</td>
<td>100%</td>
</tr>
</tbody>
</table>


Table 35: Air Freight and Mail Transport in the EU (2004)

While air transport may be small relative to other modes in intra-regional trade, the absolute size of these air markets are still significant and essential to production and consumer markets. Total US domestic air traffic in 2002 accounted for $265 billion in value and 3,411 tonnes of which $190 billion and 2,356 tonnes were US domestic trade (i.e., with US destinations). This market amounted to roughly two-thirds of the shipment weight for export traffic leaving the US via air (3,122 tonnes) at a slightly higher value ($180 billion). This comparison shows that the availability of competitive truck services for intra-regional markets results in a greater focus on higher value commodities compared to overseas export markets where air services must only compete with water services.

6.1.2.3 Foreign Investment

A final area where air connectivity is essential to the joint vitality of the US and EU economies relates to foreign investment and the increasingly multi-national nature of international businesses. Income generated between the two regions (mostly from assets held overseas) totals over $400 billion which amounts to nearly half the total trade between the two markets.

The balance between the two regions is fairly even as shown in Figure 37 below: US receipts from EU assets and other sources is estimated to total $181 billion in 2005 (45%), while EU receipts from US sources totalled $219.

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254 The CFS statistics measure export shipments in terms of the domestic routing with the destination being the airport of exit.
Between 1990 and 2005, total receipts average over 9% annual growth per year including 7.6% growth since 2000 (the table below provides the data behind the chart).

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</thead>
<tbody>
<tr>
<td>US</td>
<td>$55,978</td>
<td>$73,729</td>
<td>$134,280</td>
<td>$111,038</td>
<td>$104,454</td>
<td>$121,106</td>
<td>$146,143</td>
<td>$181,177</td>
</tr>
<tr>
<td>EU</td>
<td>$52,546</td>
<td>$76,946</td>
<td>$142,850</td>
<td>$114,171</td>
<td>$113,277</td>
<td>$116,437</td>
<td>$151,848</td>
<td>$219,132</td>
</tr>
<tr>
<td>Combined</td>
<td>$108,524</td>
<td>$150,675</td>
<td>$277,130</td>
<td>$225,209</td>
<td>$217,731</td>
<td>$237,543</td>
<td>$297,991</td>
<td>$400,310</td>
</tr>
</tbody>
</table>

* Estimated based on year-to-year growth for first three quarters. Figures in US$M

In conclusion, air transport systems are vital components of trade systems. Air transport of passengers is essential to EU-US tourism and travel-dependent services trade, while also facilitating overseas investment and commodity sales. Air cargo transport has been an important factor in the modern expansion of both manufacturing and consumer markets, promoting both the expansion of a country’s market coverage and the ability to serve vast multi-country markets and production systems. Future trade expansion will be closely linked to the ability of the EU-US air transport sector to expand, innovate and improve.

6.1.3 Anticipated Impacts of Market Liberalisation

The overall effect of liberalisation is to remove constraints on a market which are currently impeding expansion of that market. Removing constraints facilitate the release of resources and investment in the market overall.

Liberalising the air transport market between the EU and US may be expected to bring different levels of benefits to different consumers and suppliers. The fact that benefits may be unevenly distributed does not mean that the benefits are merely a transfer of resource from one part of the market to another, rather, they can be characterised as a release of resources in one part of the market for investment in the market as a whole. For example, benefits accruing to operators and consumers in their home market present an opportunity for investment and spending in foreign markets, which in turn provide an overall benefit when the entire market is taken into account.

Because of the relationship between the economy and air transport, liberalisation of air transport markets formerly restricted by regulation may expect to have beneficial economic results. In air transport markets where governments have followed a policy of restricting access to market for new entrants or supply of capacity, a more liberal regime which removes either or both of these constraints may be expected to result in an increase in traffic with the concomitant economic impacts through additional economic activity.

6.2 OVERVIEW OF ANALYSIS AND RELATIONSHIP BETWEEN BENEFITS

The overall relationship between the different areas of analysis conducted for this study are shown in the figure below.
Quantification of economic benefits from an OAA derives from several areas is outlined in the subsections below:

1. The additional GDP stimulated by increased demand for air transport
2. The impacts of additional demand on employment in the air transport and wider industries
3. The value of consumer surplus as a result of price reduction to both existing and new consumers.

6.2.1 Removal of Output Constraints (Capacity, Designation, Routes)

An OAA would include the removal of all regulatory restrictions on capacity, frequency and designation, i.e. on routes that may be operated, capacity and frequency that may be supplied and airlines that may enter the market. The removal of these constraints may be expected to lead to increased competitive behaviour as:

- new entrants can commence operations in markets from which they are currently excluded, so offering the potential for price competition, lower fares and the stimulation of additional demand; additional passengers lead to greater spending on goods and services at origin and destination of travel
- additional competition in the market encouraged by the removal of barriers to entry (traffic rights and designations) may also mitigate against fears of market dominance by larger network alliances, so that anti-trust immunity may be more readily granted and deeper alliances enabled. Research has shown that such immunised alliances can deliver greater benefits over and above those based on simple code share and operational relationships when they permit price coordination and/or revenue sharing activity
- new entrants may also lead to more efficient firms replacing less efficient firms as existing firms respond to competition by reducing their costs and adopting more efficient behaviour or risk being taken over by the new, more efficient firms. Cost
reductions achieved can lead to a benefit retained by firms, or passed on to consumers in the form of lower fares, again stimulating demand.

6.2.2 Impacts of Additional Competition – Closer Airline Relationships

In circumstances where market liberalisation goes further than constraints on supply but also permits deeper levels of industrial cooperation, such as would be enabled by the removal of constraints on foreign investment in the air transport industry under an OAA, mergers and acquisitions also offer the potential for further benefits where they drive more efficient behaviour. In such circumstances airlines may, for example, be able to generate cost savings in operations or gain economies of scale in capital expenditure (e.g. aircraft purchases) in a merged company, which were not possible on an individual basis; they may also adopt new service patterns which can offer more efficient routings, for example by replacing connecting services with direct flights. Airlines may or may not decide to pass on such costs savings to consumers.

Where investment constraints are removed and not only deeper commercial alliances (given the essential flexibility of unrestricted code sharing) but also transatlantic mergers and acquisitions, are enabled there may be opportunities for economic benefits as:

- merged firms become more efficient and generate costs savings (through economies of scale etc. as described above), which, if passed on to consumers in the form of lower prices can stimulate additional demand with an associated multiplier effect, or if not passed on, at least benefit the companies’ bottom line but with no multiplier effect generated. Ultimately incumbent firms will need to react to competition and so contribute to an overall increase in efficiency in the market, or the least efficient and least competitive firms will fail and be replaced by those more efficient

- as airlines take advantage of mergers or less extensive investment opportunities which fall short of full mergers to increase the degree of cooperation between them, they may realise operating synergies which are currently prevented from achieving with existing, more distant relationships. These may lead to better pricing synergies in connecting routes, and/or changes in service patterns such as more efficient route networks. Pricing synergies also provide the opportunity to set fares at a level which can generate additional demand.

6.2.3 Multiplier Effects

Further effects on the wider economy of increased demand are likely to be significant as the multiplier effect of additional air travel and cargo transportation generates benefits in a number of areas such as:

- benefits relating to the increase in jobs on or near the airports or directly related to the provision of aviation services

- benefits relating to direct expenditure by aviation visitors, including spend on travel agents, hotels and other industries not directly in the aviation field

- benefits related to support services to airports or the wider aviation industry

Note that the establishment of an OAA would not affect the requirement for mergers and acquisitions to comply with competition requirements of the relevant national and European authorities but that additional competition enabled by an OAA may make approval of such mergers easier to obtain.

The Phase I agreement includes freedom for code shares between EU and US airlines, however, where services involve the airline codes of third countries their authorities may be required to approve such activity.
• benefits derived from activities/expenditure in support of the non-aviation related industries under the primary indirect category
• benefits to air passenger consumers through enhanced air services and expanded travel
• benefits to air cargo shippers and consignees through enhanced air services and expanded trade.

Benefits from the reduction in fares, which accrues to both new passengers and existing passengers, can be measured in the form of a consumer surplus. As prices fall existing consumers are said to generate a surplus from the difference in the original prices they paid and the new lower fares which can then be spent on additional goods and services. New consumers also benefit from this effect as economic theory holds that they will generate a surplus if the price they pay falls below a price at which they would have travelled.
7 IMPACTS OF REMOVING OF REMAINING BILATERAL
(OUTPUT) RESTRICTIONS

7.1 UPDATING THE ORIGINAL BRATTLE GROUP REPORT

The economic analysis undertaken for this review largely follows the original Brattle Group approach. However, several deviations from the methodology used in that study have been taken, for example in circumstances where comparable data is not available or where it has been determined that a new approach can illuminate the data further, or to act as a test of the original analysis.

In line with Brattle, therefore, economic benefits from several effects of the OAA are considered including the removal of output constraints through abandoning any remaining restrictions on capacity, routes and designations – a factor common to most Open Skies agreements. This generates a benefit through stimulating demand and providing a consumer surplus.

A controversial argument can be made in respect of these benefits that there are in fact no capacity constraints on the North Atlantic but that the plethora of connecting services over alternative points in Europe means that there are always indirect routings. For example, passengers travelling from London to Washington can fly to many points in Europe and still connect on the same day through a competing network airline or with allied airlines; these routings will necessarily take longer but are still possible.

However, the attraction of a direct service is such that the forced longer routing can be considered to be a form of constraint – more consumers will travel when they have direct services – preferring to travel elsewhere or not at all if their journey is complex.

7.2 ECONOMIC RATIONALE

7.2.1 Expectations for the Removal of Output Constraints

A market constrained by regulatory limits on output – such as those EU Member State-US air transport markets not currently covered by Open Skies agreements – will tend to result in an undersupply if the limit imposed by the regulation is less than the optimum level of output for the market. Lower output implies higher prices; this imposes a cost on society in the form of a deadweight loss.

A process of liberalisation which includes loosening or removing constraints will, in general, be expected to result in an increased supply with an accompanying effect downward pressure on prices. This market adjustment towards the new level of prices and supply may not be immediate, but it is reasonable to assume that after a period of change a new equilibrium will be reached.

Note that it is not the absolute level of output that has been constrained in EU-US air transport agreements: transatlantic traffic has grown even in markets between countries with output restrictions (e.g. US – UK which restricts routes and competitors from London Heathrow), rather it is aspects of output that have been constrained, so the market is smaller in scope than it would otherwise be, with the number of carriers and of origin-destination pairs limited.

The chart below provides an illustration of the sort of behaviour that might be observed in a growing market. The solid blue line represents a market responding to the removal or
relaxation of output restrictions, while the dashed grey line represents a constrained market growing at a constant rate.

![Illustration of increased output after the removal of restrictions](image)

**Figure 39: Illustrative Comparison of Removal of Constraints on a Market**

Initially, the market may be expected to grow at a faster rate as existing firms (here airlines) expand their operations and new firms enter the market. Once a new equilibrium has been reached, the growth rate will return to its base level and continue its progression at that rate, all else being equal.

### 7.2.2 Aviation Specific Complications

For the aviation market, particularly if examined at an EU-wide level, the picture of growth, liberalisation and the identification of the impacts of liberalisation is complicated by several factors:

- the variation in the growth rate, in an industry which is highly cyclical and prone to shocks
- the degree of competition within the market, which varies from country to country
- the historic policy approach of individual governments
- constraints in key markets due to other factors such as infrastructure (e.g. in runway capacity)
- strategic of individual airlines, including the network approach which, through airlines’ hub and spoke operations, means that the impacts of liberalisation are not confined to one country market but spread into connected markets
- the existence (and perception of the existence) of barriers to entry\(^{257}\) such as aircraft procurement costs.

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\(^{257}\) See work by Pitelis and Schnell, (2002) and Schnell (2004) on the inhibiting effects of barriers to entry on airline markets
These factors affect the rate and magnitude of the market reaction to liberalisation. Clearly, the reaction will not be identical for all countries.

This theoretical framework is borne out by empirical observations. In three major world air transport markets the removal of constraints has resulted in an increase in output:

1. Traffic within Europe (liberalised through a series of Community level legislation, see section 2.2.2)\textsuperscript{258}

2. Domestic traffic within the US (overnight liberalisation of domestic services)\textsuperscript{259}

3. Transatlantic market between the US and countries with Open Skies agreements (further examined below).

In each case, the relaxation of restrictions in air services agreements has caused the market to expand, offering the consumer more choice in carrier and destination as well as lower fares. The analysis undertaken for this report, and described below, is focused on the third of these examples.

In order to assess the impact of liberalisation in the transatlantic market, historical traffic data has been examined for overall market patterns in countries before and after Open Skies. We have attempted to isolate, as far as is possible, the effect on transatlantic traffic due to liberalisation. This effect has then been applied to countries with remaining bilateral constraints in order to predict the improved growth in the event of similar liberalisation. From this, the reduction in fare prices and increase in consumer surplus can be deduced.

The data suggest that Open Skies agreements do have a significant effect on traffic growth rates in the short term, lasting approximately five years, as extra capacity is released within the market. In the long term the discernable effect decreases, and it is the policies of the individual countries and the strategies of individual airlines which once again shape the market’s development.

7.3 CONTEXT FOR TRANSATLANTIC AIR TRANSPORT MARKET GROWTH

The five years since the Brattle Group’s analysis\textsuperscript{260} have been a turbulent time for the aviation industry. The shockwaves from the 9/11 attacks compounded by the uncertainty caused by Western involvement in war in Afghanistan and the Gulf have caused a severe downturn in the level of transatlantic traffic. The industry is in recovery, but these shocks present difficulties for fair analysis.

\textsuperscript{258} DG-TREN reports that the number of scheduled airlines established in the European Free Trade Association has increased steadily from 77 in 1992 to 139 in 2000, including the emergence of low cost carriers whose operations have been enabled by liberalisation and the number of air routes between different Member States of the European Union has increased by some 30% since 1993

\textsuperscript{259} Analysis undertaken by Booz Allen Hamilton for previous studies for DG-TREN shows that the effect of liberalisation on traffic levels in the US domestic market was to increase the rate of growth by 5% over and above the underlying growth rate

\textsuperscript{260} Brattle’s report was based on 2000 data, and appears to have been compiled too soon after the World Trade Center attacks for its effects to be considered
The impact of such events on air traffic growth on the transatlantic market demonstrates the hyper-cyclical nature of the airline industry. Correlation of traffic growth rates with those for US GDP shows that air transport follows a similar pattern.\textsuperscript{261}

As the chart above shows, the growth rate of transatlantic traffic was positive throughout the 1990s, with the exception of 1991 where it suffered a decline which can largely be attributed to the war in the Gulf; 2001 and 2002 were exceptionally bad years for the airline industry, but there has since been a good recovery.

Separating out the effects of regulation change from the overall movement of the market is a challenge. This has been tackled by close statistical analysis of all the relevant variables available, including use of multivariate regression (see Appendix 2).

Note that over the entire period under analysis here, the growth rate for US GDP (right hand scale in chart above) ranged from 3.2\% to 7\%, while transatlantic traffic varied from -11\% to 17\%. The standard deviation of traffic growth is 0.077 which is over six times greater than the standard deviation of the US GDP at 0.012. This further illustrates the highly varied nature of transatlantic air traffic which is hypercyclical in relation to GDP.

### 7.4 ANALYSIS OF TRAFFIC GROWTH

For the purposes of analysis, it is convenient to divide the EU and EFTA Members into three groups reflecting their relationship with the US in terms of Open Skies agreements:

\textsuperscript{261} Transatlantic traffic levels were also compared to Euro GDP and UK GDP; however it was found that it tracked US GDP much more closely. There are a number of plausible explanations for this: the fragmentation of the European market composed, as it is, of many countries with separate economic policies; demand for transatlantic traffic being more dependent on the prosperity of the US than Europe; or simply that the negative shocks to air travel such as the Gulf Wars and 9/11 had a greater impact on the US economy than on Europe or the UK. Further investigation of these possible reasons is beyond the scope of this paper.

\textsuperscript{262} 1991, 2001 and 2002 are the only years in the history of commercial civil aviation where overall outputs have fallen compared with the previous year.
1. The **1995 Group** composed of countries which entered into Open Skies agreements in 1995: Austria, Belgium, Czech Republic, Denmark, Finland, Netherlands, Sweden, Iceland, Norway and Switzerland.

2. The **New Entrants** consisting of countries which signed up post-95: France, Germany, Italy, Poland and Portugal.

3. The **Non Open Skies Countries** which do not currently have Open Skies agreements with the US: Greece, Hungary, Ireland, Spain and the UK.

The following table gives summary annual growth rates for all the countries considered. It is a straightforward update of the analysis performed in the original Brattle Group report but with the addition of countries in the European Free Trade Association and new EU Member States. It was decided to concentrate on the different timings of Open Skies agreements and analyse the countries with respect to that factor, rather than isolate the countries by political background (i.e. EU15, EU10, EFTA), as it is their status in relation to transatlantic traffic that is of primary concern.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1995</td>
<td>2.2%</td>
<td>18.5%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Belgium</td>
<td>1995</td>
<td>-4.3%</td>
<td>13.0%</td>
<td>-12.8%</td>
</tr>
<tr>
<td>Denmark</td>
<td>1995</td>
<td>-5.4%</td>
<td>-2.4%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Finland</td>
<td>1995</td>
<td>10.0%</td>
<td>-6.5%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1992</td>
<td>12.5%</td>
<td>11.2%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Sweden</td>
<td>1995</td>
<td>-9.0%</td>
<td>8.1%</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1995</td>
<td>32.4%</td>
<td>6.3%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Iceland (EFTA)</td>
<td>1995</td>
<td>10.6%</td>
<td>10.8%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Norway (EFTA)</td>
<td>1995</td>
<td>8.7%</td>
<td>-9.8%</td>
<td>-7.2%</td>
</tr>
<tr>
<td>Switzerland (EFTA)</td>
<td>1995</td>
<td>1.8%</td>
<td>8.8%</td>
<td>-7.6%</td>
</tr>
<tr>
<td><strong>Subtotal: 1995 Group</strong></td>
<td></td>
<td><strong>4.1%</strong></td>
<td><strong>9.1%</strong></td>
<td><strong>-2.8%</strong></td>
</tr>
<tr>
<td>Germany</td>
<td>1996</td>
<td>5.5%</td>
<td>5.8%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Italy</td>
<td>1998</td>
<td>6.1%</td>
<td>8.9%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Portugal</td>
<td>1999</td>
<td>1.1%</td>
<td>4.8%</td>
<td>-8.2%</td>
</tr>
<tr>
<td>France</td>
<td>2001</td>
<td>2.6%</td>
<td>8.7%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Poland</td>
<td>2001</td>
<td>4.8%</td>
<td>8.6%</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Subtotal: New Entrants</strong></td>
<td></td>
<td><strong>4.5%</strong></td>
<td><strong>7.3%</strong></td>
<td><strong>0.5%</strong></td>
</tr>
<tr>
<td>Greece</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>1999</td>
<td>2.2%</td>
<td>7.7%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td>3.7%</td>
<td>8.6%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Hungary</td>
<td>2001</td>
<td>33.6%</td>
<td>9.0%</td>
<td>-5.5%</td>
</tr>
<tr>
<td><strong>Subtotal: Non O.S.</strong></td>
<td></td>
<td><strong>3.9%</strong></td>
<td><strong>8.7%</strong></td>
<td><strong>-0.7%</strong></td>
</tr>
<tr>
<td><strong>All countries</strong></td>
<td></td>
<td><strong>4.2%</strong></td>
<td><strong>8.2%</strong></td>
<td><strong>-0.7%</strong></td>
</tr>
</tbody>
</table>

Table 37: Transatlantic Traffic Growths by European Country and Group post 1990

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263 Although it entered into an Open Skies agreement in 1992, for the purposes of this analysis the Netherlands has been included in the 1995 group. Analysis of the data excluding the Netherlands does not have a significant effect on the results presented below.

264 Compound Annual Growth Rates (CAGR) are used as standard throughout this report.

265 It uses the same US DoT T-100 data source.
This information is summarised in the following graph which gives growth rates for each group of countries considered:

![Annual growth rates in transatlantic traffic](image)

**Figure 41: Illustration of Traffic Growth over Time**

On viewing the table and figure above, several points stand out:

- the growth rate over the last five years is substantially lower than in the previous decade; this is true for all sub-groups and for the vast majority of individual countries

- five countries signed Open Skies Agreements after 1995, therefore comparing traffic before and after 1995 is insufficient and may be misleading

- for the countries that signed agreements in 1995, the growth rate improved substantially in the latter half of that decade, taking the combined growth rate from below the average to substantially above it

- New Entrant countries that joined Open Skies agreements post 1995 had a better growth rate in the most recent period than any other group considered.

The data suggest that Open Skies agreements have a short term effect on the growth rate, increasing it in the period immediately after the agreement is signed. This is consistent with the theory that they release extra capacity within the market. Once the market has adjusted to the new regulations, no further effect on growth is observable, and it is the behaviour of the individual countries which once again becomes key.

Interestingly, the growth rate for the 1995 Group did not return to previous levels after the initial five year period. While all the groups experienced depressed rates of growth over the recent period, the 1995 Group appears to have fared the worst. Their rapid expansion in the preceding years may have left them more vulnerable to negative shocks: the new markets being less established and therefore less able to withstand short-term downturn. Alternatively, the recent low growth rate may be due to any one of the complicating factors identified above, for example, it may be that the effects of individual strategy decisions by large airlines in any one individual country market has significant effect on the overall market.
The New Entrants, in comparison, fared better in the recent years than other groups, which indicates that Open Skies agreements may still have a positive effect even in periods of recession. It is too early to draw conclusions on their performance after the initial five year adjustment period, but the indications to date are positive.

A comparison of the rates in the entire period before and after Open Skies agreements appears to give no clear indication that countries with Open Skies agreements experience increased growth compared to the total market, as the table below illustrates.

<table>
<thead>
<tr>
<th>Country (year of OS)</th>
<th>Traffic growth rates</th>
<th>Difference from total market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before OS</td>
<td>After OS</td>
</tr>
<tr>
<td>1995 Group</td>
<td>4.1%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Germany (1996)</td>
<td>5.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Italy (1998)</td>
<td>5.5%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Portugal (1999)</td>
<td>2.0%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>France (2001)</td>
<td>6.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Poland (2001)</td>
<td>7.1%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Non Open Skies</td>
<td>4.2%</td>
<td></td>
</tr>
</tbody>
</table>

Source: DoT International T-100 data

Table 38: Traffic Growth Rate Before and After Open Skies Agreements

For each country, or group of countries, their growth rates before and after Open Skies have been compared with the growth rate for the entire market. This has been done to facilitate fair comparison over time. For example, France appears to have fared worse since the introduction of Open Skies, with its average growth rate falling from 6.2% to 0.5%. However, if it is compared to the market, its growth rate was actually 0.4% below the market average before Open Skies, and 1.4% above the market average after liberalisation.

For the 1995 Group, which is presented in aggregate since they all signed agreements in the same year, the effect of Open Skies is ambiguous; compared to the total market the 1995 Group performed better before Open Skies than after.

However, if the comparison is made between the period before and the five year period directly after Open Skies agreements are signed, then a clearer pattern emerges. In this case, the aggregate total for the ten countries that make up the 1995 Group substantially improve their performance relative to the total market after Open Skies agreements:

<table>
<thead>
<tr>
<th>Country (year of OS)</th>
<th>Traffic growth rates</th>
<th>Difference from total market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before OS</td>
<td>5 yrs after OS</td>
</tr>
<tr>
<td>1995 Group</td>
<td>4.1%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Germany (1996)</td>
<td>5.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Italy (1998)</td>
<td>5.5%</td>
<td>0%</td>
</tr>
<tr>
<td>Portugal (1999)</td>
<td>2.0%</td>
<td>-6.5%</td>
</tr>
<tr>
<td>France (2001)</td>
<td>6.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Poland (2001)</td>
<td>7.1%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

Source: DoT International T-100 data

Table 39: Traffic Growth Rate Before and Five Years After Open Skies agreements

As the table above illustrates, not only did the 1995 Group exhibit improved traffic growth in the five year period after Open Skies, it also improved its growth rate relative to the market. France and Poland also experienced increased growth relative to the market in the five years after Open Skies.

To illustrate this further, at an individual country level, 70% of the 1995 group of countries experienced increased growth in the five year period immediately after the agreement (albeit some of these from a very low base of traffic):
For some countries, such as Belgium and Switzerland the improvement in growth rates was substantial. For other countries growth rates decreased, c.f. Finland and the Czech Republic. It should be noted, however, that these two countries represent a very small proportion of the total market, and their combined air traffic is less than that of Austria alone.266

Taken as a whole, the data support the hypothesis that liberalisation of air traffic increases the growth rate in the five years following the agreement.

As encouraging as this picture is to proponents of liberalisation, it should not be forgotten that the market as a whole was experiencing considerable growth over the late 1990s. As a comparison, growth rates for countries without Open Skies are considered over the same period.

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266 T-100 data, figures for 1999
Of the countries limited by bilateral agreements, 60% experienced growth in transatlantic traffic over the same period. It is thus questionable to attribute all the improved growth observed in the 1995 Group countries to the effect of Open Skies.

When the yearly growth rates are considered on an aggregate level the superior growth rate of the 1995 group of countries in the four years following the signing of the agreements can be discerned, as the chart below illustrates. The countries which joined post-95 experienced improved growth rates from 2000 onwards (compared with the performance of the market as a whole), with the levels of growth converging in 2005.

A breakdown of the growth rate by country for the 1995 Group yields the following (rather complex) picture. The improved growth in the late nineties is composed from improved growth rates in different countries at different times. There is nothing surprising about this as each country reacts independently to the regulatory change. The magnitude of the change, and the speed with which it comes about, is dependent on the strategic decisions occurring within each country.
While Austria responded rapidly to the change in legislation, other countries such as Sweden and Norway were slower to expand. The bulk of the increased output occurred by 2000. Given this variation in behaviour, it makes more sense to consider the countries in aggregate to determine the total effect of Open Skies, rather than to consider the countries singularly.

For the New Entrant countries, the pattern is even harder to discern since the period of expected increased growth overlaps with the catastrophic events which began in 2001 and continued in the years that followed. The section on regression analysis, below, attempts to separate out the impact of Open Skies on these countries from the overall flow of the market.

The analysis above suggested that Open Skies had a positive effect on traffic growth rates over the five year period following the signing of the agreements. It further revealed that countries respond to liberalisation at different rates. Therefore, the data has been analysed
at an aggregate level, and the effect of Open Skies has been modelled as having a duration of five years\textsuperscript{267}.

The 1995 group of countries was analyzed in aggregate. The regression yielded a positive coefficient for the Open Skies effect as a 6.4\% increase in growth (with an upper limit of 12.7\%). This implies that the rate of traffic growth was improved by 6.4 percentage points over the period that liberalisation took effect. This result was significant at the 95\% confidence level. The chart below illustrates the fit of the regression model’s predicted traffic to the actual observed level of traffic.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chart.png}
\caption{Regression analysis for the 1995 Group}
\end{figure}

The graph shows that the predicted value (as calculated by the regression model) gives a reasonable fit, noticeably better in years where there were no significant shocks present (the main shocks being the improved growth in the aftermath of the Gulf War in 1990, and the events surrounding 9/11). There is no obvious bias in either direction, and the mean of the residuals is close to zero\textsuperscript{268} confirming this.

A similar regression was performed on the new entrants to Open Skies (the countries that signed agreements post-1995), taking the effect as commencing in 1999\textsuperscript{269}. The market over the five years following 1999 was subject to exceptional shocks. Despite this, the regression gave a good fit to the data, with the Open Skies variable having a positive coefficient of 3.3\%. The figure below illustrates the predicted traffic and the observed traffic growth for the new entrant countries.

\textsuperscript{267} This period was varied from 3-6 years, but the best fit was obtained with 5 years; see appendix for further details.

\textsuperscript{268} 5.4 \times 10^{-17}

\textsuperscript{269} This is the median date of Open Skies agreements for the five countries considered in this subsection: Germany, Italy, Portugal, France and Poland.
Regression analysis for New Entrants

Figure 47: Output of the Regression Model for the New Entrants

The predicted traffic tracks the real level quite closely with the exception of 1994 where the strength of European growth was not echoed by an improvement in traffic. However, as before, there is no clear bias in either direction and the mean value of the residuals is close to zero\textsuperscript{270}.

7.6 CALCULATION OF INCREASED TRAFFIC VOLUMES IN AN OAA

To calculate the potential benefits of removing bilateral restrictions on the output, the improved growth rate was applied to the five countries currently without Open Skies agreements: UK, Greece, Spain, Ireland and Hungary.

The graph below shows the current breakdown of traffic volume between the countries without Open Skies.

Figure 48: Traffic volume for Non-Open Skies countries

The lion's share of traffic is claimed by the UK, while Hungary, the only New Member state, has only 0.4\% of the current traffic volume. In the following calculation of the benefits, the five countries are considered in aggregate. Since Hungary has such a small percentage of traffic, its contribution to the total volume can be considered negligible.

\textsuperscript{270} 2.2 \times 10^{-17}
the traffic, it does not make sense to divide the benefits in this case between EU15 member countries and the New Member states. It is left to the reader to infer the distribution of benefits at country level if required.

The base growth rate of 4.9%, taken from standard industry forecasts\(^{271}\), has been applied to create transatlantic traffic forecast for the countries in question. Thus the traffic for the next five years is forecast to grown from 20.9 million passengers in 2005 to 27.9 in 2011, as shown in the chart.

An improved growth rate is then applied to model the effect of an OAA. The rate applied is 6.4% - the value derived from the regression analysis above for the 1995 Group. Since the second group signed the agreements shortly before the catastrophic events of 9/11 and their aftermath, it is reasonable to believe that the rate of growth was depressed and would have been greater had those events not occurred. Indeed, 6.4% lies comfortably within the confidence intervals for that group – the true value may well be as high as 10%.

The results of the application of this value are shown in Figure 50 below. For the purposes of analysis, it is assumed that an OAA commences in 2007. It can be seen that the total traffic in 2011 under an OAA is now forecast to reach 37.0 million passengers.

---

\(^{271}\) Airbus and Boeing agree on an annual growth rate of 4.9% in their separate passenger traffic forecasts for Europe-North America, 2004-2012. IATA (October 2005) forecasts an average annual growth rate of 5.6% for the period 2005 to 2009; the more conservative figure has been employed.
The increased growth rate yields approximately 1.4 million extra passengers in the first year, 3 million in the second, almost 5 million in the third, and so forth. While the actual rate of growth, in reality, will not be as smooth, the total effect should be the same, with an increase in volume of traffic conservatively estimated to be 26 million over the course of the five years following the institution of an Open Aviation Area.

After the five year period, the growth rate would be expected to return to its long-term equilibrium but with a higher output. This is increased output is estimated at an additional 10 million passengers per year. However, as stated elsewhere in the report, there is currently insufficient evidence to state this with any statistical certainty.

The differing impact it may have on each country has not been examined. While we would expect each territory to adapt to liberalisation at its own rate, the effect over the entire five years is assumed to be in proportion to each country’s level of traffic.

### 7.7 CONCLUSIONS ON TRAFFIC INCREASES

Analysis of traffic data at an aggregate country level demonstrates that the removal of restrictive bilateral agreements affects growth over the five years following regulatory change. The duration of this period of increased growth is due to the time it takes for firms to react to the additional opportunity, which in turn depends on the market conditions within each country. However, after five years, all increase due specifically to the regulation change can be assumed to have ceased and a new equilibrium is established in the market but with a greater base level of output.

The increase in growth has been estimated at 6.4%, and may range from 3% to 10%. Due to the uncertainty associated with statistical evaluation, a range of values have been given to provide lower and upper bound figures. Their derivations are provided in the appendix.
liberalisation of transatlantic traffic. After that period, in the absence of negative shocks, the annual output should continue to increase by approximately 10 million passengers per year.

### 7.8 Welfare Benefits from the Removal of Output Constraints

The increased volume of traffic due to the removal of output constraints has a positive impact on society’s welfare in the following ways:

- Lower airline fares for both existing and new passengers
- Jobs created to serve the increased volume of passengers
- Increased consumer choice, in terms of airport and carriers
- Economic growth stimulated.

The first two benefits are considered and quantified below.

#### 7.8.1 Consumer Benefits

Increased quantity supplied implies decreased prices, *ceteris paribus*. Consumers benefit directly from this. Firstly, all the existing passengers already travelling benefit from paying lower fares than previously and secondly all the new passengers who are paying less than their reservation prices also benefit in a similar way.

Consumer surplus is calculated for the five years following liberalisation, based on our previous forecasts and fare information derived from the Form 41 data. In line with the Brattle Group, two scenarios have been modelled, one using a price elasticity of 1 and the other of 2.5.

The results are presented in Table 40 below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price elasticity = 1</th>
<th>Price elasticity = 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing passengers</td>
<td>New passengers</td>
</tr>
<tr>
<td>1</td>
<td>970</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>1,900</td>
<td>110</td>
</tr>
<tr>
<td>3</td>
<td>2,500</td>
<td>230</td>
</tr>
<tr>
<td>4</td>
<td>2,900</td>
<td>360</td>
</tr>
<tr>
<td>5</td>
<td>2,900</td>
<td>450</td>
</tr>
<tr>
<td>Total</td>
<td>11,000</td>
<td>1,200</td>
</tr>
</tbody>
</table>

**Table 40: Predicted Increase in Consumer Surplus due to Liberalisation, millions of euros**

In the first year consumer surplus is estimated at to lie between €410 – €1,000 million. These benefits increase year on year, due to the superior growth rate post liberalisation, and over the course of the five years it is predicted that consumer surplus will lie between €6.4 and €12 billion.

---

273 The maximum price a consumer would be prepared to pay for a good, in this case an airline ticket
274 Naturally, due to the cyclical nature of air traffic, it is not expected that the benefits will grow at the steady rate postulated in the table, but the aggregate effect over the five years should remain in line with predictions, *ceteris paribus*.
It should be noted that the increase in consumer surplus for new passengers, which constitutes approximately 10% of the total, is a net gain to society, in contrast to the value for existing passengers which is effectively a transfer between the firm (airline) and the consumers.

An OAA is calculated to result in a net gain in welfare to the tune of €0.65 - €1.2 billion over a five year period.

7.8.2 Employment Impact – Source of Jobs

Additional air traffic not only brings a consumer surplus but also requires additional resources to handle the increases. This includes staff at airports as well as, due to the multiplier effect of aviation, in supporting industries.

Commercial air transportation generates significant economic impacts for national and regional economies. Air transportation is essential for leisure and business travellers, as well as for shippers of high-value, time-sensitive cargo. Air service providers including airlines, airport operators and related service firms directly create a high level of jobs from both air and ground activities. The direct transportation-related impacts generate additional “induced” employment impacts as industry revenues and employee earnings are used to purchase goods and services from other industries.

Employment impacts arising from the OAA have been estimated for the resulting increases in traffic. Such impacts can be classified in several ways; one of the most common of these being:

a) **direct** relating to the increase in jobs on or near the airports or directly related to the provision of aviation services such as airlines, ground handling companies etc. Stimulated passenger traffic will create jobs in the air transport sector, but this may be offset by a shift in the level of labour input based on the assumed shift to “more efficient” carriers. Demand stimulation will further stimulate supporting services (e.g. airport operations, ground transportation, concessions, freight forwarders, air logistics)

b) **indirect** relating to expenditure on goods and services not directly in the aviation field including spend on travel agents, hotels and retail at airports etc, as well as purchases from companies within the supply chain

c) **induced** relating to expenditure of direct and indirect employment incomes (e.g. purchases made by airport employees)

d) **catalytic** deriving from economic activity stimulated by the increased efficiency of and improved access to air transportation (e.g. the attraction of corporate headquarters to the OAA or the increased intra- and extra-OAA trade because of its good transport links). Existing analyses indicate that the catalytic impact of airports on the wider economy is significant275.

This study calculates potential employment impacts in the first three of these categories.

The impact of current and projected levels of passenger traffic associated with the OAA depends on the mix of airlines that handle any stimulated traffic, the passenger-to-employee ratio representing airline efficiency, and the geographic distribution of impacts between the

\[275\] One study indicates that the impact of aviation growth equated to approximately 3% of the trend increase in GDP – “The contribution of the aviation industry to the UK economy”, Oxford Economic Forecasting, 1999
US and EU. Details of how employment benefits have been estimated are included in Appendix 5.

7.8.3 Employment Impacts from Removal of Output Restrictions

7.8.3.1 Results

On the basis of the sources and approach outlined in the above sections an estimate of the impact of the employment which may be created by the removal of output restrictions under an OAA has been estimated.

As the results shown in Figure 50 above, under an OAA traffic is estimated to increase by 26 million passengers over the five year period that liberalisation has an effect on traffic growth (modelled over the years 2007 to 2011). Since the impact of liberalisation has an effect on the growth rate of traffic for five years, the employment impacts have been calculated for this period.

The table below summarises our findings for the five year period following the establishment of an OAA:

<table>
<thead>
<tr>
<th>Year</th>
<th>US</th>
<th>EU</th>
<th>Total (EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct jobs</td>
<td>Indirect jobs</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>1,500</td>
<td>3,600</td>
<td>5,100</td>
</tr>
<tr>
<td>2</td>
<td>3,200</td>
<td>7,800</td>
<td>11,000</td>
</tr>
<tr>
<td>3</td>
<td>5,200</td>
<td>13,000</td>
<td>18,000</td>
</tr>
<tr>
<td>4</td>
<td>7,500</td>
<td>18,000</td>
<td>26,000</td>
</tr>
<tr>
<td>5</td>
<td>10,000</td>
<td>25,000</td>
<td>35,000</td>
</tr>
</tbody>
</table>

Table 41: Employment created in Europe and the US

In the first year following the creation of an OAA, new passengers are projected to create from 1,500 new US jobs and 1,800 new EU jobs working directly in the aviation sector. This impact reaches a total of around 10,000 US jobs and 12,000 EU jobs by the end of the five year period.

In addition, indirect and induced jobs will be created to serve these new passengers. While a greater uncertainty may be attached to the scale of this increased employment, their importance should not be underestimated. As the figures show, the indirect / induced employment is likely to be several times larger than the direct employment and is estimated to create approximately 35,000 new jobs in the US and 38,000 in the EU by the end of the five years following liberalisation: a total of 72 thousand new jobs.

The above figures do not include the catalytic effect that increased employment has on the economy, due to factors such as inward investment and tourism, and, as such, may be considered to underestimate the total macroeconomic effect on employment in the countries concerned.

7.8.3.2 Note – Comparison with the Original Brattle Report

The inclusion in this analysis of the effect of additional jobs created due to the stimulation of the economy by the airline sector is in contrast to the approach of the original Brattle report which looked at airport employment only. The figures calculated above are in line for the first year with Brattle’s predicted number of direct jobs. Indirect employment was not

276 See Brattle page 4-4
calculated for the last report, which is why the figures given above are higher than previously predicted.

It should be noted that our analysis assumes that employment increases incrementally with traffic; it may be the case that some traffic can be managed by fewer staff and that this analysis may overstate the benefits in terms of employment generated. However, there is a limit to which efficiency gains can occur. Even if the industry became twice as efficient in terms of employees, the gains due to liberalisation would still be considerable, both in terms of direct jobs created and in terms of indirect jobs.

As described elsewhere in this report (see subsection 9.3.4), there has been some downward pressure on employment in the aviation sector over the past five years. Even though the estimates used are derived from relatively recent data, the increasing influence of Low Cost Carriers on the structure of the sector – in the airport field as well as the airline – may lead one to conclude that the employee to passenger ratios are on the optimistic side. However, even if the employee to passenger ratio has declined, this may be more than made up by the stimulated growth in traffic and thus in employment due to the highly competitive fares offered by LCCs. The history of aviation liberalisation is that jobs are created due to liberalisation has been shown to have increased. A study for the UK CAA in 2004 shows that during the opening up of the market in the 1990s employment in the aviation industry in Europe grew by 6%.

As explored in greater detail later, the US in particular has already cut costs considerably over the past five years which is partially why the multipliers used to estimate employment are lower for the US than the EU. If the EU carriers follow suit, at some point in the future, then the employment created may still be expected to be in line with that predicted for the US.

The analysis which produces the multipliers applied to the traffic increases are based on the employment/passenger ratios for operations on transatlantic routes only – operated today by mainline traditional carriers in the EU and US. Such long haul operations with higher levels of service may be expected to require higher numbers of staff per passenger. Were these operations to be carried out by new types of carriers with greater efficiency and different operating models the multipliers may be expected to be lower.

7.8.4 Employment Impacts – Quality of Jobs

The analysis to of impact on employment from the removal of output constraints, as well as other areas of benefit that follow in this report shows that there are likely to be a considerable number of additional jobs created. Some labour organisations question whether the jobs created are of similar quality to existing jobs.

The Directorate-General for Employment, Social Affairs and Equal Opportunities (DG EMPL) provide various indicators of quality in work that were adopted by the European Commission at the Laeken European Council in December 2001 as a means of both assessing the quality of work in Europe and monitoring its evolution over time. These are:

- intrinsic job quality (including level of remuneration and fairness);
- skills, life-long learning and career development;
- gender equality;

277 The Effect of Liberalisation on Aviation Employment (CAP749) March 2004
278 Where the data were unavailable at this detail, best effort was used to estimate this ratio accurately
• health and safety at work;
• balance between flexibility and security;
• inclusion and access to the labour market;
• work organisation and work-life balance;
• social dialogue and worker involvement;
• diversity and non-discrimination; and
• overall work performance (including productivity).

Analysis against this wide set of criteria is not possible within the scope and resources of this study. While some indicators would be somewhat easier to assess than others, e.g. the element of remuneration that makes up “intrinsic quality” would be easier to calculate than, for example, diversity and non-discrimination. Many of these indicators can only be determined through extensive primary research including gathering worker’s opinions.

We note that no change in job quality should be anticipated in the area of the greatest number of additional jobs – in the indirect category. There is no reason to think that in general competition in the airline industry which generates additional air travellers will affect the quality of jobs in supporting industries, or, for that matter, in any other industries supplying goods to workers and travellers.

In the airline sector itself it is likely that airlines will seek greater efficiencies in response to costs. Predicting the type of airlines, their operating models or working practices that they would adopt and thus the types of jobs would be futile exercise. We can envisage that new LCC airlines may arise who demand higher productivity from their staff than has traditionally been the case with legacy carriers, though the latter may change in this respect. At the same time, several new airlines are launching business class only services and other airlines are increasingly seeking to differentiate themselves on the basis of their high quality customer service. We suggest that in this case there may well be the case for a few, better rewarded staff operating in a favourable environment. We also contend that the results of the DG-EMPL criteria will depend greatly on the individual culture of the company in question and the personal expectations of its staff.

7.9 ACCOMODATING THE NEW TRAFFIC VOLUMES – FUTURE AIRLINES

In forecasting traffic growth of 26 million passengers over five years it is perhaps beholden on the analyst to examine where these travellers will come from and with whom they will fly. An underlying principle for the analysis of Brattle and one which this report follows is that one of the benefits of an OAA is new airline entrants and greater competition in the market. In addition to this quantitative approach above, a brief and alternative qualitative description of the removal of constraints is offered.

Part of the impact of an OAA is to stimulate the market through demonstrating a commitment by government to encourage industry to take advantage of liberalisation and to develop in new ways; the combined effect of normalising the industry to permit cross border investment, and allowing operations to and from any points chosen on a commercial basis with the ability to merge and cooperate is a potentially powerful force for increase in the market.
Evidence from the EU and the US in the liberalisation of internal and domestic markets respectively shows that new airline models can emerge. One experienced aviation official in Europe commented to the study team that “the industry always goes further than the regulator expects”. Aerospace investment continues to grow and the industry appears to be on the verge of important technological developments which may act as catalysts for growth in all ranges of aircraft operations: the continued improvement in engine development to improve operating economics of large civil aircraft; similarly the use of composite materials including Boeing’s emerging B787 makes aircraft lighter improving ranges and operating flexibility; Airbus’s giant A380 has the potential to bring a step change to some markets and offer new options to airlines; at the other end of the spectrum Very Light Jets are set to become commonplace and possibly bring additional challenges to the air navigation services domain.

In such circumstances with a combination of regulatory change and technological development it is not unreasonable to envisage new entrants to the market.

Maxjet has recently entered the market with business class only services from London to Washington and it would seem only somewhat hasty to rule out the potential larger scale entrants using hitherto unforeseen operating models.

The runaway success of the low cost European market, Ryanair and easyJet have been driven by the entrepreneurial vision of their CEOs in taking advantage of their lack of legacy costs. The new Member States of the EU offer over 60 million new citizens who are not only a potential market for existing airlines but also a potential source of similar entrepreneurs.

We can imagine a new airline registered in London – Zoltan Airways – owned by a US citizen with, perhaps, an Eastern European background, with the best tradition of American entrepreneurship and serving secondary European cities (from different EU Member States) and US cities on a point to point basis, concentrating on markets in the new Member States of the EU as their economies grow. New aircraft design is already making longer haul services more cost effective – for example Jet Blue’s transcontinental domestic services include journeys of over six hours not much longer than a transatlantic operation and for around €175 (US$200). It may be argued that, subject to the emergence of the appropriate technology, US based airlines can already operate such services to all European countries with Open Skies agreements and to others to which they can secure the appropriate designation. However, this opportunity is currently denied European entrepreneurs – an OAA will remove the regulatory barriers to entry to enable European based operations to operate from more than one EU country to the US.

To be successful such operations would need to be responsible for only a small proportion of the additional traffic generated. Our Zoltan Airways need generate only a small proportion of the additional traffic forecast by the analysis in the preceding sections. Operating daily operations on ten city pairs with an aircraft of 250 seats (the B787-8 will have 257) would account for 912,000 passengers. The markets chosen, the equipment deployed and the operating model followed are a matter of conjecture, but the overall impact – it is suggested – is that is a reasonable picture of one possible world.
8 IMPACT OF ENABLING CLOSER ALLIANCES

8.1 IMPROVED INTERLINE/ALLIANCE COOPERATION

8.1.1 Updating the Original Brattle Report

Wishing to provide a reasonably close update to the Brattle Group’s analysis, this report largely follows the rationale and approach from the original report in the area of airline cooperation, as with other benefits. However, in the case of impacts of closer alliance cooperation, not only are there differences in available data but estimates as to the volumes of traffic that may benefit have been calculated in a different way. The conceptual source of the benefits is also not tested in this study.

8.1.2 Rationale for Benefits

One of the theoretical benefits anticipated from the development of an OAA is the ability of airlines to cooperate in ways that they cannot currently pursue. The Brattle Group argued that economic benefits will accrue from an improved ability of airlines to coordinate prices and schedules on interline routes (where passengers travel on more than one airline to get to their destination). This is said to lead to more efficient operations which involve lower costs and coordinated prices. These two elements combine to enable airlines to pass on the benefits to their passengers in the form of lower fares.

Although many airlines – and thus consumers – currently benefit from the existence of network alliances on routes across the Atlantic, the benefit has been shown to be greater for those that are part of an anti-trust immune alliance. Immunised alliances can gain the greatest benefit from interline traffic by coordinating prices; those without immunity must rely on improved operational factors including tactics such as seamless baggage and passenger transfers, or the other constituents of an alliance including cooperation on frequent flyer programmes in order to encourage interline traffic between the partner airlines.

The development of an OAA, it is suggested, will lead to additional competition as barriers to entry are reduced or removed; this competition in the market will mean that fears that deeper alliances may result in unfair pricing would be mitigated to some degree and further cooperation would be permitted. In such circumstances existing relationships could be allowed to cooperate further and new alliances would be created providing fare reductions and associated economic benefits.

The analysis conducted for this report does not seek to predict either the numbers or types of new entrants to the market which may result from liberalisation. The experience of liberalisation in other markets including the EU’s internal market and the US domestic market has shown a marked increase in competition on routes and on the numbers of airlines operating. The EU saw an increase of 80% in the number of airlines operating and liberalisation has allowed some of these new entrants to flourish. It is not possible to second-guess either managers of existing airlines or entrepreneurs considering entry to the market but what seems likely is that over time, new entrants are likely to appear.

8.1.3 Note on Previous Analyses of Alliance Impacts

There is evidence from previous economic analyses that support the view that prices on routes operated by alliances with anti-trust immunity are significantly lower than those where the major airlines do not benefit from such immunity. The US DoT shows in its
report Transatlantic Deregulation, the Alliance Network Effect\textsuperscript{279} that in the period 1996 to 1999, which thus includes the years immediately after anti-trust immunity was granted to at least two major alliances – being related to the signing of Open Skies agreements – prices on the routes reduced by 20.1\% overall on Open skies countries routes and 23.9\% in connecting markets beyond European gateways. In non-Open Skies countries prices reduced by 10.3\% overall, but as DoT notes this is to be expected as the network operations of allied airlines spreads the reach of the immunised alliance into those countries without Open Skies.

The connection between anti-trust immunity and market liberalisation through Open Skies agreements must be acknowledged. Immunity has often been contingent on the establishment of an Open Skies agreement, for example, the Netherlands agreement was followed by immunity for Northwest-KLM and the Germany agreement prepared the ground for United and Lufthansa’s immunity.

It may be reasonably argued that the removal of constraints on designation, capacity and routes are an enabling action: a necessary but not sufficient condition for optimising the benefits in this area and immunised alliances provide the trigger for cooperation between airlines which delivers more efficient services and lower fares.

In addition to the DoT evidence, the results of economists Breuckner and Whalen have been widely quoted as demonstrating the effects of alliances on prices: their analysis shows that fares are between 18\% and 28\% lower where airlines can indulge in price coordination and revenue sharing\textsuperscript{280}.

However, more recent research provides what initially appears to be somewhat contradictory evidence of the impacts of alliance arrangements on prices. In a submission as part of the DoT docket concerned with the application for anti-trust immunity made by the Skyteam alliance\textsuperscript{281} evidence is presented (coincidentally by the Brattle Group\textsuperscript{282}) to show that the effect of Open Skies and alliances has now reversed and that, in the period 1999-2004, prices in US-Europe markets covered by Open Skies agreements and “dominated by immunized alliances” increased by 12.6\%, whereas in non-open skies markets fares increased by only 1.1\% over the same period\textsuperscript{283}. We note, however, that this effect (particularly in the case of the Netherlands/KLM-Northwest alliance) is delayed and is, thus, consistent with the results shown in section 6 above, as the impacts of liberalisation appear to become less important after a five year period and individual airline behaviour and strategy is key. Of perhaps more concern from the point of view of competition regulators is the fact that these results could also be seen as being consistent with the expectation that as parties are allowed to cooperate in a market, the initial impact on prices is to reduce them; this can result in the cooperating parties becoming oligopolistic players in the market, dictating prices and forcing out those unable to compete at the new, lower price levels; the subsequent impact of fewer competitors is then a gradual increase in prices driven by the allied – and dominant – parties. However, in an OAA, where there are no regulatory barriers to entry\textsuperscript{284} on transatlantic routes for EU and US carriers, it is entirely possible that new airline entrants with newly competitive approaches (perhaps using more

\textsuperscript{279} Second report on International Aviation Developments October 2000

\textsuperscript{280} (i) Jan K Brueckner , University of Illinois International Air Fares in the Age of Alliances: The Effects of Codesharing and Antitrust Immunity, June 2000, shows that combined codesharing and anti-trust immunity results in a fare reduction of between 17and 30\%

(ii) Brueckner and W Tom Whalen The Price Effects of International Airline Alliances Oct 2000 results in a fare reduction of 18-28\%, providing the basis for the original Brattle Group analysis.

\textsuperscript{281} Docket OST-2004-19214

\textsuperscript{282} Docket OST-2004-19214; surreply dated 9th Sep 2005

\textsuperscript{283} Analysis is presented for the effects of Delta-Air France and KLM-Northwest

\textsuperscript{284} Requirements for aircraft operating certificates notwithstanding
advanced aircraft and with innovative operating models) will emerge and provide a check on such behaviour.

Of the four largest markets, and biggest airport hubs, in Europe only one is the home base of a major European carrier that has no anti-trust immunity with its US alliance partner: members of the oneworld alliance (British Airways and American Airlines) do not have such immunity.

Major transatlantic markets include the following alliance arrangements:

- France – Open skies in 2001, benefits also from Delta/Air France alliance with anti-trust immunity (a recent application for the whole Skyteam alliance having been withdrawn)
- Germany – Open skies in 1996, Lufthansa/United Airlines anti-trust immunity
- Netherlands – Open skies in 1992, KLM/Northwest alliance anti-trust immunity (now sought also with Air France)
- UK – no Open Skies, home airlines do not benefit from anti-trust immune alliances.

It is of particular interest to the question of an OAA that the major home airlines in the UK and Ireland (respectively the largest and seventh largest transatlantic markets) have no anti-trust immunity. British Airways and American Airlines decided in January 2002 not to pursue their application for immunity as they considered that the price demanded of them for approval by competition regulators in terms of airport slots was too high. The US DoT and UK Office of Fair Trading have approved anti-trust immunity for bmi with its Star alliance partner United Airlines but this is contingent on a UK-US Open Skies agreement; Virgin Atlantic is not a member of a global alliance; Aer Lingus was in oneworld with British Airways and similarly had no immunity, though, at the time of writing, it had just announced its withdrawal from the alliance.

8.1.4 Traffic Increases and Economic Benefits

Indicative benefits from the improved interline opportunities have been calculated. Although the rationale espoused above suggests that benefits will accrue through deeper alliances, it is also clear that many of the impacts are already being experienced through existing alliances; United and Lufthansa can coordinate prices on transatlantic routes and although British Airways and American Airlines cannot, they can cooperate on some operational matters – such as arranging mutually beneficial baggage transfers. Moreover, even with greater numbers of alliances and deeper cooperation there will always be some connecting traffic outside alliances: not all passengers currently connecting will benefit from better airline relationships.

8.1.4.1 Traffic Impacts

Identifying the volume of passengers that may benefit from improved cooperation is inevitably an unreliable process. We have attempted to do so by looking at available data on the pattern of transfers for traffic in the UK (see also Appendix 4) and making estimates for the rest of Europe.

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285 See “BA rules out airline deal”, BBC website, 25th January 2002
286 Using CAA survey data for 2004
Analysis of “online” connections (that is, for the purposes of this analysis, those connections within existing alliances or between carriers with existing code share relationships) and what we have called “offline” connections leads to the tentative conclusion that 21% of all traffic is currently connecting between airlines where they do not currently benefit from cooperative airline relationships. This is made up of 14% of connections in the EU and 6% of connections in the US.

Since it is extremely unlikely that all such passengers would in future benefit from an alliance which allowed price coordination, and so provide a benefit through reduced fares, we have sought to reduce this proportion. Examination of the data suggests that 5% of the UK’s traffic is currently transferring between American Airlines and British Airways without anti-trust immunity. On the assumption that much of this and some of the rest of European traffic would benefit from a closer alliance between British Airways and American Airlines, we have applied the 5% proportion to all traffic in countries whose principal airlines are members of the oneworld alliance or are not part of any anti-trust immune alliance.\(^\text{287}\)

For the passengers benefiting from improved price co-ordination, two scenarios have been modelled. The first is calculated assuming a price decrease of 18% and a demand elasticity of 1; this gives a lower bound scenario. Our upper bound assumes price decrease of 28% and a demand elasticity of 2.5. The price reductions have been taken from previous analyses\(^\text{288}\). The results are quantified in the table below.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Lower bound scenario</th>
<th>Upper bound scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic increase (annual)</td>
<td>240,000</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Gain in consumer surplus (€ millions)</td>
<td>160</td>
<td>340</td>
</tr>
<tr>
<td>Existing passengers CS</td>
<td>142</td>
<td>221</td>
</tr>
<tr>
<td>New passengers CS</td>
<td>15</td>
<td>114</td>
</tr>
</tbody>
</table>

*Table 42: Impact of Price Decreases due to Improved Interlining*

Passenger volume is, therefore, estimated to increase by between 240 thousand and 1.4 million per annum, and the consumer surplus to increase by between €160 and €340 million each year.

### 8.1.4.2 Employment Benefits

The increased volume of passengers creates employment for those in the aviation industry, either working at the airport or for an airline. In addition the multiplier effect increases employment in other industries. The methodology applied to calculate the impacts of this increase is as given in section 7.8 (where it was used for the employment impacts deriving from the removal of bilateral constraints). Following on from the analysis in this section, upper bound and lower bound scenarios have been calculated. The table below shows the estimation of the increased employment due to interlining.

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\(^{287}\) Note that this is a more conservative estimate than the previous report by the Brattle Group which applies an estimate of 10% to all interline services

\(^{288}\) These are the same values as employed by the Brattle Group in their original report.
<table>
<thead>
<tr>
<th>Year</th>
<th>Direct Jobs</th>
<th>Indirect Jobs</th>
<th>Total</th>
<th>Direct Jobs</th>
<th>Indirect Jobs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>300</td>
<td>620</td>
<td>920</td>
<td>1,700</td>
<td>3,600</td>
<td>5,300</td>
</tr>
<tr>
<td>US</td>
<td>250</td>
<td>610</td>
<td>860</td>
<td>1,500</td>
<td>3,500</td>
<td>5,000</td>
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<tr>
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<td>550</td>
<td>1,200</td>
<td>1,800</td>
<td>3,200</td>
<td>7,100</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Table 43: Employment Created in Europe and US due to Pricing Synergies

In Europe, it is estimated that between 300 and 1,700 jobs will be created working directly in the aviation sector, with additional jobs created for people working in related services. Similarly, in the US, 250 – 1,500 new aviation jobs are estimated, with further indirect jobs created as a result. In total, it is estimated that between 1,800 and 10,000 jobs will be created.

This analysis does not include the jobs created due to increased domestic traffic in the US (which will clearly benefit from improved interline efficiencies) and similarly it does not include employment created on intra-EU flights.

8.2 MERGERS AND ACQUISITIONS

8.2.1 The Rise of Airline Alliances

International network alliances have been the key area of strategic development in the evolution of the airline industry over the last decade or so. Much has been written about the advantages and limitations of alliance relationships and this report will not reprise this material. However, as an interim step towards mergers, and because it provides background for the benefits that are achieved from closer alliance development under an OAA as set out above, the current position in relation to alliance arrangements warrants brief attention.

Strategic change in the development of the industry has seen international network airlines coalesce into a few international alliances over the last 10 years or so. The pattern of membership is still evolving – airlines change alliance or withdraw from alliances as they change business model (e.g. Aer Lingus has recently announced withdrawal from oneworld).

The strategic decision to enter into international alliances may have a variety of different drivers depending on the airline in question. One of the primary reasons has been the desire to increase the reach of an airline’s network. But the traffic rights (cabotage or inward investment) that could facilitate feeder networks in other countries have not generally been a part of liberalisation efforts to date (though would be an integral part of an OAA), and such networks would take years to establish unless via merger with, or acquisition of, an existing network operator.

Airlines have thus sought to access each other’s feeder networks through establishment of alliances. Transferring traffic to the aircraft of alliance partners also decreases the reliance of airlines on access to 5th freedom traffic rights from multiple countries in order to operate commercially viable services on new or long haul routes. Identifying partners with complementary rather than overlapping networks and feeding traffic between airlines has been a successful outcome of such strategies.

In 2004, 64% of all scheduled international passenger traffic (IATA members) was carried by international alliance members.
8.2.1.1 Revenue Generation and Cost Savings

The revenue generation side of alliances in terms of capturing additional traffic has been seen as relatively successful. Although some alliance members have attempted to build on their relationship of encouraging passengers (and their revenue) to connect on partner services, in order to share risk and costs, there are few successful examples of deeper relationships delivering benefits on the cost side.

While it has been the case in some parts of the world that markets are split between competing alliances, within Europe the development of airline alliances has often been between a single dominant EU carrier and one or more major US carriers in the market. The result is that individual Europe-US markets are heavily dominated by whichever alliance the flag carrier belongs to.

Amongst the top 6 Europe-US markets in 2004, only the UK, and to a lesser extent Spain, are not dominated by a single airline alliance with over 75% of the market. Notably, these are both markets where open skies agreements have not been agreed previously with the US, and anti-trust immunity has not been granted enabling close cooperation between alliance partners.

Alliances do not necessarily mean greater competition, or at least not within the existing bilateral framework. Current rules relating to anti-trust immunity in the US mean that immunity from prosecution will only be granted in situations where an open agreement is in place that allows new competitors to enter the market. Issues relating to competition have already been discussed in this section, but in effect, this has meant that extensive alliance arrangements, including collaboration on fares, are in place only in those markets where an open skies air services arrangement was previously agreed with the US.

This market dominance in most EU countries, however, is also explained by the presence of a single strong domestic feeder network and dominant hub. Despite the establishment of the EU single market in aviation, airlines have not been able to establish hubs and feeder networks outside their home market – due to third-party restrictions on their ability to exercise international traffic rights from such hubs. An OAA may enable the consolidation that such a co-ordinated system would require.
In the airline industry there have been rounds of consolidation within domestic markets; in other “normal” industries, mergers and acquisitions would be expected to be cross border as well, but international airlines have been prevented by ownership and control restrictions in bilateral air services agreements from acquiring each other for fear of losing traffic rights. Thus consolidation in the industry – that some airlines argue is much needed – has been prevented. An OAA offers the potential for such mergers by recognising community designation and removing the restrictions on foreign investment between EU and US nationals.

8.2.1.2 Consolidation under an OAA: Airline Mergers

Under an OAA two significant factors may encourage take overs and mergers in the airline industry across the Atlantic:

- the removal of investment constraints permitting airlines to buy each other
- the ability of EU airlines to operate from any Member State to the US regardless of their country of origin (Community designation).

An OAA also facilitates the creation of wider intra-Europe feeder networks by EU airlines and/or the operation of additional hubs outside their country of origin market. As an alternative to organic expansion to achieve these networks, EU carriers may seek to acquire each other.

In addition to any other benefits from such commercial strategy, merging with or acquiring another airline may be a more effective way to acquire slots at constrained airports. Airlines finding it hard to access key hubs may choose to buy an airline that already has access and so gain its slots and the accompanying feeder network.

8.2.1.3 Opportunities for Synergies

Where companies are structured to share the risks and benefits of operations, mergers may provide additional opportunities for cost savings over and above those delivered by closer alliances.

Experiences in other “normal” industries have shown that mergers can deliver significant benefits, but that they have significant risks. The transactional costs, cultural and organisational as well as financial in delivering international alliances should also be considered. Success requires not only regulatory approval and shared strategy, but also commitment – or failing that lack of obstruction from those delivering the integration on the ground.

The largest transatlantic merger in any industry, Daimler Benz with Chrysler in 1998 (reportedly worth $36 billion) was notoriously controversial, not only for political reasons (when it was alleged that the US firm was being taken over by the German rather than merging) but also for the clash of cultures between management. Only now, eight years later, are the benefits being delivered and share prices beginning to recover.

Merging companies attempt to gain synergies but also cost savings. Vast potential benefits from mergers have tempted companies in other sectors to mergers. In telecoms, the December 2005 acquisition of AT&T by SBC Communications (forming AT&T Inc) is
expected to deliver $18 billion in merger synergies, and cost savings of approximately $500 million this year, growing to $1.2 billion in 2008\textsuperscript{289}.

In the airline industry, benefits of mergers whether intra-EU or transatlantic, would include synergies in areas such as revenue management, network planning, commercial management and maintenance. Cost savings may be expected to be realised from consolidation of head office and other overhead support activities.

Cost savings to airlines from hypothetical mergers may be significant – but are not easy to estimate. One must first identify the potential target companies and then the areas in which costs can be reduced. The implications from previous analyses on the benefits of costs savings in anti-trust immune alliances described earlier in this chapter (see 8.1.3), suggest that similar efficiencies could be gained from mergers. The range of estimates in terms of proportions of costs that could be saved is large and the uncertainty in the results applying assumptions to aggregate level data means that the potential value of cost savings has not been quantified.

However, the recent merger of Air France and KLM provides an indication of the potential benefits of EU carrier consolidation. We note that the two airlines, as subsidiaries of the newly created Air France–KLM, continue to operate services under their distinct brand names. This is to satisfy third parties of the continued qualification of the airlines to utilise traffic rights. It is unlikely therefore that the full range of possible synergies has been obtained to date.

Nonetheless, in its first year result 2005/2006, the Air France-KLM group has reported revenues growth of 10% to €21.4 billion, operating profit up 69% to €936 million, passenger numbers up 6.4% to 70 million and load factor improvement from 78.9% to 80.6%. Strengthened by a multi-hub operation, cost and revenue synergies, the group forecasts annual growth of some 5% to 2010\textsuperscript{290}.

One analyst has recently estimated the synergies from the Air France/KLM merger to be in the region of €610 million by 2009. Table 44 below shows the projected source of the merger synergies anticipated for Air France/KLM in 2009.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Upper bound scenario</th>
<th>Lower bound scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Management</td>
<td>180</td>
<td>30</td>
</tr>
<tr>
<td>Commercial</td>
<td>98</td>
<td>16</td>
</tr>
<tr>
<td>Network</td>
<td>97</td>
<td>16</td>
</tr>
<tr>
<td>Engineering &amp; maintenance</td>
<td>76</td>
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<td>IT</td>
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<td>Cargo</td>
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<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>610</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: DrKW Equity research\textsuperscript{291}

Table 44: Forecast Air France-KLM Merger Synergies

Similarly, the second major merger underway Europe, that of Lufthansa and Swiss aims to deliver around €174 in benefits by 2007.

\textsuperscript{289} “AT&T updates outlook on merger synergies”, Business Wire, 31 January 2006.
\textsuperscript{291} “Open Skies? Big Deal! A storm in a teacup” – Dresdner Kleinwort Wasserstein, 7 April 2006
These are significant benefits, which if deepened or extended across the Atlantic could, in theory, provide for benefits from cost savings in a merged company which were not possible on an individual basis. Cost savings could include areas such as joint purchasing of supplies including - ultimately the largest item in any airline’s balance sheet - aircraft. In addition, overheads would be expected to be one of the first areas of opportunity for mergers to reduce costs for airlines. While marketing and sales, for example, requires some local presence (following the traditional airline model if not the internet sales based LCC approach) some head office functions such as revenue accounting can be performed in virtually any location and would be expected, ceteris paribus, to migrate to the lower cost economies (as indeed many airlines have already done).

On the basis of the analysis of airline staff costs earlier in this report it appears that current conditions mean that between the EU and the US overall, US airlines are moving costs down faster than the EU - however, in absolute terms the smaller EU economies also present an incentive to base some functions there. We note that reducing costs through reduction in staff numbers also has a negative effect on employment levels in the industry which would need to be set against employment benefits from an OAA.

Merged companies may also choose to adopt new service patterns which can offer more efficient routings, e.g. by replacing connecting services with direct flights. This may enable consolidation of capacity on some routes and reduction in combined fleet capacity, or allow for additional routes to be operated with the spare capacity. Benefits may be achieved as consolidated carriers seek networking efficiencies and make use of combined assets (such as valuable slots) in a more efficient or profitable manner. This could, for example, enable consolidated carriers to free up slots at congested hubs for use in new or alternative markets.

An OAA implies the convergence of many aspects of regulation as described throughout this report. Mergers and acquisitions will naturally be subject to the relevant rules applicable in the EU and the US. The existing cooperation arrangements between the Department of Justice and the Directorate-General Competition would be applicable and an OAA would not necessarily add greatly in terms of regulatory convergence, except by providing a focus for aviation industry cases.

However, as noted in section 8.1 above, it is assumed for the realisation of benefits from closer alliances, that the removal of barriers to entry and the additional competition introduced to the to the market in an OAA, will result in the market shares of existing airlines reducing as new entrants grow. Under these conditions it may also by easier to obtain approval for mergers from competition authorities under the more competitive market of an OAA.

It is impossible to say with any certainty how much the benefits of transatlantic mergers may be. It will be ultimately be for individual carriers to decide on their strategies, calculating opportunity and risk, but under an OAA, carriers would at least have the freedom to make such commercial decisions on a normalised basis, rather than being constrained by national ownership and control clauses.
9 IMPACT OF COMPETITIVE PRESSURE ON AIRLINE COSTS

In keeping with the previous analysis, we seek to quantify the potential benefits due to greater competition. This chapter, therefore provides a rationale for cost savings in the airline industry and a high level calculation of potential cost savings due to greater efficiencies. It also offers an exploration of current costs and finishes with an investigation into labour costs which demonstrates convergence in wage levels across the Atlantic.

9.1 COMPETITIVE PRESSURES ON AIRLINE COSTS

9.1.1 Airline Cost Savings

One of the benefits identified deriving from an OAA is additional competition leading to downward pressure on airline costs. As the anticipated additional competition in the market materialises, airlines will need to respond through becoming more efficient– reducing their costs and/or providing improved service.

In a future OAA, competitive pressures which derive from the removal of output constraints on those markets not currently governed by Open Skies agreements – including the threat of competition – would lead to a general reduction in costs: network operators facing new competition on the Atlantic market would need to respond by reducing their costs to counter this threat and, as these cost reductions are not restricted to the transatlantic market but are spread across the airlines’ whole operation, so their networks within Europe feeding transatlantic services would benefit from lower costs overall; these cost savings passed on to consumers through lower prices would, in addition, stimulate demand.

In the Brattle report this factor accounted for approximately half of the economic benefits identified. In the interests of providing an update to that report our analysis follows this approach with some differences in data and execution of the analysis.

9.1.2 Rationale for Economic Impacts

With full liberalisation under an OAA European and US carriers will be able to compete on all transatlantic routes. The flexibility of an OAA allows two types of additional competition:

1. In country markets currently not governed by Open Skies agreements, additional US airlines and airlines from the EU Member State in question will be permitted to operate

2. Airlines from all EU Member States will be able to operate from any other EU Member State to the US

3. Cabotage rights for EU carriers within the US and unlimited 5th, 7th, 8th and 9th freedoms for US carriers within the EU will permit additional competition on intra-EU or domestic routes.

This will therefore affect competition not only on transatlantic routes but will also have a knock-on effect elsewhere in the system.

To explore the implications further, take the following schematic picture below. The ovals A, B and C each represent a country, the arrows between them represent flight paths.
Currently flights between countries A and B will tend to be operated by carriers of those two countries. It is not possible for country C to operate such a flight due to lack of 7th freedom rights. In addition, the route BC may be undersupplied as it could be used as a feeder route (6th freedom) by carriers from any one of the three countries.

In reality an airline based in country C may not find it commercially viable to operate on routes B-A (due to factors such as the inherent marketing advantage the home carrier B may have in attracting passengers originating in B, or due to the strength of existing networks that B-based airlines have developed to date with which they can feed B-A services). In theory, if the difference in efficiency between carriers based in B and C is great enough, C-based carriers would be able to compete effectively with B and A based carriers on the route BA, ultimately replacing them on that route.

This replacement may mean that B-based carriers may fail, or that C-based carriers will acquire or merge with their less efficient competitors based in B. This in turn would produce economies of scale and efficiencies in airline operations and thus reduce costs for that airline not merely on that route but potentially on all its routes.

Similarly, the domestic route within country A may be subject to competition from carriers based in countries B and C and thus domestic carriers will also be incentivised to either improve efficiency or face the threat of mergers, acquisition or direct competition from the carriers of countries B and C. In addition, if a carrier from country A is more efficient than one from country B, it may merge or acquire the foreign carrier and thus benefit from cost savings due to economies of scale.

If country A represents the US and countries B and C represent two EU member states, competition on transatlantic routes AB and AC is expected to increase following the removal or remaining restrictions on designation, routes and capacity between EU and US markets. In addition, relaxation of rules governing ownership will allow carriers to merge across the Atlantic. Thus there will be a downward pressure on costs not only on transatlantic flights, due to the increased competitive behaviour and the efficiency gains due to mergers.

**9.1.3 Breakdown of Airline Operating Costs**

In the original Brattle Group report, costs were classified according to their potential for savings. Since then, changes in the structure of operating expenses have occurred.

In order to assess the likely degree of cost savings available, the original Brattle analysis categorised airlines into three groups: low cost, medium cost and high cost carriers. It was then assumed that all those airlines in the high cost category would reduce their costs in respect of certain categories to the industry average. The costs which were considered to be the largest elements, and to offer the potential for the greatest efficiency savings were those related to:
• flight deck crew
• cabin attendants
• passenger service
• ticketing, sales and promotion
• general and administrative.\textsuperscript{292}

Where there are significant costs differences between EU and US carriers there may be expected to be a \textit{prima facie} case, in a combined and open market, for potential efficiency improvements from aviation liberalisation as market competition will drive costs down and move suppliers towards more efficient behaviour. This was suggested by Brattle’s analysis of economic impacts. This competitive behaviour is consistent with standard economic theory and, furthermore, the experiences of EU and US legacy carriers in responding to the entry into their home markets of so-called low cost carriers also provides evidence that this phenomenon is likely to develop to some degree.

The chart below shows the breakdown of costs based on data for major European carriers. The single largest element of costs (using the IATA categories) for EU airlines is fuel at 15% of total operating costs in 2004. Pilot (7%) and cabin crew (8%) costs combined represent 15% so that if these labour costs are taken as a whole they represent the greatest single proportion of costs.

\textbf{Figure 53: Breakdown of Operational Expenditure for EU Carriers, 2004}

\textsuperscript{292} One obstacle presents itself in any attempt to replicate the Brattle Group’s approach. The original study benefited from a recent database containing a relatively detailed breakdown of airline unit costs, commissioned by DG-TREN shortly before the Brattle Group undertook its analysis. No such similar corpus of data exists for use in 2006. Instead the study team has relied on publicly available information from the US DoT (Form 41 data) as well as our own research. We also acknowledge the support of the Association of European Airlines who kindly provided aggregate cost data for their members (as indeed they did for the Brattle Group) which has contributed to building a fair picture of the cost operations for the European market as a whole.
The opportunity for reducing costs in the face of increased competition depends partly on the degree of control airlines have over the individual areas of expenditure. Many aspects of airline operations, including fuel and navigation charges for example, offer airlines very little opportunity to influence their unit costs. Prices are set outside the airlines’ control whether by international oil markets or by the air navigation service providers. As with other elements, these two costs can realistically only be reduced by reducing operations so incurring fewer charges and burning less fuel.

The figures above break the costs into two separate categories – those described as “difficult to influence” make up the majority of the operational expenditure, with the single biggest category being fuel and oil. The price of fuel and oil has increased further in the last year so is likely to form an even bigger percentage than shown here. The price of crude oil has gone up by around 30% from January 2005 to 2006, while the price of jet kerosene has risen even faster and is now over 40% higher (see Figure 20: Jet Fuel Prices 1985 – 2006).

In the “less difficult to influence” category – i.e. where airlines may be expected to reduce their costs in the first instance in the face of competition – the single biggest component is Ticket, Sales and Promotion which makes up 14% of expenditure. On-board employees, i.e. the Flight Deck Crew and Cabin Attendants, together make up 15%, and the remainder is divided evenly between Passenger Service and General & Administration.

In the US, the overall proportion of airline costs is similar as shown in the following figure, with 61% being “difficult to influence” as compared with 60% for EU carriers.

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293 We note that fuel prices can be managed through hedging, but this is usually a medium term tool which does not offer the ability to respond flexibly to short term price changes.

294 Enroute charges in most states are set on a cost plus basis where an air navigation service provider (ANSP) charges a fee based on sharing the cost of providing the service among its user airlines. When traffic goes down unit costs to airlines can increase as the fixed costs of ANSPs remain. In the USA, the ANSP is currently funded mainly through fuel taxes.
larger proportion of the expenditure. Conversely, the percentage of cost assigned to insurance, airport and navigation charges and ticketing, sales and promotion is less than for EU carriers.

To give an indication of the other end of the market, the costs of two European LCCs are given below. The operational expenditure for easyJet and Ryanair, set out in the two charts, is composed of a much higher percentage of costs that are difficult to influence being 77% and 74% respectively. However, both these airlines are protective of their costing information and leave a number of questions unanswered, so these figures should be treated with caution and do not represent a direct comparison.

As shown in the chart above easyJet’s fuel costs at 19% are its highest overall category. Airport charges at 17% are a much greater proportion than the AEA members’ 5%.
Figures 56: Breakdown of Operational Expenditure for Ryanair

As with easyJet, fuel and oil represent the highest proportion of Ryanair’s costs at 26%. Again airport charges are a significant proportion of the airlines operating expenditure being 18%.

The fact that such elements are the highest proportion of these LCCs operating expenditure also reinforces the impression that their overall cost control is so effective – these elements are high relative to the legacy carriers’ position because the other elements making up Opex are very low. This goes doubly so for Ryanair whose strategy is to negotiate aggressively with airports to ensure the lowest costs possible. That their airport charges are still 18% of their Opex shows how low their costs are in other areas.

9.2 MOVEMENTS IN COSTS SINCE THE ORIGINAL REPORT

It should be noted that at the time of the original analysis, airline costs within the EU were significantly lower than in the US (Brattle estimated, when comparing major airlines, that US workers were 15% better paid than those in the EU). Since 2000, the development of the market has seen pressure on airlines on both sides of the Atlantic to reduce costs, and significantly, the movement in the dollar/euro exchange rate has also had an important impact on the balance between the EU and the US.

In the years since the Brattle Group reported there has been a general tightening of costs. This can be ascribed to several factors. Firstly and most importantly, the impact of the “economic storm”, triggered by 9/11, which exposed the underlying weaknesses in the finances of many established airlines, has exerted a tremendous pressure on airlines, causing them to cut costs where possible. In the US in particular, many airlines had to substantially restructure their cost framework, sometimes aided in this by the provision of Chapter 11 which allowed them to renegotiate contracts which would have otherwise been binding.

Staff costs, which, industrial relations and negotiations notwithstanding, are more flexible than some other components of airline expenditure, have in some cases seen reductions. These may have been achieved through absolute reductions in remuneration for, e.g. pilots and cabin crew, but also from changes in working practices and productivity improvements.
In many cases it has been the non operational expenditure related to staff costs, such as pension schemes, that have been reduced. A particular impact has been on pension funds where, in the US in particular, some airlines have been able to reduce their pension liabilities when in Chapter 11 as the courts have agreed that they may suspend, set aside or otherwise reorganise their pension schemes.

Another source of cost-savings has occurred as a result of developments in technology. E-ticketing and online booking have both rapidly increased since 2000. According to a recent survey by Airline Business\textsuperscript{295}, online sales now account for 20% of all ticket sales, up from 5% five years ago which has a direct impact on the cost of ticketing since fewer resources are required. IATA has adopted a formal strategy directed towards the elimination of paper tickets which has a target date of 2007 intended to deliver further cost reduction in this area of airline operations. (In the short term, the migration to a higher level of technology that is required would involve some fixed cost investment). It is predicted that this initiative will result in gross savings of $3 billion (€2.5bn) worldwide\textsuperscript{296}. Major airlines in the US are now issuing around 90% of their tickets electronically at estimated cost savings of $9 (€7.5) per booking\textsuperscript{297}.

One of the most significant impacts on costs – and one which has direct relevance to liberalisation as envisaged under an OAA – has been the changes forced on the market by low cost carriers. Their presence has unarguably had a strong downward pressure on costs for all airlines in the US and in the EU. Their strategy has been to focus on relentlessly reducing the cost base. For example, Ryanair has famously focused on reducing costs, negotiating good deals as well as maximizing its use of resources; cost is an aspect the airline continues to work on, and can claim a reduction of 7% in costs (excluding fuel) in the most recent year to date\textsuperscript{298}.

The following chart shows the percentage change in cost per available seat kilometre (CASK) for European airlines. Overall operating costs for European airlines have increased by approximately 30% since 2000.

\textsuperscript{295} 2005 IT Trends Survey, Airline Business July 2005
\textsuperscript{296} IATA director general Giovanni Bisignani, July 2004
\textsuperscript{297} Some US carriers estimate this figure to be closer to $15-24 (€12-€20) a booking, if the cost saved due to not issuing paper tickets through a travel agent is taken into account.
\textsuperscript{298} Howard Miller, deputy chief executive and chief financial officer of Ryanair, quoted in Air Transport Intelligence, March 2006
There has clearly been some change in the breakdown since 2000. Firstly, the cost of insurance has rocketed – Load Insurance has increased by almost five times, though it remains a small percentage of overall costs. Airport and Navigation charges have also increased substantially, reflecting the response of aviation infrastructure to a difficult few years of decreased traffic. Overall, costs that are difficult to influence have increased almost 50% as much again as costs which are less difficult to influence.

Since traffic has decreased, analysis of cost figures by ASK may overstate the change in cost – around 10% of this apparent cost increase is likely to be the result of under-utilisation due to the fall in demand. Analysis of the position on the US side of the Atlantic presents a rather different picture as operating costs for US airlines have only increased 1.3% since 2000 which, after inflation is taken into account, represents a decrease in real terms.
Judging from the data available, the pressures of the last five years have impacted on costs in the US to a much greater extent than in the EU. In particular, costs which may be expected to be “less difficult to influence” have decreased by 6% in nominal terms suggesting that US airlines have made progress in reducing some costs where they can.

9.3 HIGH LEVEL CALCULATION OF POTENTIAL COST SAVINGS

Having examined both the theory and the recent history, we now calculate potential cost savings from an OAA and their knock-on effect for the industry. Lack of detailed data has limited our ability to do this effectively. However, within these limitations, an estimate has been made based on the information available.

9.3.1 Methodology

The BAe database that provided a detailed breakdown of airline cost and which formed the central source of data for the last report is, unfortunately, no longer available. Thus, the detailed source of airline costs which was the basis of the Brattle Group analysis is not available for this study.

The analysis therefore relies on publicly available information on the operational expenditure of individual airlines and that provided by the AEA. In some instances, we have only been able to obtain data on an aggregate level. It is not possible, therefore, to follow the Brattle Group in their methodology of reducing high cost airlines to the average.

Instead, on the basis of a judgement as to how far any given airline may be able to reduce its operating costs in the short term, we have applied a percentage reduction to the aggregate level of operating costs (on the basis of the data available).

We suggest that potential cost savings for airlines could be estimated at a maximum of 10% in the short term. This would not necessarily be achievable for all airlines - particularly since this may require drastic changes to business model and/or product. Other carriers may be able to achieve more, but local political and social environment as well as management calibre and will are significant factors.
Aer Lingus provides an example of a radical cost reduction plan in the face of severe competition. Through changing its business model and stripping out costs from operation, the airline succeeded in reducing its operating costs in one year by around 11%. This may be considered to be the most that it could have achieved given social and political pressures – which are not unique and may be expected to face other European airlines attempting a similar degree of cost cutting.

So, while certain airlines have made great strides in reducing their costs, we believe there is still some slack in the market, particularly in the EU – and costs may be reduced at other airlines should they face greater competition. In addition, the potential for cost savings due to mergers must also be considered (see 8.2 above).

Given their structure and the external pressures on them, we consider that only around 50% of EU and US airlines will be able to reduce their operating costs significantly. The opportunity for cost cutting may also be different in the US from the EU.

This is partly due to the fact that since 2000 US airlines have achieved substantial cost cutting overall in the last five years, as shown above (Section 9.2), US airlines’ operating costs have shown a decrease in real terms since 2000. Further reductions must be generated from a lower cost base, which makes large proportional reductions ever harder to achieve. A radical realignment of strategy would be required to deliver significant cost reduction.

Taking a conservative approach to our analysis we consider that for the 50% of US airlines that can possibly reduce their costs, those savings will be in the order of 2%, thus a saving of 1% is applied to the figures for aggregate total operational expenditure.

In the EU market, costs for legacy carriers in general appear to have risen slightly. We have not included LCCs in this analysis. These airlines already focus on cost cutting and have less scope for further reductions over and above what their strategy dictates. Furthermore data on these airlines that would facilitate market level analysis is not readily available. It may be considered that the scope for further efficiencies lies in the cost base of the established network carriers, indeed the term legacy carrier refers not only to their traditional approach but also to the “legacy costs” they carry.

Of the EU carriers that can reduce their costs (i.e. 50% of all airlines) we estimate that they can do so on average by 6%. A greater proportion for cost savings is applied to EU carriers since their costs appear to be on the rise.

For operations on the transatlantic market we assume an even split between EU and US carriers. An intermediate figure of 2% of total operating expenses attributable is applied.

9.3.2 Estimated Cost Savings

On the basis of the assumptions set out above, a top level analysis of potential cost savings has been performed. Cost data for the year 2004 from the US DoT Form 41 and that provided by AEA has been used. The figures for costs derived from this data have been adjusted to estimate the impacts on the entire market (including grossing up values where only proportions of European costs are available) in order to take account of expenditure of the airlines in the market not covered by the data available.

Note that the figures for the US domestic market and the Intra-EU include only the carriers that also operate transatlantic services. Other carriers operating in North America domestically or within Europe may also find that they need to cut their costs due to the pressure of competition, but the benefit of this effect has not been considered here.
The estimated cost saving has been applied universally over the three flight territories affected (EU, US, transatlantic market). While it would have been possible to fine tune the figures according to national circumstances, we do not want to give an impression of greater detail than is appropriate given the inherent degree of uncertainty in this type of analysis and the aggregated nature of the data. Any prediction about future performance must always be tempered by the reality of the substantial amount of uncertainty involved; adjusting individual figures may lend it an air of authority which is unrealistic and such predictions should never be considered anything other than approximate.

The table below shows our findings, based on applying the cost savings set out above for operating expenditure incurred in the relevant territories.

<table>
<thead>
<tr>
<th>Flight territory</th>
<th>Total Operational expenses €m</th>
<th>Estimated % saving</th>
<th>Total Saving €m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transatlantic</td>
<td>18,000</td>
<td>2.00%</td>
<td>360</td>
</tr>
<tr>
<td>Intra-EU</td>
<td>42,000</td>
<td>3.00%</td>
<td>1,300</td>
</tr>
<tr>
<td>US domestic</td>
<td>51,000</td>
<td>1.00%</td>
<td>510</td>
</tr>
<tr>
<td>Total</td>
<td>111,000</td>
<td></td>
<td>2,100</td>
</tr>
</tbody>
</table>

Table 45: Estimated Savings

The analysis shows that a total cost saving of €2.1 billion is theoretically possible from the pressure of competition on the market. It should be noted that this analysis is intended to provide an indicative order of magnitude and would depend on individual airline strategy as well as new competition materialising to a significant degree.

9.3.3 Consumer Benefits from Airline Cost Savings

If, in order to increase their competitiveness, the airlines pass these cost savings onto their customers by reducing the price of airfares, then there would be further knock-on benefits. These are considered briefly here, following the same methodology as used in section 8.1 to calculate their magnitude; details on how this is done can be found in Appendix 3.

As outlined above, the benefits occur for transatlantic, intra-EU and domestic US traffic. For each market, two scenarios have been modelled. The lower bound is calculated assuming a demand elasticity of 1; the upper bound assumes a demand elasticity of 2.5. The results are shown in the table below.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Transatlantic</th>
<th>Intra-EU</th>
<th>US domestic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic increase ‘000</td>
<td>460</td>
<td>8,400</td>
<td>6,500</td>
<td>15,000</td>
</tr>
<tr>
<td>Existing pass. CS (€ m)</td>
<td>330</td>
<td>2,200</td>
<td>1,200</td>
<td>3,700</td>
</tr>
<tr>
<td>New pass. CS (€ m)</td>
<td>3.4</td>
<td>34</td>
<td>5.8</td>
<td>43</td>
</tr>
<tr>
<td>Total gain in consumer surplus (€ m)</td>
<td>340</td>
<td>2,200</td>
<td>1,200</td>
<td>3,700</td>
</tr>
</tbody>
</table>

Table 46: Impact of Price Decreases due to Increased Competition

Passenger volume is therefore estimated to increase between 15 and 39 million per annum, and the consumer surplus to result in an economic benefit of around €3.8 billion each year.

Note that, although the increase in passenger volumes varies considerably depending on the scenario, there are not large differences between the consumer surplus gains in the upper and lower bound scenarios. Since the cost reduction is the same in either case, the existing passengers experience the same gain in consumer surplus under both scenarios, and it is this value that constitutes the majority of consumer surplus created. However, as more new
passengers are created in the upper bound scenario, their consumer surplus is greater than that in the lower bound scenario, and this represents a net gain to society (rather than a transfer between the firm and consumer).

9.3.4 Employment Effects from Airline Cost Savings

As examined in 9.2, the decrease in total costs, *in real terms*, that has been observed in the US over the past five years has been partially associated with a reduction in the number of employees working for the major transatlantic carriers. This suggests that cost savings have been found by reducing total employment. However, this must be viewed in the wider context of the market, which experienced substantial decreases in passenger traffic over this period. If passenger traffic continues to increase, as it is forecast to do, then, inevitably, employment will recover to its previous level, though this may take a couple of years.

As stated earlier, this analysis of cost savings is performed on a high level basis due to data constraints. We have purposely avoided identifying the source of the cost reduction since we do not have sufficient information to calculate where cost savings may most efficiently be made. If employees can be made to be “more productive” by more efficient management responding to increased competition, then this may depress employment. However, this effect is likely to be counteracted by the potential increase in demand for air travel (if cost savings are passed onto consumers), which may be sufficiently large to cause employment to increase overall.

On the other hand, if, for example, employees become more productive so that their outputs grow at, say, 3% per worker per annum, but traffic growth does not match this growth level, then job losses could ensue; traffic growth at 5% per annum would conversely mean that employment should rise.

Estimation of the potential increase in traffic volume indicates that the net effect on employment is likely to be positive. However, to quantify this effectively, much more detailed data is required than is available to the study team; in any case such analysis would have such a high degree of uncertainty associated with it, given the vagaries of the labour market and the various rigidities and restrictions acting upon it, as to make it effectively meaningless. Therefore, for this section only, the employment effect is considered to be beyond the remit of this analysis.

9.4 ANALYSIS OF FLIGHT AND CABIN CREW COSTS

Analysis of costs of flight and cabin crew salaries over the period 2000 – 2004 has been undertaken to explore the relative positions of European and US crews, to inform the discussion on concerns as to the likelihood of labour substitution across the Atlantic and to examine how the market developments of the last four or so years have affected remuneration of key airline workers.

The following sections provide an analysis of the changes in flight crew and cabin costs from 2000 to 2004. This latter year provides a set of data across the Atlantic for a whole year – it should be noted that since then significant changes have occurred and that wage negotiations are still developing.

Expenditure on flight deck crew makes up a comparatively large percentage of operational costs. Combined with cabin crew expenditure, on board labour costs are the single largest expense for airlines.
As explored in Chapter 5 above, pilots occupy a vital place in an air carrier’s structure and are essential to the operation. As a collective group, they have an interest in maintaining and improving the standards of their job, worthy of any profession. Their relatively high standard of education and training make them valuable employees. In labour relations these positives combined with their key role mean that they are tough negotiators. In contrast to the general labour market, the pilot workforce in the US is highly unionised. Pilot unions have played an important role in collectively negotiating wages and benefits packages. On the one hand, pilots in Europe as well as the United States have responded in crisis situations by accepting reductions in compensation. On the other hand, when business has begun to recover, they have also acted strongly to recover if not strengthen their economic position.

Against this background, this section investigates how wage packages have changed in response to the increasing pressure on airlines to cut costs.

9.4.1 Investigating Wages

The general view of pilots being a well paid profession is historically accurate, backed up by national statistics which put the mean average salary of airline pilots, copilots, and flight engineers working for US scheduled airlines at $144k (€116k)\(^{301}\) and stories of major airlines paying pilots up to $300k (€240k) – a good salary by any standards\(^{303}\). However, airline restructuring in recent years has meant large reductions in benefits and wages for certain airlines. In some cases of upheaval, this has led pilots to assert that the stress induced by their circumstances may be compromising safety\(^{304}\).

One of the concerns raised with respect to liberalisation is the possibility of an influx of cheap labour in one market bringing down wages for all. However, since being a pilot is a highly skilled job requiring years of expensive training, supply of fully-trained pilots is limited. In the new Member States of the EU, for example, which have comparatively low wages, qualified pilots number in the low thousands. The legal implications for labour have been explored in Chapter 5 of this Report. Wage differentials are calculated to provide an indication of incentives for pilots to work on the other side of the Atlantic.\(^{305}\) In this analysis, cost of living has also been taken into account which may reflect more realistically the difference in wages.

Benefits are also an important part of any wage package. Retirement rules require pilots to retire earlier than the general population (in the US pilots are obliged to retire at 60, jurisdictions in the EU have similar rules\(^{306}\)) so that pension plans become extremely important. This is a particularly sensitive point given that US airlines pension plan benefits have been cut by more than $5.2 billion (approximately €4.6 billion) since 2001 according to the US Government Accountability Office\(^{307}\).

Another characteristic is that income distribution for pilots appears to be negatively skewed. Normally income distributions are positively skewed – i.e., there are a greater number of

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\(^{303}\) For example, the average salary for dentists in the US is $134k (€108k) while postsecondary teachers earn an average of $55k (€44k), Occupational Employment Statistics (OES) Survey 2004, BLS

\(^{304}\) The threat of job losses caused Swissair pilots to complain in July 2005 that the stress they were under meant that they were not safe to fly.

\(^{305}\) Many pilots work for commercial interests in a range of industries. However, the analysis for this report considers only pilots and co-pilots working for scheduled airlines

\(^{306}\) European-wide rules have not yet been agreed

\(^{307}\) Quoted by Airline Business, August 2005
people earning a comparatively low amount and then a long tail of a few people earning a high amount. The situation appears to be reversed for pilot wages. National statistics compiled by the Bureau of Labor Statistics (BLS) in the US consistently gave a higher value for median annual wage than for mean average wage for pilots and co-pilot on scheduled airline services, indicating negative skewness. This may be accounted for by a number of pilots who earn very little, for example, starting salaries may be as low as $12k in the US for the co-pilot of a non-major carrier flying small aircraft\textsuperscript{308}, while the top 50% of pilots earn substantial salaries – over $144,000 in the US\textsuperscript{309}.

9.4.2 Changes since 2000

There have been substantial moves in the euro-dollar exchange rate over the last five years which complicates the picture, so for this section only, data for US carriers will be quoted in US dollars, while that for EU carriers will be quoted in euros\textsuperscript{310} to make clear the changes within a national context. Later in this section there are charts, denominated in euros, comparing costs across the Atlantic.

9.4.2.1 The United States

The table below shows average remuneration for crew in the US. Figures are given for the six main transatlantic carriers and two domestic carriers as a point of comparison. Flight deck crew salaries are seen to increase by between 0.6% and 15% on an annual basis. The unweighted average is 6%. For cabin crew, the range of increase is even larger with the average being 8%.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Flight Deck Crew $</th>
<th>Cabin Crew $</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>188,304</td>
<td>193,890</td>
</tr>
<tr>
<td>Continental</td>
<td>197,941</td>
<td>203,010</td>
</tr>
<tr>
<td>Delta</td>
<td>190,503</td>
<td>301,775</td>
</tr>
<tr>
<td>Northwest</td>
<td>178,587</td>
<td>247,222</td>
</tr>
<tr>
<td>United</td>
<td>198,928</td>
<td>207,054</td>
</tr>
<tr>
<td>US Airways</td>
<td>171,214</td>
<td>207,190</td>
</tr>
<tr>
<td>Jet Blue</td>
<td>76,054</td>
<td>134,368</td>
</tr>
<tr>
<td>South West</td>
<td>170,014</td>
<td>207,846</td>
</tr>
</tbody>
</table>

Source: ICAO data, USD\textsuperscript{311}

Table 47: Average Annual Remuneration for the Crews of US Carriers

The figures above are nominal, but if inflation is taken into account, of the six major transatlantic carriers, half have increased their expenditure on flight deck crew while half have, in real terms, decreased expenditure on the flight deck very slightly. The carrier which increased expenditure the most is Jet Blue, albeit from the lowest base. This suggests some convergence in pilot wages, and a similar pattern is observed for cabin crew staff. Delta increased wages substantially for all on board staff in 2001, in what could be said to be the last great “win” for unions before the events of 9/11 and its aftermath ushered in a period of cutbacks for labour. These figures do not take into account the $1 billion giveback agreed in 2004; see section on Recent Developments below.

\textsuperscript{308} Airline Pilot Career Information, ALPA

\textsuperscript{309} Median Annual Wage, Industry wages statistics, BLS, 2003 (no figure was available for 2004)

\textsuperscript{310} In order not to overcomplicate the picture with multiple currencies, European countries which are not part of the Eurozone, such as Latvia, Poland and the UK, will still have their data quoted in euros.

\textsuperscript{311} For US airlines, ICAO excludes payments for employee benefits, payroll taxes and pensions from the individual staff categories, whereas these payments are included for all other airlines. In order to provide a like for like comparison, the US figures have been adjusted by a proportion of the additional payments in line with the fraction of total expenditure that is spent on flight deck crew. This methodology is consistent with the previous report.
The figures given above are within the wide range of ALPA estimates, which gives a salary for pilots at major airlines of between $70 and $300k\textsuperscript{312}. The rate of growth of wages is confirmed by national statistics. Figures compiled by the BLS in November 2004 give the mean average annual salary for pilots, co-pilots and flight engineers on scheduled services as $144,410. This compares with an average of $106,910 in 2000, an increase of 35\%\textsuperscript{313}. These figures are lower than those for the major airlines given above; this may be due to smaller domestic airlines paying less, the inclusion of flight engineers in the measure, or a different way of accounting for benefits.

9.4.2.2 The EU

Increases in remuneration appear to be more modest in the EU. The table below shows average remuneration for some major European carriers in 2000 and 2004. The compound annual growth rate is an increase in 3\% for pilots and 4\% for cabin crew.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air France</td>
<td>168,637</td>
<td>212,361</td>
<td>6%</td>
<td>51,275</td>
<td>56,976</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA</td>
<td>122,263</td>
<td>133,038</td>
<td>2%</td>
<td>32,030</td>
<td>41,874</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iberia</td>
<td>174,233</td>
<td>178,096</td>
<td>1%</td>
<td>57,512</td>
<td>64,311</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lufthansa</td>
<td>166,743</td>
<td>212,274</td>
<td>6%</td>
<td>49,956</td>
<td>59,074</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAP</td>
<td>142,731</td>
<td>139,440</td>
<td>-1%</td>
<td>44,810</td>
<td>54,103</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virgin</td>
<td>99,152</td>
<td>108,273</td>
<td>2%</td>
<td>21,517</td>
<td>22,134</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: ICAO data, euros

Table 48: Average Annual Remuneration for Crews of EU Carriers

This appears to be at odds with the earlier finding that in terms of cost per ASK, flight deck crew have increased their cost by 49\% in the EU\textsuperscript{314} compared with 4\% in the US\textsuperscript{315} (see section 9.2 above). This may be partially due to using a smaller sample of EU carriers in this subsection. However, this does not explain why wages have appeared to grow in the US, but costs per ASK have decreased in real terms. The implication is that US pilots may be enjoying higher remuneration, on average, but they may also be working harder (spending more hours at the controls) for their pay.

Remuneration for selected Central and Eastern Europe are listed below. Here pilot salaries have increased by an average of 6\% growth annually whereas cabin crew have seen 4\% increase.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech</td>
<td>19,018</td>
<td>34,536</td>
<td>16%</td>
<td>6,639</td>
<td>10,591</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonian</td>
<td>31,214</td>
<td>45,665</td>
<td>10%</td>
<td>10,712</td>
<td>12,777</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithuanian</td>
<td>15,146</td>
<td>14,189</td>
<td>-2%</td>
<td>7,401</td>
<td>7,661</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOT Poland</td>
<td>58,807</td>
<td>60,668</td>
<td>1%</td>
<td>16,156</td>
<td>15,478</td>
<td>-1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: ICAO Data

Table 49: Average Annual Remuneration for Crew for Central and Eastern EU carriers

Average wages are substantially lower in these new EU Member states. This reflects lower cost of living and lower salary expectations. These markets are developing rapidly but they remain small in comparison to Western Europe. In 2004, the number of flight deck crew

\textsuperscript{312} Airline Pilot Career Information Booklet, ALPA
\textsuperscript{313} This is equivalent to a compound annual growth rate of 7.8\%, significantly higher than inflation
\textsuperscript{314} AEA members data, 2000-2004
\textsuperscript{315} Department of Transport Form 41 data, 2000-2004
working in the four airlines listed above was 1,049 in total, approximately a quarter of the number of pilots employed by Air France alone.

9.4.3 Comparison Across the Atlantic

As an indication as to whether there is a financial incentive for pilots to seek employment on the other side of the Atlantic, remuneration has been calculated for all airlines in Euros. The graphs below illustrate the results. For ease of comparison, US carriers are given in red and EU carriers in blue. In 2000, US carriers had the highest paid pilots.

![Selected US and EU Airlines Pilot Salaries 2000](chart1)

Source: ICAO personnel database

Figure 59: Average Annual Remuneration for Flight Deck Crew, 2000

However, shifts in the exchange rate and a tightening market in the US produce a different picture for 2004.

![Selected US and EU Airlines Pilot Salaries 2004](chart2)

Source: ICAO personnel database

Figure 60: Average Annual Remuneration for Flight Deck Crew, 2004
As shown in the chart the situation has shifted significantly so that three major European airlines, Air France, Lufthansa and Iberia, had more generous packages for cockpit crew than most US carriers in 2004. \(^{316}\)

Market exchange rates were used in the analysis above. However, if the cost of living is taken into account by using purchasing power parity exchange rates, the position of carriers in comparatively low cost countries, such as Spain and Portugal, is considerably improved.

A similar analysis for cabin crew salaries shows that in 2000 only Iberia’s employees earned more than their US counterparts\(^{317}\).
By 2004 however, Lufthansa and Air France’s crew had overtaken the US equivalent staff.

![Selected US and EU Airlines Cabin Crew Salaries 2004](chart1)

**Figure 63: Average Annual Remuneration for Cabin Crew, 2004**

Once again, when living costs are taken into consideration, the picture is altered slightly and continental European cabin crew are seen to be better off.

![Selected US and EU Airlines Cabin Crew Salaries 2004:PPP](chart2)

**Figure 64: Purchasing Price Parity-Adjusted Remuneration, 2004**

As shown in the chart, once again employees of the southern EU economies, Spain and Portugal, climb the rankings over their counterparts from France and Germany.

### 9.4.4 Overall Commercial Aviation Employment

#### 9.4.4.1 Flight Deck and Cabin Crew

While there have been general increases in wages, this should be viewed within the context of the overall job market, which has, for the most part, contracted for flight deck and cabin
crew for European and US carriers. Crew employment for the major carriers already investigated is summarised below.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Flight Deck Crew</th>
<th>Cabin Crew</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>9,816</td>
<td>9,929</td>
<td>0.3%</td>
<td>21,534</td>
<td>17,484</td>
</tr>
<tr>
<td>Continental</td>
<td>4,656</td>
<td>3,943</td>
<td>-4%</td>
<td>8,082</td>
<td>7,386</td>
</tr>
<tr>
<td>Delta</td>
<td>9,123</td>
<td>6,786</td>
<td>-7%</td>
<td>17,657</td>
<td>12,781</td>
</tr>
<tr>
<td>NW</td>
<td>5,981</td>
<td>4,942</td>
<td>-5%</td>
<td>10,753</td>
<td>8,636</td>
</tr>
<tr>
<td>US</td>
<td>5,247</td>
<td>2,967</td>
<td>-13%</td>
<td>9,857</td>
<td>5,689</td>
</tr>
<tr>
<td>United</td>
<td>9,855</td>
<td>6,446</td>
<td>-10%</td>
<td>23,821</td>
<td>15,382</td>
</tr>
<tr>
<td>Jet Blue</td>
<td>75</td>
<td>809</td>
<td>81%</td>
<td>128</td>
<td>1,309</td>
</tr>
<tr>
<td>South West</td>
<td>3,316</td>
<td>4,197</td>
<td>6%</td>
<td>5,260</td>
<td>6,155</td>
</tr>
<tr>
<td>US average</td>
<td></td>
<td></td>
<td>-4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air France</td>
<td>3,370</td>
<td>3,952</td>
<td>4%</td>
<td>10,955</td>
<td>12,414</td>
</tr>
<tr>
<td>BA</td>
<td>3,214</td>
<td>3,018</td>
<td>-2%</td>
<td>14,774</td>
<td>13,892</td>
</tr>
<tr>
<td>Iberia</td>
<td>1,875</td>
<td>1,922</td>
<td>1%</td>
<td>4,383</td>
<td>4,591</td>
</tr>
<tr>
<td>TAP</td>
<td>499</td>
<td>555</td>
<td>3%</td>
<td>1,522</td>
<td>1,422</td>
</tr>
<tr>
<td>Virgin</td>
<td>569</td>
<td>585</td>
<td>1%</td>
<td>2,441</td>
<td>3,198</td>
</tr>
<tr>
<td>EU15 av.</td>
<td></td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czech</td>
<td>330</td>
<td>530</td>
<td>13%</td>
<td>628</td>
<td>1,031</td>
</tr>
<tr>
<td>Estonian</td>
<td>46</td>
<td>51</td>
<td>3%</td>
<td>59</td>
<td>83</td>
</tr>
<tr>
<td>Lithuanian</td>
<td>106</td>
<td>70</td>
<td>-10%</td>
<td>98</td>
<td>80</td>
</tr>
<tr>
<td>LOT</td>
<td>467</td>
<td>435</td>
<td>-2%</td>
<td>759</td>
<td>773</td>
</tr>
<tr>
<td>EU10 av.</td>
<td></td>
<td></td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand total</td>
<td>58,545</td>
<td>51,137</td>
<td>-3%</td>
<td>132,711</td>
<td>112,306</td>
</tr>
</tbody>
</table>

Source: ICAO data

Table 50: Flight Deck and Cabin Crew Employment

For the US, almost all the major carriers have decreased the number of pilots and cabin crew employed. Delta, for instance, which in 2004 had a generous remuneration package for pilots, decreased its number of flight deck crew by a total of 26% and cabin crew by 28% over the four year period. In contrast, the two LCCs increased their flight deck crew, Jet Blue increasing its pilots by almost 10 times, reflecting the airline’s growth from start-up to significant player over the period under analysis.

In Europe the picture is more positive. Some airlines, such as BA, have decreased the number of jobs, whereas others, such as Air France, have substantially increased their flight deck and cabin crew – creating over 2000 jobs. In the EU New Member States, on-board jobs have generally increased, in some cases substantially, though this is from a relatively small base.

The changes set out in the table above are presented in graphical form below, with flight deck and cabin crew combined. Unsurprisingly, those airlines with significant increases are those who have enjoyed passenger growth in the period.

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318 Note that due to difficulties in obtaining accurate comparable data, only a small sample of European carriers is included.
9.4.4.2 All Categories of Staff

This section has focussed on the “mobile workers” – i.e. the flight deck and cabin crew, since they are the most likely to be affected by greater liberalisation. However, in order to put this in context, this subsection briefly considers other airline workers.

Analysing employment by carrier, the graph below shows the categories of staff that have been reduced and increased (for the selected carriers). Changes have been more extreme in the US where all categories of staff have reduced.

Figure 66: Change in Number of Carrier Employees for Selected Airlines
In the US, staff reductions appear to be across the board. Ticketing and sales personnel have suffered the most – in line with the previous analysis on cost, but no section has escaped unscathed.

In Europe, it is clear that certain occupations have fared better than others, with flight deck and cabin crew being the positive exception as the only area where numbers of employees have increased. Decreases in ticketing and sales as well as maintenance and overhaul personnel are not as pronounced as they are in the US.

From the sample considered, employees for US carriers have seen their rewards reduce much more in recent years than employees of EU carriers. These data also imply that the US pilots that remain, while in some cases being better paid, are working harder since the number of pilots has decreased to a much greater extent than the scheduled capacity.

ALPA’s current concentration on tightening up regulations around flight times also implies that this is a significant issue. In a recent statement, ALPA urged the FAA to address its flight duty-time rules and a similar line is given by the European Cockpit Association which puts forward the position that current flight time limits do not take into account the latest medical research.

As with most of the preceding section, it should be borne in mind that this analysis covers just a representative sample of airlines and therefore should be used with caution when considering the change in the job market as a whole. Best efforts have been made to confirm these figures with international statistics where possible, and to ensure that the sample is reasonably representative. Noticeably, it does not include any European LCCs and their pattern of employment is fundamentally different to that of the major carriers. LCCs have been excluded because they are not set up to operate transatlantic routes and the inclusion of a fundamentally different operating model is largely irrelevant to the current analysis and would skew the results.

9.4.5 Recent Developments

9.4.5.1 Anecdotal Changes for Individual Airlines since 2004

Consolidated data is not yet available for 2005. However, since 2004, two more US airlines – Northwest and Delta - have entered into Chapter 11, doing so on 14th September 2005. Both airlines cited high labour costs as well as the cost of fuel as causes.

The figures above show that in 2004 Delta pilots earned significantly more than others. At the time of writing, however, the airline is in the process of negotiating $325 million additional savings from pay and benefit reductions. One billion dollars in annual concessions agreed in a 2004 deal was intended to reduce wages by 32.5%. Delta states that pilots earned more than $157,000 on average in 2005 and the pilots union claims $151,000 including overtime. Clearly, substantial decreases have occurred since the 2004 figures were published. The latest news indicates that the pilots union has agreed to a further cut of 14%, bringing the average down to under $130,000.

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319 ALPA Factsheet: “Tired of Pilot Pushing” www.alpa.org
320 ECA Press Release, 9 March 2006
321 Wall Street Journal, 1 June 2006
By contrast, in the EU Air France has recently reported to have negotiated a 3.3% pay increase and €500 bonus for all its cabin crew and ground staff, an offer that has been accepted by six unions.  

However, in the UK, British Airways is raising the retirement age of its pilots and cabin crew as part of an initiative aimed at clearing a c. €1.5 billion pensions deficit. The airline has stated that the normal retirement age of pilots will increase to 60 from 55 while for cabin crew it will increase to 65.

9.4.5.2 Falls in Remuneration Since 2004

The analysis conducted has been performed on the basis of the most recently available comprehensive data. As indicated by the individual airline activity described above, the levels of remuneration continue to evolve.

The most recent data compiled by the US Department of Transportation suggest a decrease in the number of pilots working for the six main carriers of around 9%. This is only partially balanced by an increase in numbers of pilots working for Southwest and Jet Blue. In total, there are now 3% fewer pilots working full time equivalent in 2005 than 2004.

More significantly, incomplete data for 2005 shows that flight deck cost per ASK has decreased substantially in the US: flight deck crew cost an estimated 7.9 cents per ASK in 2004 and 6.9 cents per ASK in 2005, which represents a substantial decrease of 15%.

Taken as a whole, it would appear that recent changes have left Europe a more attractive place to work than before for a mobile work force such as pilots.

9.4.6 Concern over Unintended Consequences of Chapter 11

Concerns have been voiced by some in Europe that certain US carriers have been able to reduce elements of cost only because they are or have been under shelter of the bankruptcy laws in the US. They contend that because these same airlines have been unable to reduce their high cost elements such as cockpit crew and aircraft (due to the difficulties of reducing either pilot numbers or aircraft quickly, or because they have otherwise not attempted to reduce staff or fleets for strategic reasons), they have “spare” resources and a more competitive overall cost base. Since the most profitable routes for US carriers are, in general, international services, these airlines – it is suggested – have deployed these “spare” resources on transatlantic services.

The views of these stakeholders suggest that Chapter 11 represents a “subsidy” to US-based airlines, providing incentives to them to operate unprofitable routes at lower load factors than their European counterparts. However, analysis of load factor data for scheduled airlines comparing the period 1999-2000 with 2001-2005 does not support this hypothesis. Low load factors may suggest capacity deployed without a fair business case but, in fact, the reverse is revealed: load factors are seen to increase across all airlines in the recent period from 72.2% to 78.8% on average. This includes those airlines that have entered into Chapter 11 bankruptcy protection, suggesting that rather than adding additional or “spare” capacity on transatlantic services, airlines are in fact managing their capacity effectively. A breakdown of this load factor analysis is shown in Appendix 6. Values for yield (i.e.

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322 Air Transport Intelligence, March 2006
323 Ibid.
324 DoT Form 41 data, using data to September 2005
325 A counter veiling argument, put forward by US labour and industry, is that some European carriers benefit from government subsidies.
revenue) would go further to answer this question but, unfortunately, due to commercial confidentiality, these figures are not available.
10 IMPACTS FROM FURTHER MARKET ACCESS AND OTHER POLICY ASPECTS

This chapter explores the potential impact of an OAA with respect to further market access through granting 5th and 7th freedom and cabotage rights. It focuses primarily on cargo since this is the area that stands to gain the most. Indeed, the ability for cargo operators to conduct 9th freedom operations within the US is of high value according to at least one integrated express carrier (DHL) as a means of increasing access to the US market; by way of comparison, a case study of a UPS hub in Europe is presented.

The implications for opening up the wet-leasing market are also considered – again concentrating on the cargo sector.

The chapter concludes with a short section on the implications of Fly America which, while it is more political in nature, may also become more important as should beyond rights be granted to EU carriers.

10.1 CABOTAGE

10.1.1 Opportunities for Passenger Operations

10.1.1.1 Cabotage and Investment Rights Compared

During interviews undertaken for this study it has been profitable to explore the opportunity provided by cabotage rights and to contrast with that from expanded investment rights – a brief review of these aspects is provided as an introduction to the further opportunities for passenger operations under an OAA.

In order to provide both fully open and equal access to the respective continental market, EC negotiators have advocated removal of existing constraints on cabotage and foreign investments. Though such rights would address a common problem of market access to national traffic, it is essential at the outset to realise that they are fundamentally different in key respects.

Investment is not a traffic right. It is a “right of capital”. While an issue in international trade and economic relations, its fundamental objective is “national treatment” or the right of a foreign investor to be treated no better or no worse than the national investor, to be subjected to the same rules and privileges, the same standards of safety, security, consumer protection and employee rights.

The foreign investor brings money and ideas to a new market. By contrast, the cabotage operator brings outside equipment and people to the new market whose licensing and performance standards are governed in first instance by its national rules. The cabotage operation raises different questions under law and policy. Thus, apart from the economics, acceptance of cabotage will arguably depend substantially on progress on regulatory convergence.

It is also important to realise that both cabotage and inward investment rights are necessary to provide a full range of commercial freedom to airlines. Particularly when combined with rights of Change of Gauge, it can be very difficult from a regulatory perspective to determine the difference between 8th and 9th freedom cabotage. An 8th freedom (consecutive cabotage) service is one which originates in the territory of the designating Party and uplifts passengers in the territory of the other Party destined for another point in...
that territory, in the course of an international service. A 9th freedom (stand-alone cabotage) service is one that uplifts passengers destined for another point in the territory of the second country, but that does not originate in the territory of the Party designating the airline. Where rights of Change of Gauge are utilised in conjunction with 8th freedom cabotage rights, the distinction between the two freedoms becomes blurred, especially if multiple internal sectors are performed.

This gives rise to a number of other issues. Single-aircraft consecutive cabotage has limited commercial appeal, largely due to factors around passenger facilitation, security and the use of international facilities for the carriage of domestic passengers (or conversely, the use of domestic facilities by international passengers). If an airline were to seek to make use of 8th freedom cabotage rights, it is likely that it would also seek to utilise its right to Change of Gauge and may wish to perform multiple domestic sectors. This in turn gives rise to issues such as the Customs and VAT treatment accorded to such operations (specifically the entry requirements applied to aircraft) and the question of whether such operations are rightfully considered to be consecutive or stand-alone cabotage. Regulatory oversight of such operations may also be an issue, particularly in respect of prosecution. Extensive 9th freedom (stand-alone) cabotage operations would thus almost certainly require the issue of a domestic AOC to be a commercially attractive proposition, thereby bringing the operation under the regulatory oversight of the host country – and requiring the right of inward investment.

Interviews conducted as part of this study suggest that currently European passenger airlines do not have ambitions to operate cabotage services. However, while this is the case today, it is not necessarily the case that airlines – including new entrants – would not want to take advantage of cabotage rights in the future.

10.1.1.2 Structural Difference between EU and US Markets

The EU is a single market in air transport and any airline registered within the Community is able to offer commercial services within any other part of the Union, whether between Member States or within an individual Member State, regardless of its origin. There are many significant national routes within the Community (e.g. Madrid-Barcelona is the biggest single route in the world by capacity), but most of the important routes link major cities in different Member States.

Taken as a whole the single EU market in air transport, while smaller than that of the US, is of a comparable scale (650 million passengers per annum compared with 712 million passengers in the US), and the European side equates the opportunity for US carriers within the EU as equivalent to effective if not complete access to the whole US – a market currently denied to European carriers without internal traffic rights. Thus stakeholders on the European side perceive an asymmetry of access in the current situation.

An OAA which removes all restrictions on traffic rights for EU and US airlines would enable EU carriers to hold out cabotage services within the US and operate 7th Freedom combination services between the US and third countries. For US carriers it would mean the right to hold out cabotage services within EU Member States and to operate 7th Freedom combination services between Member States and to third countries as well as being able to operate such all-cargo services in the 17 Member State markets in which the US presently lacks such bilateral rights.
10.1.1.3 Opportunities within the US

For this study, analysis of the origin and destination of traffic travelling through London’s Heathrow and Gatwick airports has been assessed as part of a case study of the UK’s hub activity (presented in Appendix 4) in order to assist in determining the opportunity for and likely interest of EU carriers in taking up cabotage rights in the US market, whether consecutive cabotage or stand-alone cabotage. At 38% of the entire transatlantic market, the UK represents a significant proportion worthy of consideration.

Among the results of this analysis are the following points:

- hubbing activity within the US is highly dispersed (i.e. hubbing activity takes place at all the gateways). Although dominated by the home bases of the major carriers, hubbing occurs at a very large number of airports within the US
- there are very many end points to which the traffic is transferring beyond the gateways
- the top 10 destinations to which passengers are connecting beyond US gateways account for around 40% of the total connecting traffic
- the remaining 60% of connecting traffic is distributed among c.190 different points
- with the exception of a very few of the top ten end points (including Orlando and Las Vegas) the many connecting routes are very thin. Only eight points see more than 50,000 passengers per year on indirect services (e.g. 93,000 passengers connected at different US gateways from London Gatwick to Las Vegas, but the tenth largest point for connections, Boston sees only 23,000 connecting passengers from all gateways)
- the vast majority of traffic (c.80%) connects through existing alliance relationships.

We conclude from this analysis that from the point of view of the EU carriers, operating eighth freedom, or consecutive cabotage services, with a wide-body aircraft through a US gateway is not likely to be commercially attractive for EU airlines. The relatively small volumes of traffic connecting suggests that direct services are effective (there are also no obvious candidates for additional direct routes from London on the basis of existing connecting traffic).

Consecutive cabotage services must be sure of attracting sufficient local traffic to support such add-on services. This means that the airline in question must compete against local incumbents who would likely enjoy competitive advantages in terms of both frequency and reliability (arriving aircraft on transatlantic services being more likely than domestic services to be subject to unpredictable delays).

Since most of the existing traffic connects within alliances, capturing a proportion of local traffic implies substituting a transit service for passengers that would otherwise transfer to an alliance partner service. This business opportunity may be less attractive if it damages existing relationship with other members of the alliance.

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326 Also known as “add on or route cabotage” or 8th Freedom services where the service offering the cabotage service has begun or will end its journey in a different country and to be distinguished from 9th Freedom stand-alone cabotage that terminates and begins in the foreign country.
A question arises as to whether two points not served directly by services from Europe could be combined with cabotage rights to provide a viable single plane service between the two points and a European gateway. Airline interviews have suggested that the economics of operating a widebody service from Europe in such a way would not be viable – competing with the extra frequency offered by local airlines would be difficult. The UK data (Appendix 4) also suggests that current routes served by indirect services connecting in the US are too small to justify creating direct services. However, this is not to say that a new airline entrant offering new routes would not generate additional traffic and justify such a service – experience to date suggests that using local partner airlines is a more effective solution to expanding the number of points served.

10.1.2 Opportunities for Cargo Operations

10.1.2.1 Hub Operations

In the cargo field cabotage rights within EU Member States and within the US may be of interest to both integrated express carriers and freighter operators carrying general cargo.

Currently UPS and FEDEX benefit from a number of 5th and 7th freedom rights within the EU which enable them to run hub operations within the European Union (with some support from contracted Community carriers). By contrast, DHL and TNT do not have the ability to establish a hub in the US – the world’s largest market - using their own equipment.

For integrated companies whose competitive advantage lies in the very fact that they are integrated – and as much activity as possible is carried out by company owned equipment and company employees – this requirement to use third party capacity and facilities can introduce additional costs.

European integrators argue that, to ensure fair competition, they need to be truly global – their customers expect a door-to-door service and are not concerned with freedoms of the air. Being able to compete effectively in this market (and bring the benefits of competition to the markets in which they operate) requires them to be able to introduce their own branding and quality controls without restriction.

Without cabotage operations or without the ability to control the economic performance of subsidiaries, a hub operation within the US is constrained or must be outsourced to US operators through expensive (including management time) and complex contracts with US airlines.

In interviews for this study, DHL indicated that the benefits of operating their own services would be considerable through fleet efficiencies and economies of scale.

Estimating the value of such benefits requires detailed company information not available to the study team. However two pieces of information provide an indication of the costs for DHL as an example within the US:

- ABX, operating air services for DHL in the US, reports revenue for ACMI leasing from DHL of $487 million in 2005\(^{327}\) (ABS earns additional “hub services” revenue from DHL identified separately).

- ASTAR, the freight company created from DHL’s US operations in 2003, now providing services for the integrator and others (including the US Postal Service) earned domestic operating revenue of $295.5 million in 2005\(^{328}\).

\(^{327}\) Source Company financial data: www.abxair.com

\(^{328}\) Source Company financial data: www.abxair.com
Assuming that half of ASTAR’s revenue comes from DHL, we can assume that the integrator is spending around $635 million (€524 m) on outsourced capacity. Any reductions which could be achieved through fleet efficiencies and economies of scale would represent a benefit to the company; passed on to their customers in the form of lower prices, DHL would be able to provide a more competitive offering.

Naturally such opportunities depend on the strategy of individual companies – UPS by contrast to DHL declares no particular interest to amend its current operations in Europe by substituting its own aircraft for outsourced operators who have in many cases been operating for the US company for many years. However, UPS has also served a number of its inner European routes with US flag equipment (flying as extension services of its transatlantic and Asia-Europe-US wide body services).

10.1.2.2 Cargo Flows

Cabotage rights can also provide a tool for compensating directional demand imbalance: where a flow of freight is weighted towards a particular direction – for example, where eastbound loads are sufficient to justify a freighter service, but westbound loads are such that the aircraft would return with loads of less than commercially viable volumes. Cabotage services can provide valuable operational flexibility by allowing the combination of points and “fill up” volumes within the cabotage market – in this case in the US - for European airlines.

An integrator such as DHL could, for example, carry a mix of high yield express packages for next day delivery in major western US markets and then carry more conventional loads on the leg back to one of its sort centres or a major general cargo point like New York for the return trip to Europe.

10.2 5TH AND 7TH FREEDOM BEYOND RIGHTS

10.2.1 OAA Opportunities for Cargo

The expansion of intra-regional cargo rights and activity under an OAA could also lead to new opportunities between OAA and non-OAA markets, particularly for integrated carriers seeking to enhance their worldwide networks. While operating and traffic rights that are external to the OAA are subject to the control of third party countries, existing open skies agreements between the US and EU should allow for some immediate routing opportunities and would pressure other countries to liberalize or risk having inferior access to worldwide distribution networks.

The following sections examine the potential opportunities for extra-OAA cargo expansion including:

- Expanded traffic opportunities between the US and Canada, Latin America and Asia-Pacific for European integrated carriers;

- Expanded traffic opportunities between the EU and Africa, the Middle East and Asia-Pacific for US integrated carriers; and

- Expanded traffic opportunities for all-cargo airlines operating freighters.

328 Source: DoT Form 41 Schedule P-12
10.2.2 Integrated Carrier Beyond Rights

As described in Chapter 4, the large integrated carriers are in the process of developing “converging” worldwide service networks that seek to connect a large share of the world’s shippers and consignees with a multiplicity of service options. The current use of available beyond rights is a critical element of their service networks, and the expanded possibilities for new rights could be valuable. The potential impact of new rights will vary based on market area and would depend on whether “third party” non-OAA rights can be used and the value of those rights in eliminating service “gaps”.

The desirability of expanded beyond rights is primarily dependent on the extent to which those rights enhance service levels in terms of improved delivery times or reduced operating costs. For the integrated carriers, beyond rights are useful in the following areas:

- The carriers connect regional networks (e.g. intra-EU and intra-US) with inter-regional hub-to-hub flights or “bypass” flights for large markets. Available 7th freedom rights permit the direct carriage of traffic between “non-home” regions, while 5th freedom rights permit routings via an intermediate region (e.g. US-to-Asia via Europe). Expanded rights could permit new region-to-region combinations (e.g. Asia-US for EU carriers) or additional bypass flights (e.g. London-Tokyo for US carriers). Expanded rights could also expand the choice for hub locations if substantial rights are available.

- The inter-regional flights often stop at intermediate non-hub points and beyond rights would enable the use of certain flight segments within regional hub systems. For example, a FedEx flight from the US to Frankfurt via its Paris hub creates a usable segment for their intra-EU network based on available rights.

- The basic integrated carrier system consists of regional hub networks connected via inter-regional flights. As demand dictates, sub-regional hub-and-spoke systems can be used to expand market coverage or improve service levels. For example, beyond rights for Latin America or Canada could be used by DHL to carry US traffic to and from those markets, possibly using a Miami regional hub/gateway similar to the US carriers.

Key factors to consider in identifying possible opportunities include:

- The desirability of trying to expand simultaneously both within and without the OAA. In particular, the current expansion of DHL’s US domestic network may not be enhanced by trying to add additional markets to the network. The trade-off will be between the value of closing any particular “gap” in the network versus the difficulty of integrating another new service market into the network.

- Many of the key extra-OAA markets are controlled by existing bilateral agreements that would not be affected by the OAA. In particular, key markets such as US-China/Hong Kong and UK-China/Hong Kong are currently constrained in terms of fifth and seventh freedom rights, service levels and carriers.

The key issue is what value these rights have to integrated carriers, and that can be demonstrated by showing the level to which integrated carriers depend on a balanced mix of both direct region-to-region and multi-market/multi-regional flights. As shown in

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329 As described in Section 4, the basic model for worldwide integrated networks consists of regional hub-and-spoke networks that are connected with hub-to-hub flights. A second stage of development involves the use of “bypass” flights that serve large origin/destination markets and exclude one or both primary hubs.
Section 4.3, the top markets for each of the primary integrated carriers are their “home” markets (US domestic for FedEx and UPS and intra-EU for DHL and TNT), but each depends heavily on international traffic for one-fifth to one-third of revenue.

One of the reasons for this pattern is the synergy between intra- and extra-regional services both from a market demand and supply perspective. The integrated carrier seeks to provide a full range of services to its customers both in terms of level of service and the scope of markets served. Service “gaps”, whether they result in sub-standard service or rate levels, or in no service at all, detract from the “air express” value-added that has stimulated the joint growth in express services and express-based manufacturing and distribution. An expansion in a regional express network stimulates traffic between regional networks and vice versa. In the 2002/2003 Hong Kong Fifth-Freedom All-Cargo Frequency Proceeding, FedEx demonstrated the relationship between the expansion of its AsiaOne (intra-Asia) network and its US-Asia trans-Pacific service and traffic.\textsuperscript{330} Between 1996 and 2001, growth in FedEx’s capacity for intra-Asia and US-Asia was closely related, as was the resulting growth in express traffic for those markets.

The interrelationship between intra- and extra-regional traffic can also be shown using traffic patterns for FedEx and UPS (as measured in USDOT T-100 statistics). For the 12 months ending July 31, 2005, FedEx and UPS combined handled 4.0 million tonnes of US domestic traffic\textsuperscript{331} compared to over 1 million tonnes of extra-US traffic. Traffic routed via Europe (including transhipments to other regions) accounted for 229,000 tonnes while Asia, the Middle East and Africa accounted for 452,000 tons. Western Hemisphere traffic to Canada and Latin America totalled 362,000 tonnes. As shown below, extra-US traffic accounts for 26 tonnes of traffic for every 100 tonnes of intra-US traffic for these carriers. While there is no direct ratio of “domestic” to international traffic that can be measured, there is a clear relationship between the expansion of traffic and capacity between all markets. Any policy that expands one sector of the worldwide network would stimulate additional activity for other sectors.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Ratio_of_Extra-U.S._to_Intra-U.S._Traffic_for_FedEx_and_UPS}
\caption{Ratio of Extra-U.S. to Intra-U.S. Traffic for FedEx and UPS (12 months ending July 31, 2005)}
\end{figure}

\textsuperscript{330} US Department of Transportation, Docket OST-2002-14049, Direct Exhibits of Federal Express, Exhibits FX-T-2, FX-312, and FX-313.

\textsuperscript{331} This total for origin/destination traffic is estimated assuming that 90% of the domestic traffic is routed via a hub and therefore adjusts enplaned traffic totals. Domestic traffic totals exclude Alaska traffic most of which is transhipped to/from Asia.
To the extent available, beyond rights are utilized in the integrated carrier networks for both intra- and extra-regional services. Within Europe, FedEx combines available 5th and 7th freedoms to both serve the intra-EU market and supply traffic for its “round-the-world” flights connecting the US, Europe and Asia. In July 2005, FedEx operated 180 non-stop flights within Europe (excluding some flights known not to have local traffic rights and flights operated by other airlines). A total of 159 flights connected their CDG hub to the European points of Stockholm, Basel, Copenhagen, Frankfurt, Madrid and Milan. Of these, 35 flights were portions of round-the-world flights. There were an additional 21 “bypass” flights that connected European points directly (i.e. not via the hub) and four of these flights were based on round-the-world flight segments.

Beyond rights are also essential to efficiently operating inter-regional flights. FedEx operated a total of 506 flights connecting its regional networks in US, Europe and Asia in July 2005. Of the flights connecting the US to Europe, over one-quarter were flights that connected beyond to Asia or the Middle East. These same flights accounted for 40 percent of the flights connecting Europe and Asia. While FedEx does not identify any US-Asia flights that are available for Europe-Asia traffic, this may be a result of requirements to change flight numbers in Asia to best utilize available traffic rights. Overall, the ability to connect multiple regions with individual flights is critical to efficient networks for integrated carriers, and will become more important for EU carriers seeking to replicate the US carriers’ expansion pattern.

In terms of the OAA, the following opportunities have potential based on existing systems:

- Europe-Asia rights for US carriers
- US-Asia rights for EU carriers
- US-Canada and US-Latin America rights for EU carriers (i.e., DHL)

In the first two instances, the rights could be used to better serve the origin-destination markets while also increasing the network efficiency of inter-regional flights (e.g., underutilised flight segments due to a lack of traffic right affect unit costs throughout the
network). As described above, both FedEx and UPS currently operate flights between their European and Asian hubs, while also carrying traffic on a direct basis for certain markets. Expanded traffic rights would create more opportunities for direct flights, although the availability of rights would be dependent on rights liberalization by the various Asian markets.

DHL and TNT currently handle US-Asia express traffic, but do not operate their own flights in the market. Expanded rights, while still dependent on bilateral agreements, could be used to expand both their direct capacity and traffic. DHL is currently in the process of developing a dedicated flight network for the intra-Asia market with a hub in Hong Kong, shifting from a system mostly based on combination carrier lift. A next stage might include expanding the use of dedicated lift in the US-Asia market.

The US carriers both operate extensive north-south capacity as part of their US-Canada and US-Latin America express services. These networks can also be used to handle European and Asian traffic for those markets. It is likely that DHL would also expand their Western Hemisphere network to cover these markets, although probably after their domestic US network has been developed to incorporate the direct OAA changes.

In conclusion, beyond rights are a key component of the current integrated networks and expanded opportunities would produce a systemic benefit for the markets involved, although expansion on those rights would not be entirely within the control of an OAA agreement.

10.2.3 All-Cargo Airline Beyond Rights

The all-cargo freighter operators could have similar uses for beyond rights, although more oriented towards improving efficiency within shifting and imbalanced freight markets as opposed to network effects. As described in Section 4.4, these all-cargo airlines provide freighter capacity that supplements that available from the passenger airlines and the integrated carriers typically on high volume trade routes, but also on routes that are highly imbalanced or that require specialized heavy-lift capacity (e.g. oilfield or military). In simple terms, these freighter operators provide capacity where needed and when needed, often operating in contrast to the passenger and integrated carrier patterns.

Other than the obvious benefit of expanding market coverage based on additional traffic rights, there are also benefits that are somewhat similar to that of the integrated carriers. For example, Asia-to-US is a top market for freighter operators based on the large and heavily imbalanced volume of trade. To the extent that increased rights improved the efficiency of Europe-to-Asia operations, the carriers could also provide Asia-to-US capacity more efficiently. A similar effect could be expected for EU carriers with extended Asia-to-US rights.

A second possible area of impact would be the expanded handling of intra-regional traffic not limited to the OAA, perhaps leading to expanded use of hub networks by these carriers. For example, an EU airline could connect EU-US flights with flights to Canada or Latin America via a US airport using those flights to handle both EU and US origin-destination traffic.

10.2.4 Impact of Expanded Beyond Rights on Cargo Markets

For both the integrated and all-cargo carriers, expanded beyond rights would increase capacity on some trade lanes and would also lower allocated unit costs by improving loads on some flight segments. The direct impact would be additional traffic based on higher
service levels or lower costs. The uncertainty of where (and whether) these expanded rights would occur make it difficult to precisely estimate a direct traffic or employment impact. It is reasonable, however, to predict that the expansion of OAA cargo activity will stimulate demand for extra-OAA rights to further realize network efficiencies. Based on the relationship between the US domestic and international markets for the US integrated carriers, it is reasonable to expect that expanded intra-OAA activity will stimulate an additional 10-20% in extra-OAA activity if sufficient rights are made available.

10.2.5 General Comments

Both the results of interviews with airlines and examination of current connections beyond the US suggest that European airlines are unlikely extensively to take up the opportunity of fifth freedom beyond rights enabled through the OAA, at least in the near term. In the passenger sector, connections beyond the US facilitated by alliance or code sharing arrangements are likely to be the most attractive way to perform fifth freedoms services.

An exception may be where a carrier can conduct round the world service which offers fleet utilisation benefits but that also depend on appropriate air services agreements with third parties that allow for the necessary traffic rights. This may be of particular interest to cargo operators if it enables them to serve freight flows which tend to be monodirectional in contrast to passenger services.

Onward services to Australasia and South Pacific are feasible options for EU carriers enjoying 5th freedom rights under an OAA (rights are more easily obtainable from New Zealand – which is understood to be keen to attract EU carriers to operate own aircraft services as does Air New Zealand today) for example. A linkup with Singapore would provide a round the world routing, if return via US is unattractive, or alternatively, west-coast USA to Asia.

If traffic volumes on major routes continue to grow as anticipated under an OAA, the spread of multiple daily transatlantic frequencies across the day may be observed – for example in markets between London and major points such as New York, Atlanta, Chicago and Los Angeles. Such conditions could affect the economics of stationing narrowbody aircraft in the other party’s territory (that are currently unfavourable to operating add on connections) to provide connecting service behind the gateway for fifth freedom or domestic connections perhaps several times daily.

The OAG database shows that there are few passenger fifth freedom operations from the US over Europe by US carriers and no EU carriers operating intra EU fifth services onto the US. In September 2005 only Delta and Northwest of US airlines operated fifth freedom passenger services over EU countries: Delta with a daily service from New York to India via Paris and Northwest had a daily service from Minneapolis via Amsterdam to Bombay. In addition to these two US airlines, seven other non-US and non-EU carriers were operating fifth freedom services over Europe to points in the Indian subcontinent, Africa, the Middle East and Malaysia. Pakistan International Airlines, and Air India also operate limited cargo frequencies (one and three per week respectively) from the US over the UK to their home countries but Air India has.

While few US carriers and no EU carriers are currently operating fifth freedom services in the EU, in the cargo field more complex routings are seen. Analysis of the OAG data base shows that four EU carriers and two US carriers declare scheduled services touching more than one EU country en route to the US.

By way of an illustration these frequencies are shown in the table below.
<table>
<thead>
<tr>
<th>Airline</th>
<th>Country start</th>
<th>Interim point</th>
<th>Second interim point</th>
<th>Country finish</th>
<th>Weekly Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>UK</td>
<td>Germany (Frankfurt)</td>
<td></td>
<td>US (Atlanta)</td>
<td>7</td>
</tr>
<tr>
<td>Cargolux (Lux)</td>
<td></td>
<td>UK (Prestwick)</td>
<td>US</td>
<td>US</td>
<td>10</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>Germany</td>
<td>UK (Nottingham East Midlands)</td>
<td>US</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Martinair (NL)</td>
<td>Netherlands (AMS)</td>
<td>USA (LAX/MIA)</td>
<td>Mexico or Argentina</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Federal Express</td>
<td>Outside EU</td>
<td>France (CDG)</td>
<td>Germany (Cologne)</td>
<td>US</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Outside EU</td>
<td>France (CDG)</td>
<td></td>
<td>US</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Outside EU</td>
<td>UK (STN)</td>
<td></td>
<td>US</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Outside EU</td>
<td>Germany (FRA)</td>
<td></td>
<td>US</td>
<td>1</td>
</tr>
<tr>
<td>Polar Air Cargo</td>
<td>Netherlands (AMS)</td>
<td>UK (Prestwick)</td>
<td></td>
<td>US</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Netherlands (AMS)</td>
<td>Ireland (Shannon)</td>
<td></td>
<td>US</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 51: Cargo fifth freedom services September 2005 (EU and US carriers)

This table, derived from OAG schedules is provided as an indication of the current use of beyond rights, it is not intended to be definitive of every service in operation.

10.3 THE UPS HUB AT COLOGNE-BONN: A CASE STUDY POLICY ANALYSIS

10.3.1 Context and Relevance to Liberalisation

The integrators, whose business profiles are detailed in Chapter 4, clearly provide a vital service to trade, nationally, regionally and globally. The growth in their business volumes and market values have served to recast their relationship to the classical combination airline business. Thus the trade as opposed to the travel side of air transport has become relatively much more important in the past 20 years.332

Recent Studies by Oxford Economic Forecasting predict the European express industry will be one of the fastest growing industries in the EU over the next 10-20 years. Since 1998 it has grown at six times the rate of the EU economy overall.333

Control is a key issue for the integrator business. As pioneered by Fred Smith of Federal Express, a central element of the product is reliability and accountability as well as speed. The vitality of the business has depended on being able to exercise central business direction.332

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332 In 1987, the US Departments of State and Transportation conducted a systematic study of the international position of the US all-cargo industry at the request of the US Congress which demonstrated that cargo services had been treated as stepchild by industry and government. Subsequently, US negotiators consistently sought all-cargo 7th freedom as well as wide reaching intermodal rights from foreign partners. See An Analysis of the United States International Air Cargo Market 1975-1986, 2 vols., Washington, 1988.

It is not evident that any of the many states in whom the integrators have created local establishments have suffered political costs as a result of allowing these foreign investors to establish their control systems (which from this industry’s perspective must be systematic). On the contrary, as the UPS investment at Cologne Bonn airport (as discussed below) serves to illustrate, these investors have proved to be a dynamic force in local and regional economic development, assisting in particular exporting enterprises.334

UPS’ CGN expansion will permit it (during the 2-3 hour sort period) at least to double its current handling volume of c. 180,000 packages per night, which has more than tripled since 1995 (see fig Figure 69).

These shipment numbers (rather than tonnage) give some idea of the operational meaning of the express services that enable individuals and businesses to conduct millions of daily transactions cost-effectively and reliably.335

Every night aircraft arrive at CGN that have picked up packages at some 59 airports in 32 countries in and around the EU. Trucks also arrive from a myriad of closer-in points.336 The company’s European air network for 2006 is shown in the figure below.

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334 In 2005, for example, UPS increased its export shipments from CGN 15% over the previous year. Source UPS.
335 UPS at present provides some 8 % of the inner-European package services as well services to North America and Asia (with some six daily wide body arrivals/departures for intercontinental services).
336 The Benelux countries, for example, are not served by air connections.
Figure 70: UPS European Air Network 2006

Long haul wide body services also arrive from points in Asia as well as the US.

Figure 71: UPS’s Connections from Cologne to US and Asia
UPS services the CGN Hub with a combination of its own trucks, aircraft and those of European contracting airlines. It directly employs close to 2,000 persons at Cologne and, perhaps more importantly, some 32,000 staff in Europe.

Though at one level enterprises at a particular airport, hubs like Memphis, Louisville, Cologne and (in the near future) Leipzig, are vital control points for entire systems. It is also interesting that Customs and Security officials work hand-in-hand with UPS at the Cologne hub which is a key transfer point in intercontinental as well as EU trade. As we have already noted, key aspects of the Integrator model are control and accountability. Thus, arguably this type of system design also helps serve the broader public interest.

10.3.2 Policy Implications

The hub for an integrator is the key to an entire system which involves collecting high priority shipments at the end of the business day and then distributing them at the beginning of the next business day. This means doing the bulk of the flying at night.

The hub city benefits significantly but only partially from the overall business activity, while it is asked to bear a larger share of the external costs. At the spoke cities the originating aircraft depart first and return last individually. At the hub city, they arrive last and depart first collectively. Thus all the integrators face a continuous challenge of dealing with local concerns about aircraft noise especially in growing their business.

UPS and other operators have sought to confront this challenge by modernising their fleets. They also seek from governments reasonable assurances that investments made in good faith will be allowed to bear full fruit. Through their associations in the EU and the US, they have urged that land use planning take into account the importance of their services for the larger regional community.

A central goal of an Open Aviation Area must be to “keep it open as well as get it open” – not just to confront one-time challenges of dismantling formal legal barriers but also to work together to deal with new constraints that will inevitably arise, for example through the external costs imposed by growth of demand. Thus, it seems certain that the quantity and quality of infrastructure access will be an agenda item for Stage 2 discussions and beyond\(^\text{337}\). Oxford Economic Forecasting have estimated that the cost of the loss of next-day international delivery service (i.e. due to loss of hubs) would have a negative effect for GDP within the EU of €11 billion annually and a cost over 20 years of €280 billion.\(^\text{338}\) Within an Open Aviation Area this would also have a cascading effect – imposing costs in North America (and in other continents) as well.

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337 A key criteria for the selection of a hub for an integrated express operator is not only that there should be suitable airport infrastructure including sufficient parking areas and navigational equipment to maintain operations in adverse weather conditions, but also that there but that it should be located sufficiently close to the labour and market source.
Moving to areas with no nearby population in an attempt to manage environmental impacts removes the opportunity of recruiting the necessary part time, flexible staff in addition to increasing time to local market catchment.

10.4 CARGO WET LEASING IMPACTS

10.4.1 Market Overview

The Boeing Company estimated that over 8% of the world’s air cargo traffic is moved by “ACMI” freighter operators on a wet lease basis\(^{339}\) with the market averaging 17.9% annual growth between 1991 and 2003. Most of the recent market growth has been for widebody freighters operated in long-haul markets.

The use of wet leased aircraft for cargo services results from various market and regulatory factors including:

- By outsourcing the operation of freighter aircraft to an airline specializing in a particular configuration (e.g. B-747s), airlines can avoid developing and maintaining the capability and staff for just a few aircraft, particularly in the early stages of market development or for aircraft that aren’t compatible with their primary fleet.

- ACMI operators typically can achieve a higher utilization of freighter aircraft compared to a dedicated airline by shifting capacity between higher variable trade markets and participating in other markets (e.g. military charters). This is true particularly if the lessee airline offers freighter services in a relatively limited number of markets (i.e. fewer opportunities to shift capacity on short-term basis).

- ACMI airlines can provide capacity in markets where they have traffic rights not available to the lessee carrier.

The following sections discuss the possible impact of expanded OAA wet lease opportunities.

10.4.2 OAA Opportunities

Wet leasing accounts for a small but significant amount of all-cargo capacity in OAA markets. The current profile of wet lease operations in OAA markets includes:

- US-EU freighter services provided by mostly US ACMI carriers for European combination airlines or integrated carriers

- Intra-EU cargo flights provided by EU carriers for the US integrated carriers, both for reasons of operating efficiency and traffic rights

- Intra-US cargo flights provided by US airlines to an EU integrated carrier (DHL) due to the lack of cabotage rights plus a limited amount of specialized domestic services (e.g. small aircraft mail and express).

The impact for the lessor airline of removing some current requirements on using an ACMI airline due to traffic restrictions has been covered in other sections. This section will examine the potential impact of expanded access to wet leasing services, particularly those provided by EU airlines to US airlines where restrictions are currently the most apparent.

Under current US rules, US airlines are prohibited from wet leasing aircraft from foreign carriers. US carriers do not face the same restrictions for operations in Europe and, in fact,

\(^{339}\) Wet leasing is also described as ACMI operations and denotes aircraft operations where an airline provides the aircraft, crew, maintenance and insurance for air services offered another airline, forwarder, or shipper that is responsible for all other operating costs (e.g. airport charges, fuel).
currently have wet lease operations in the US-EU and other markets. US carriers do face some restrictions on their EU wet leases that limit fleet planning and efficiency, most importantly on the duration of the lease. Full liberalization of wet leasing under an OAA would eliminate all restrictions with the primary immediate impact being an expansion in the pool of available aircraft with both competitive and efficiency effects. A secondary impact would be the expansion of airlines willing to provide ACMI services with expanded access to markets including possibly expanded range of aircraft or industry consolidation.

10.4.3 Potential Impacts

ACMI activity is not well-reported due to the commercially sensitive nature of contracts and the lack of identification in traffic and schedule databases, so it is difficult to measure either the current level of activity or the potential impacts of OAA liberalization on that activity. During the US-UK bilateral negotiations several years ago, the UK-based British Cargo Airline Alliance\(^{340}\) provided estimates of the scope of the market that they were denied participation in and the size of the comparable market available to US airlines in Europe including:

- UK airlines currently leasing $90 million of annual capacity from US airlines (passenger and cargo);
- A 0.5% share of the US domestic market (which accounts for 40% of the world air cargo) would be equivalent to the total revenues of the UK all-cargo airlines.

As part of a UK parliamentary inquiry, the total wet lease market for US airlines in Europe was estimated at over $1 billion (presumably for both cargo and passenger).\(^{341}\) While these estimates are not supported by any data source and should be regarded based on their use in ongoing negotiations at the time, a brief analysis of a major US airline in this market indicates ACMI is a significant and growing market.

Atlas Airlines promotes itself as the largest US ACMI airline and it is a subsidiary of Atlas Air Worldwide Holdings, Inc. along with Polar Air Cargo which provides scheduled cargo services. A review of the company’s activities provides an indication of the size of the wet leasing market.

Atlas Airlines operates a fleet of 23 747 freighters including 16 747-200's and 7 747-400's. The concentration in a single widebody aircraft family reflects the long-haul markets in which Atlas competes, and also provides them with specialized expertise in the operation and maintenance of that aircraft which is of value to its customers.

In the calendar year 2005, the parent company reported total revenues of US$1.6 billion and a net income of US$73.9 million. The ACMI and charter activity that is handled primarily by Atlas generated $466 million in revenues based on 84,000 block-hours of operation and an average rate of $5,569 per block-hour (see table below).

\(^{340}\) The BCAA consisted of the four largest UK cargo airlines including Channel Express, Air Foyle, HeavyLift Cargo Airlines, and Atlantic Airlines. At the time, the BCAA estimated that its members accounted for 96% of the country’s all-cargo airline industry and 50% of the European all-cargo industry (from “All Wet?”, Air Cargo World, February 2000, http://www.aircargoworld.com/archives/reg1_feb00.htm).

\(^{341}\) “Open Skies” Or Open Markets? The Effect Of The European Court Of Justice (ECJ) Judgments on Aviation Relations Between the European Union (EU) and the United States Of America (USA), House of Lords, Select Committee on the European Union, SESSION 2002–03, 17th REPORT
<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Block-Hours</th>
<th>Revenue per Block Hour</th>
<th>Revenues US$ m</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMI</td>
<td>83,682</td>
<td>$5,569</td>
<td>$466</td>
</tr>
<tr>
<td>Military Charters</td>
<td>29,306</td>
<td>$15,036</td>
<td>$441</td>
</tr>
<tr>
<td>Commercial Charters</td>
<td>6,257</td>
<td>$17,235</td>
<td>$108</td>
</tr>
<tr>
<td>Total</td>
<td>119,245</td>
<td>$37,840</td>
<td>$1,015</td>
</tr>
<tr>
<td>ACMI Share</td>
<td></td>
<td>70%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Atlas financial reports

Table 52: Atlas Airlines Charter Revenues

ACMI accounted for 70% of the non-scheduled operations for Atlas and 46% percent of the revenues (although the coverage of fuel and other operating expenses in charter rates means the share of net income for ACMI operations would be higher). In the most recent year, Atlas reported a shift away from scheduled operations (which declined by 33%) to ACMI and charter operations.

While ACMI contracts are proprietary, Atlas reports operating for European carriers such as British Airways, Lufthansa and Cargolux, as well as other foreign carriers such as Air New Zealand, Emirates, Korean, Lan Chile, and Qantas. The long-haul nature of their operations is indicated by an average flight length of six hours.

Under an OAA which removes restrictions on access to the EU-US wet leasing market EU operators would gain access to this market. The potential scope for impacts in this area can be described (by market) as set out below.

10.4.3.1 EU-US Transatlantic:

The current market for US wet leasing to European combination and all-cargo carriers can reasonably be estimated at less than $500 million annually, assuming Atlas accounts for less than half of the market and Europe accounts for less than half of its ACMI operations. This total includes operations in non-OAA markets (e.g. Europe-Asia).

The market for wet leasing to US combination carriers is limited as none of these carriers currently operate freighter aircraft to Europe and only one (Northwest) operates any freighters at all. Theoretically, the OAA would allow EU operators to compete for this business in the future were it to appear.

The US integrated carriers operate their own aircraft in this market, and are unlikely to require ACMI services from US or EU carriers in the short-term. The EU integrated carriers do wet lease some capacity from US and other airlines, but that market would be unaffected by an OAA.

10.4.3.2 Intra-EU and Intra-US

Besides the ACMI operations dictated by traffic rights, wet leasing is mostly limited to the integrated carriers for economic or efficiency reasons. The extent to which US or EU integrated carriers desire participation by an expanded pool of ACMI operators would probably be limited to niche markets (e.g., a specialized aircraft type more prevalent to one market or the other).

The potential for US participation in the intra-EU ACMI cargo market is probably negligible as the primary current lessees, the US integrated carriers, would be able to make greater use
of their own fleets.\textsuperscript{342} Their future demand for ACMI services is likely to decline, and, in any case, would probably be best served by aircraft tailored to the intra-EU market rather than that operated in the longer-haul US-based markets.

For the intra-US market, the impact would similarly depend on the suitability of aircraft types operated by EU ACMI carriers in the intra-EU market finding the appropriate niche in the US markets. This would also appear very limited based on the recent focus on ACMI expansion in long-haul international sectors and no shortage of US-based aircraft for integrated niche markets (e.g. turboprop feeder services).

Ultimately, the impact of expanded wet leasing opportunities will be small relative to other impacts based on the relative size of these operations compared to the integrated carriers.

Increased activity is likely to bring only limited benefits in other areas such as employment since the industry employs relatively few people. In 2005, the top US ACMI airlines, who are a great deal larger than any EU companies active in this field, employed a total of just over 3,500 staff (including all of their services charter and passenger):

<table>
<thead>
<tr>
<th>ACMI Operator</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlas Air</td>
<td>1,220</td>
</tr>
<tr>
<td>Evergreen</td>
<td>394</td>
</tr>
<tr>
<td>Gemini Air Cargo</td>
<td>437</td>
</tr>
<tr>
<td>World Airlines</td>
<td>1,465</td>
</tr>
<tr>
<td>Total</td>
<td>3,516</td>
</tr>
</tbody>
</table>

Table 53: US ACMI Operators’ Employees

While there is no allocation of employment by market, it is likely that the OAA-related ACMI market does not account for more than 1,000 employees. Even a 10 percent stimulation to the market would result in just 100 additional employees split between the two markets. In the long term, the primary benefits are likely to result from the ability of ACMI airlines to consolidate and evolve more comprehensive services.

10.5 “FLY AMERICA”

Under the Fly America Act\textsuperscript{343}, US government-funded air travel by employees and contractors must utilise US carriers when reasonable service is available. While transportation provided by a non-US partner of a US flag carrier under a code share agreement is permitted,\textsuperscript{344} the Act effectively precludes non-US carriers from competing for US government air travel spending. We may envisage that an OAA which allows fair competition between EU and the US carriers for air travel within its boundaries would extend such arrangements so that EU carriers may be able to compete for US government business.

In order to facilitate the process of purchasing air tickets on behalf of US government, the US General Services Administration (GSA) administers a program under which airlines engage in a yearly competitive bid process to be the designated carrier for US government travel in specific city-pairs with both a minimal level of traffic and service competition by US airlines. Under the “City Pair Program,” airlines are selected on the basis of the best overall value to

\textsuperscript{342} As noted in Chapter 4, an interview with a major US ACMI airline did not identify any market impact from their perspective.

\textsuperscript{343} The “Fly America Act” refers to the provisions enacted by section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 as amended.

the US government, taking into account factors such as flight time, price, type of service, and frequency of service. Tickets purchased under the program have special features including last seat availability, refundability, and costless cancellations and schedule changes. For each route, the government traveller has a choice between two fares, an unrestricted fare and a capacity controlled fare. Both of these fares stay fixed for the duration of the one-year contract covering the market. Travellers must use the contract city-pair fare unless using a non-contract carrier results in a lower total trip cost including other travel expenses.

During Fiscal Year 2005, the City Pair Program covered 4,345 city-pair markets (3,616 domestic and 729 international). Contracts for these markets were spread across thirteen US airlines and the GSA estimated their total value at $819 million (€676 m).

The GSA estimates that the City Pair Program saves the US government $2 billion (€1.65bn) per year relative to what the government would pay if its travellers had to pay retail rates. Effectively the GSA is stating that airfares under the City Pair Program are discounted by an average of 72% of comparable commercial fares, assuming that all trips would have still been taken even without a discount program. Without a discount program, we may expect the number of trips taken to be lower.

The program has expanded significantly in the last 20 years from an original total of 11 markets. The number of international markets has increased from 433 in Fiscal Year 2000.

Table 54, derived from City Pair Program contract data, provides an indication of the magnitude of US government spending in US-Europe city-pair markets. The table shows, for each European country with at least one city-pair market contract awarded, the number of contract routes, the average unrestricted and capacity controlled fares, the estimated number of annual government travellers, and an estimate of the total revenue generated by government travellers during the year (assuming a 50:50 mix of unrestricted and capacity controlled tickets in each city-pair market).

<table>
<thead>
<tr>
<th>Country</th>
<th>Contracts</th>
<th>Av. Unrestricted One-way Fare Across City-Pairs</th>
<th>Av.Capacity Controlled One-way Fare Across City-Pairs</th>
<th>Annual Passengers</th>
<th>Annual Revenue (USD)</th>
<th>Annual Revenue (EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>168</td>
<td>$445</td>
<td>$238</td>
<td>97,294</td>
<td>$35,592,486</td>
<td>29,363,800</td>
</tr>
<tr>
<td>UK</td>
<td>75</td>
<td>$466</td>
<td>$271</td>
<td>28,923</td>
<td>$10,089,027</td>
<td>8,323,447</td>
</tr>
<tr>
<td>Italy</td>
<td>39</td>
<td>$523</td>
<td>$187</td>
<td>14,513</td>
<td>$6,814,887</td>
<td>5,622,282</td>
</tr>
<tr>
<td>Belgium</td>
<td>25</td>
<td>$461</td>
<td>$198</td>
<td>6,116</td>
<td>$2,843,282</td>
<td>2,345,708</td>
</tr>
<tr>
<td>France</td>
<td>15</td>
<td>$483</td>
<td>$291</td>
<td>5,072</td>
<td>$1,864,314</td>
<td>1,538,059</td>
</tr>
<tr>
<td>Spain</td>
<td>11</td>
<td>$496</td>
<td>$146</td>
<td>2,748</td>
<td>$1,176,986</td>
<td>971,013</td>
</tr>
<tr>
<td>Netherlands</td>
<td>17</td>
<td>$470</td>
<td>$293</td>
<td>3,087</td>
<td>$1,081,631</td>
<td>892,346</td>
</tr>
<tr>
<td>Switzerland</td>
<td>5</td>
<td>$484</td>
<td>$258</td>
<td>2,425</td>
<td>$1,014,293</td>
<td>836,792</td>
</tr>
<tr>
<td>Austria</td>
<td>1</td>
<td>$437</td>
<td>$362</td>
<td>1,898</td>
<td>$758,251</td>
<td>625,557</td>
</tr>
<tr>
<td>Greece</td>
<td>3</td>
<td>$685</td>
<td>-</td>
<td>984</td>
<td>$661,571</td>
<td>545,796</td>
</tr>
<tr>
<td>Czech Rep</td>
<td>1</td>
<td>$545</td>
<td>$455</td>
<td>498</td>
<td>$249,000</td>
<td>205,425</td>
</tr>
<tr>
<td>Poland</td>
<td>1</td>
<td>$486</td>
<td>$414</td>
<td>474</td>
<td>$213,300</td>
<td>175,973</td>
</tr>
<tr>
<td>Denmark</td>
<td>1</td>
<td>$454</td>
<td>$403</td>
<td>459</td>
<td>$196,682</td>
<td>162,263</td>
</tr>
<tr>
<td>Hungary</td>
<td>1</td>
<td>$649</td>
<td>$500</td>
<td>323</td>
<td>$185,564</td>
<td>153,090</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>$457</td>
<td>$354</td>
<td>387</td>
<td>$170,744</td>
<td>140,864</td>
</tr>
<tr>
<td>Norway</td>
<td>1</td>
<td>$441</td>
<td>$393</td>
<td>269</td>
<td>$112,173</td>
<td>92,543</td>
</tr>
<tr>
<td>Lithuania</td>
<td>1</td>
<td>$820</td>
<td>$610</td>
<td>142</td>
<td>$101,530</td>
<td>83,762</td>
</tr>
</tbody>
</table>

The GSA does not provide actual traffic levels moving under the program, but makes estimates for the annual solicitation process.
As shown in the table, the total estimated value for US-Europe travel in Fiscal Year 2005 was $63 million (€52m) for an estimated 166,000 passengers. However, because these figures only include markets covered under the City Pair Program they should be viewed as a lower-bound estimate. According to one published estimate, total US government spending on international air travel was $1.3 billion (€1.07bn) in 2003. While this figure includes spending in all international markets (not just Europe) and all levels of government (i.e. local, state, and federal), its magnitude suggests that overall federal government spending in US-Europe markets is likely to be higher than the amount estimated using City Pair Program data.

Under an OAA where European airlines can be eligible to directly compete for US government traffic in US-Europe markets, including under the City Pair Program, these European airlines would benefit from a new revenue source. Increased competition from European carriers would also be likely to benefit the US government (and taxpayers) to the extent that it results in lower contract rates.

All things being equal, it may be expected that under open competition for US government traffic on transatlantic routes, European carriers may expect to secure a proportion of the traffic currently travelling. Since US government travel is permitted on flights operated by non-US carriers if the ticket carries the code of a US carrier, non-US carriers are already likely to be receiving some of the revenues available from government traffic. Thus, assuming that half of the existing transatlantic traffic may be available to EU carriers is likely to be unrealistic. If we assume that 10% of the current traffic is already utilising EU carriers, opening up the remainder of the market could potentially result in 50% of the entire market travelling on EU carriers, which would represent a shift of approximately $25 million (€21m) per annum in airline revenues and ~70,000 travellers from US to EU airlines, using the lower-bound estimates from the City Pair Program.

An accompanying shift in resources necessary to administer the scheme and support the additional traffic may also be theoretically anticipated, although since the traffic would be originating in the US the majority of resources (for example, sales and marketing effort and contract negotiators) may be expected to be retained within the US.

The overall transatlantic scheduled market (including US government traffic) is split with 42% of traffic travelling on US airlines and 54% travelling on European airlines. The remaining proportion travels on non-European or non-US carriers under fifth freedom operations.

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347 Source: US DoT T100 data for the year ended September 2005.
However, in such a scenario it is not likely that all EU airlines would wish to bid for US government contracts and less likely that those that did so would secure half the available market. Several factors combine to support this hypothesis.

From the above analysis, EU carrier costs are estimated to be higher than those of current US transatlantic operators, putting the EU carriers at a competitive disadvantage when attempting to win contracts where price is a vital determining factor. It would also be natural if some residual preference existed among US officials for US products, such that in circumstances where price and service are balanced, a US carrier may have a better chance of winning a contract. Not only would US carriers expect to have a stronger marketing presence within the US, but the established domestic networks of US carriers would provide an opportunity to secure business on city pair routes, where travellers are regularly transferring to and from US domestic sectors.

Under an OAA which includes US cabotage rights, European carriers would presumably also be able to participate in US domestic city-pair bidding. This would open up a new and larger market, currently estimated to be worth about $700 million (€578 m) per year based on data from the City Pair Program. Overall US government domestic air travel, including air travel under the federal City Pair Program as well as federal non-City Pair Program, state government, and local government air travel was estimated at $5.7 billion (€4.7 bn) in 2003.348

While EU carriers would be able to compete for some of this business, until they have established routes and networks in place within the US and have committed to the market, the opportunity is likely to be small, and limited to one or two routes. The volumes of US government traffic on individual routes are not likely sufficient in and of themselves to justify an EU airline commencing a cabotage route, either as an add on to an existing transatlantic service or as a stand-alone 9th Freedom service.

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11 IMPLICATIONS OF AN OAA FOR AIRLINE FINANCING

11.1 INVESTMENT IN AIRLINE STOCKS

Under an OAA as envisaged for this study, restrictions on investment in EU airlines by US investors and in US airlines by EU investors would be removed. Doing so would open up additional sources of capital for airlines on both sides of the Atlantic and so raises a question as to whether the benefit which results from this can be quantified in terms of costs of capital to airlines. The Brattle Group’s original report addressed this issue briefly, including the comment that “we are sceptical that access to capital is an issue for airlines located in the United States or in large EU Member States, where capital markets are big enough to provide an adequate potential source of funding”\(^{349}\). In general we have sympathy with this viewpoint. However, this is not to say that there are no benefits from the removal of investment constraints. We can distinguish two overall aspects by which airlines may benefit from removal of these constraints:

- Access to a wider market of investors including other airlines, interested in strategic long term investments
- Ability to take advantage of variations of finance costs in a larger overall market as is normal in other industries.

In addition, specific financing arrangements such as tax efficient leasing in the US currently available to US airlines only may be extended to EU carriers establishing an airline in the US.

A distinguishing characteristic of the industry is that, with a few notable exceptions, long term investment in airline stocks is not a profitable activity. As shown above IATA members’ cumulative losses of €19.7 billion ($23.9bn) since 1999 do not make for a good return for investors. This does not mean that investment in airlines cannot yield positive returns. Speculative transactions make up a large volume of the daily trade in airline stocks. Investors watching the cyclical nature of the industry, and of individual companies, are (as in other market sectors) effectively betting on changes in share prices: judging correctly can yield significant positive returns.

In addition, exceptional performers – generally those airlines who are transforming the industry – have proved rewarding investments. For example, the FL Group of Iceland has very recently sold its 16% stake in easyJet for €325m, a profit of €140m.

The speculative nature of much airline investment in legacy carriers is however, less than ideal. Interviews with airlines undertaken for this study confirmed the view that there is little difficulty in raising finance in the US, but that the ability to widen the scope of potential investors to Europe, including allowing EU carriers to invest more in US airlines under an OAA, would facilitate strategic long-term investment and encourage stability.

11.2 REMOVING RESTRICTIONS ON EU AND US AIRLINES’ ACCESS TO FOREIGN CAPITAL

By capital, we mean equity (comprising ordinary and preference shares) and long term debt (bonds, bank debt, long term structured finance, and leasing).

\(^{349}\) Section 1-4 page 1-13, Access to Capital
Financial benefits from removing the existing restrictions on the raising of capital may be expected to come primarily from improved access to global equity markets, through:

1. stock market listings, as European airlines are able to increase their listings in the US
2. private placements with institutional investors and private equity funds, the main markets for which are also in the US.

There are currently no restrictions on airlines’ access to the global long term debt markets, as debt does not affect ownership. However, once European airlines are able to acquire up to 100% of a US airline, or European investors able to establish US airlines, they would benefit from access to sources of finance only available to airlines in the US.

11.3 CURRENT SITUATION

Under current regulations, European airlines must be majority owned and controlled by Europeans in order to retain their national status under existing bilateral agreements. The same applies to US airlines, which must have at least 51% of their issued share capital held by US entities and no more than 25% of the voting stock may be owned by non-US investors. European airlines are, subject to meeting listing requirements, eligible for listing on the New York Stock Exchange (NYSE) and other leading stock exchanges around the world. However, because of the existing ownership regulations, the percentage of issued share capital that can be traded on these overseas markets is limited to 49% of the total.

Given the size of the NYSE (as the main US market) and its appetite for airline stocks, this restriction limits the ability of European airlines to raise capital in the US and reduces the market for their stock. The effect of these restrictions is less marked for US airlines, as the European stock markets are individually much smaller than US market (see below).

Despite these restrictions, shares in EU airlines do trade in US markets. For example, British Airways shares have been listed on the NYSE since privatisation in 1987, and are traded in dollars. Trading is by means of American Depository Receipts (ADRs), a well established mechanism for shares in foreign companies to be traded on the NYSE. Thus, the mechanism is already in place for full trading of European airline stocks in New York if the existing restrictions are lifted.

The restrictions also limit the ability of European airlines to access the growing private equity350 and institutional investor market in the US (and, to a lesser extent, the Middle East and parts of Asia).

As an example of the restrictions at work, two US start-ups (Maxjet and Eos) have successfully raised considerable amounts of capital in the US and recently launched all-premium transatlantic services (JFK-London Stansted), whereas a number of similar airline projects based in the UK have so far failed to raise sufficient capital in the UK to begin operations. While the ability to attract investors is, of course, dependent on the nature, structure, and plans of the individual companies in question, opening up such opportunities to a wider market would provide greater opportunity for new entrant operators.

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350) The term private equity is used to refer to any type of equity investment in an asset in which the equity is not freely tradable on a public stock market. There are several different forms of private equity investment including: venture capital (provided by outside investors for the financing of new, growing or struggling businesses and are generally considered to be higher risk investments while offering the potential for above average returns); angel investing (capital provided by an affluent individual – a “business angel”, or group of individuals for a start-up business, usually in exchange for ownership equity).
11.3.1 Debt

Regarding long term debt as a source of capital, US airlines have in the past been big users of the US bond markets, whereas in Europe, where the bond markets are far less developed, airlines have tended to rely more on bank debt and leasing to finance their aircraft fleets. The primary sources of long term funding are through:

- Bond Markets, and
- Leasing.

The above two sources are considered below.

1. Bond Markets – the US domestic bond market is the deepest, most liquid and most developed of all global fixed income markets, with arguably the most sophisticated investors. The market is open to foreign issuers in the form of public listed bonds (known as “Yankee Bonds”), quasi public bonds (Section 144A Issues), and private placements. US airlines have for many years been major issuers, but European airlines have not been active in the market mainly due to the costs and time involved in meeting onerous SEC registration, disclosure and reporting requirements, and the need for ratings (i.e. ratings assigned by credit rating agencies and which provide an indication of a company’s credit worthiness).

US airlines have also been major users of asset backed bonds to finance aircraft fleets, and a number of structures have grown up in recent years based on mortgage backed securities which have been used in US real estate financing for many years. These structures are generally only available to US carriers due to the need for the bonds to be backed by aircraft registered in the US and to enjoy the benefit of US bankruptcy protection (Chapter 11).

In Europe, the bond markets are less sophisticated, and airlines have traditionally relied on leasing structures and bank debt to provide long term finance for aircraft fleets. Some airlines have made inroads into the European corporate bond markets (e.g. Lufthansa, Air France), and in recent years a number of European airlines have attempted to replicate the asset backed bond structures used by airlines in the US to finance fleets of aircraft. However, to date, only Iberia and Air France have launched issues.

2. Leasing – at one time, the US leveraged lease (USLL) market was a major source of finance for aircraft, both for US and overseas airlines. The USLL was a tax based lease, under which tax benefits obtained by investors in aircraft were passed on to the airline lessees in the form of reduced rentals. Benefits could be considerable, particularly for overseas airlines able to also make use of export subsidies for US manufactured aircraft through foreign sales corporations (FSCs). In recent years, regulations have been tightened and the USLL market is now closed to non-US airlines. Further regulatory changes and a lack of investor appetite following losses in the aftermath of the 9/11 terrorist attacks have now effectively also closed the market for US carriers. However, a limited amount of leasing capacity remains available as a source of long term finance for smaller ticket assets, such as flight simulators and ground handling equipment.

Although the USLL is no longer available, European airlines continue to access other sources of cross-border aircraft lease finance, primarily Japanese, and, to a lesser extent, France and Germany. Although availability is limited and benefits have
fallen in recent years as regulations have been tightened, these markets and structures continue to offer attractive financial benefits to airlines. There are also opportunities for aircraft leasing in the UK, although this market is currently restricted to UK carriers. In the main, none of these markets are available to US carriers.

While bond markets are not currently restricted, an OAA which stimulates transatlantic investment in general may encourage an increase in activity in this market, as airlines look for varied options for financing.

In the area of leasing, should foreign owned airlines be able to access the beneficial arrangements available to US airlines – for example were EU airlines to establish subsidiaries which are US companies – the costs of market entry and access to finance in the US may be lowered. A potential scenario where EU airline fleets are owned by a US based company might also enable beneficial financing arrangements to support non-US based aircraft.

11.3.2 Equity - Benefits of Removing Restrictions on Ownership

The effect of removing the existing ownership restrictions would be to give airlines greater access to overseas equity markets through stock market listings and private equity. The benefits of this are as follows:

- a broadening of the shareholder base, helping attract new investors and enabling larger share issues to take place
- closer alignment between the business base and the shareholder base
- an enhanced reputation in world financial markets, underscoring the airline’s image as a world class company
- for shareholders, a wider international shareholder base creates additional liquidity for the stock and greater scope for secondary market offerings
- lower cost of capital, by enabling airlines to launch International Public Offerings (IPOs)\(^{351}\) and issue shares in specific markets from time to time on an opportunistic basis.

11.3.3 Access to a Larger Capital Markets

The advantages to wider sources of finance are in general likely to be more important for European airlines which do not have the benefit of massive domestic stock markets, as do US airlines. The NYSE is the largest stock market in the world by a wide margin, with over 5,200 listed companies and an average daily trading volume of 1.6bn shares valued at $54.3 billion (€45.1 bn).

The chart below illustrates the relative size of the US stock markets compared with other individual country markets in terms of trading volumes. It is 4.4 times the size of Japan’s markets which are the next nearest individual market, and 5.8 times the size of the nearest European market, the UK. The US markets are half as big again as the combined value of European markets.

\(^{351}\) To be distinguished from Initial Public Offerings also generally known by the same acronym.
A NYSE listing gives a European airline access to a potentially vast number of new investors. All the major airlines and many smaller carriers in the US are already traded on the NYSE and US investors have a detailed understanding of the airline sector. The following table provides a list of airlines currently listed on the NYSE (all except British Airways are US companies).

<table>
<thead>
<tr>
<th>Airline</th>
<th>Market Capitalisation</th>
<th>$m</th>
<th>€m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Trans</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American</td>
<td>2,100</td>
<td>1,729</td>
<td></td>
</tr>
<tr>
<td>Alaska</td>
<td>1,160</td>
<td>955</td>
<td></td>
</tr>
<tr>
<td>British Airways (ADRs)</td>
<td>6,320</td>
<td>5,202</td>
<td></td>
</tr>
<tr>
<td>Continental</td>
<td>2,270</td>
<td>1,869</td>
<td></td>
</tr>
<tr>
<td>Delta</td>
<td>180</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Express Jet</td>
<td>379.26</td>
<td>312</td>
<td></td>
</tr>
<tr>
<td>FedEx</td>
<td>35,940</td>
<td>29,583</td>
<td></td>
</tr>
<tr>
<td>Frontier</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Hawaiian</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Jetblue</td>
<td>1,830</td>
<td>1,506</td>
<td></td>
</tr>
<tr>
<td>Maseba</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Mesa (Nasdaq)</td>
<td>367</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>50</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Northwest</td>
<td>450</td>
<td>370</td>
<td></td>
</tr>
<tr>
<td>Pinnacle</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Republic</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>SkyWest</td>
<td>1,550</td>
<td>1,276</td>
<td></td>
</tr>
<tr>
<td>Southwest (Nasdaq)</td>
<td>14,070</td>
<td>11,581</td>
<td></td>
</tr>
<tr>
<td>United</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>US Airways</td>
<td>3,110</td>
<td>2,560</td>
<td></td>
</tr>
<tr>
<td>UPS</td>
<td>52,880</td>
<td>43,527</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>122,656</strong></td>
<td><strong>100,962</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 55: Airlines Listed on the New York Stock Exchange

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Note that UPS and FedEx together make up approximately 70% of the total – demonstrating the strength of the integrated express carriers compared with passenger airlines.

In addition to the public markets, removal of ownership restrictions would increase access to the private equity markets in the US and elsewhere.

As with the public markets, the US private equity market is the deepest in the world, and has demonstrated an appetite for taking risk and investing in airlines. Whilst there are disadvantages with using private equity compared to a public issue to raise capital – for example, a liquid secondary market in the shares in not created, the cost of finance is often higher and there are usually strings attached - increasing access to such markets could be a great benefit to many European carriers. Generally the public markets are low risk, and a proven track record is needed to use them. In contrast, private equity will look at riskier investments and take a longer term view thus, particularly smaller airlines and start-ups which might not have access to the public markets would be likely to benefit.

The value of private equity markets world wide is estimated to be around $180 billion (€149bn)\(^{353}\) which is small by comparison with the overall value of established markets – companies on the NYSE are worth around $15 trillion – but represents a significant pool of available capital. It is also estimated to be even more concentrated in the US than traditional markets, with around 64% of the world’s private equity investments being managed in the US.

Outside the US, sources of private equity exist in Europe, the Middle East and parts of Asia. As the US private equity market matures, Europe has emerged in the last couple of years as a focus for hedge fund management, whilst in the Middle East burgeoning oil surpluses have created huge liquidity.

Private equity investment in airlines in both the US and Europe include some of the most successful operators of recent years (e.g. Ryanair and Jetblue), as well as new market entrants building businesses significant for their market approach or location such as Wizz Air in Central and Eastern Europe or Eos US-UK business only service. Some examples of these types of investment are provided in the table below.

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\(^{353}\) International Financial Services London, Private Equity 2004 (www.ifsl.org)

\(^{354}\) Originally used to refer to funds/managers hedging market risk by selling short some stocks while buying others, today the term hedge fund is used to mean a relatively unregulated investment fund, which pursues non-traditional strategies.
Table 56: Example Private Equity Investments in Aviation

Growth of the private equity market since the 1980s has been stimulated by the fact that private equity investments generated consistently higher returns than most public equity markets and bond markets. Global private equity investments (in all sectors) averaged a 14% return over one year in 2004 and European private equity registered a higher than average one year return in 2004 with 17.7%. These returns, coupled with the nature of airline startups as higher risk mean that private equity is likely to become more of a source of finance for new entrant airlines.

For US investors, removal of ownership restrictions will provide opportunities for increased investment in European carriers. Given the poor financial state of the majority of airlines in the US at the present time, many US based investors, including private equity and institutional funds, may view European airlines as a good investment, providing an opportunity to diversify exposure away from domestic US airlines.

Removal of the ownership restrictions will give European airlines the right to own airlines in the US. This will give them, through their US subsidiary airlines, access to the long term financing structures described above which are only available to domestic US airlines. Such a broadening of access to the US debt markets would benefit European airlines by increasing the range of financing options available to them, possibly at reduced cost, whilst reducing their dependence on traditional funding sources in Europe.

### 11.3.4 Assessing the Cost of Capital

Quantifying the benefits from lower costs of capital is extremely difficult. To provide an effective and detailed analysis, data on individual airlines’ costs of capital is required. There

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355 Note, Wizz Air has dual aircraft operating certificates issued in Poland and Hungary and is registered as a company in the UK.

356 [www.ilfs.org.uk](http://www.ilfs.org.uk)
are problems of confidentiality associated with such an approach but also there will be as many differences between European airlines as there are between European and US airlines, given that the cost of capital is related closely to the individual business in question. However, in the absence of specific data there are several relevant points to consider in qualitative terms.

European airlines will benefit financially from removal of the ownership regulations if the cost of raising equity capital in overseas markets is less than that in Europe.

The cost of raising capital on stock markets is a function of the price obtained from the sale, the costs of launching the issue, and dividend levels. It can be calculated as follows:

\[
\text{Annualised dividend payments divided by the net proceeds of the issue (i.e. the number of shares issued times the price obtained, minus issue costs).}
\]

The following factors all have an impact on the price of an issue:

- **The financial position of the issuer.** Always the starting point, the stronger this is, the greater demand there is likely to be for the shares, the higher the price obtained and the lower the cost of raising capital.

- **The overall strength of the market** at the time of issue. Share prices are higher in a strong “bull” market, lowering the cost of capital.

- **The strength of the airline sector** within the market. If the airline sector is regarded as weak, shares will have to be priced cheaply in order to attract investors, thereby increasing the cost of capital.

- **The position of the airline within the sector.** If an airline is regarded as strong within the sector, the shares should be in high demand relative to other airlines. This should enable the shares to be issued at a premium, thereby reducing the cost of capital.

- **The size of the issue.** If an issue is too large for the market to absorb, the price may have to be reduced thereby increasing the cost of capital.

Other factors that can affect the cost of raising equity capital include:-

- **The level of interest rates.** This can influence dividend levels and yield expectations

- **Dividends.** These represent the cost of servicing equity, and although dividend levels vary in accordance with company profitability, if a company’s dividend gets out of line with the sector and market expectations, this can have an impact on the share price.

- **Currency.** It may be necessary for a European airline to have its shares denominated in US$ if they list on the NYSE. The resulting exposure to the US$/€ or US$/£ exchange rate can affect the cost of capital.

- **Issue Costs.** For European airlines, these are likely to be higher in the US than in Europe due to the extensive SEC registration, disclosure and reporting requirements which include the need to reconcile financial statements to US GAAP.

In addition, since many costs are incurred by airlines in Europe in dollars (including most finance leases and fuel payments), gaining dollars through issuing shares in the US would
provide some benefit in terms of exchange rate risk and to a lesser degree currency transaction costs.

Several of the points above emphasise the difficulty of comparing costs of capital between the EU and the US as the price obtained and the costs associated with the issue are dependent on the individual circumstances of the airline in question. It is not possible to carry out a meaningful analysis of the cost of raising equity capital for airlines based on the above methodology since very few airlines in the US and Europe currently pay dividends.

11.3.5 Benefiting from the Variety and Size of Markets

Given the number of variables that can influence share prices and the cost of capital, at any given time the cost of raising capital on the NYSE for example, is likely to be different to that of markets in Europe. Although it is not possible to say whether these costs may be higher in the EU or in the US, the very fact that the cost is different means that airlines without restrictions on ownership would be able to take advantage of the lower value. It is clearly in the interest of an airline to be able to issue shares in either the US or the EU, or elsewhere, at will depending on which market is showing the lowest cost at the proposed time of issue. This is the concept behind International Public Offerings, which are increasingly being used by multinational companies to overcome the shortcomings of relying on their domestic markets to raise capital. The current ownership restrictions clearly limit the ability of airlines to launch IPOs and are therefore an obstacle to capital raising and introduce additional costs.

The very size of the financial markets in question also has an effect on the cost of capital. Research conducted for the European Commission into the benefits of integrating European financial markets\textsuperscript{357} shows that trading costs and, therefore, costs of capital are lower in larger markets with higher volumes of trade. As investors require higher returns as a compensation for higher trading costs, this translates into higher financing costs for firms. Transaction costs on the NYSE were found to be less than any other market being approximately 25% lower than in London – the next nearest market.

The conclusions from this research suggest that integrating financial markets in the EU would provide additional economies for firms to the extent of reducing costs of capital by 50 basis points (0.5% in interest rates). While this cannot be directly translated into impacts in the airline industry today, it is nevertheless an example of how access to a wider, deeper market can reduce finance costs.

\textsuperscript{357} Quantification of the Macro-Economic Impact of Integration of EU Financial Markets, London Economics November 2002
12 CONCLUSIONS AND OVERALL RESULTS

12.1 QUANTIFIED BENEFITS

12.1.1 Summary of Quantified Benefits

The potential benefits of an OAA in terms of additional traffic and, through the multiplier effect of aviation, new employment are considerable. These are summarised in the tables below. These benefits are presented with the caveat that due to the nature of this applied statistical analysis, there is an inherent degree of uncertainty associated with these results, the figures provided in this report should, therefore, be interpreted as indicative of the potential benefits rather than as exact forecasts.

12.1.1.1 Potential Increases in Traffic Volumes

An OAA may generate several millions of additional passengers: approximately 26 million in the markets currently constrained over five years due to the removal of output restrictions, with an additional 15 - 40 million due to the increased efficiency of firms in all markets following the amendment of ownership and control rules and the resultant increased competition.

<table>
<thead>
<tr>
<th>Cause of increase</th>
<th>Domain</th>
<th>Lower bound scenario</th>
<th>Upper bound scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Output Restrictions</td>
<td>Year 1</td>
<td>1,400,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Year 2</td>
<td>3,000,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Year 3</td>
<td>4,900,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Year 4</td>
<td>7,100,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Year 5</td>
<td>9,600,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>26,000,000</td>
<td></td>
</tr>
<tr>
<td>Improved Airline Cooperation (interlining)</td>
<td>Per annum</td>
<td>240,000</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Cost Reductions (increased airline efficiency due to competition) Per annum</td>
<td>Transatlantic</td>
<td>460,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td></td>
<td>Intra-EU</td>
<td>8,400,000</td>
<td>22,000,000</td>
</tr>
<tr>
<td></td>
<td>US Domestic</td>
<td>6,500,000</td>
<td>16,000,000</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>15,000,000</td>
<td>39,000,000</td>
</tr>
</tbody>
</table>

Table 57: Estimated Increase in Passenger Volume

The cargo market is also estimated to increase in volume by 100 to 170 thousand tonnes.

<table>
<thead>
<tr>
<th>Market</th>
<th>Lower Bound Scenario</th>
<th>Upper Bound Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrator</td>
<td>All-cargo</td>
</tr>
<tr>
<td>EU-US</td>
<td>3,900</td>
<td>7,000</td>
</tr>
<tr>
<td>Intra-EU</td>
<td>1,500</td>
<td>na</td>
</tr>
<tr>
<td>Intra-US</td>
<td>24,000</td>
<td>na</td>
</tr>
<tr>
<td>Total</td>
<td>29,000</td>
<td>7,000</td>
</tr>
</tbody>
</table>

Table 58: Estimated increase in cargo volume by type of carrier
12.1.1.2 Consumer Benefits

The consumer surplus resulting from the increased passenger volume is estimated to be in the region of €6 to €12 billion over five years (due to the removal of bilateral restrictions) with an additional €4 billion across all markets due to firms’ increased competitiveness.

<table>
<thead>
<tr>
<th>Source of Benefit</th>
<th>Domain</th>
<th>Price elasticity = 1</th>
<th>Price elasticity = 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Output Restrictions</td>
<td>Year 1</td>
<td>1,000</td>
<td>410</td>
</tr>
<tr>
<td></td>
<td>Year 2</td>
<td>2,000</td>
<td>850</td>
</tr>
<tr>
<td></td>
<td>Year 3</td>
<td>2,800</td>
<td>1,300</td>
</tr>
<tr>
<td></td>
<td>Year 4</td>
<td>3,200</td>
<td>1,700</td>
</tr>
<tr>
<td></td>
<td>Year 5</td>
<td>3,400</td>
<td>2,100</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>12,000</td>
<td>6,400</td>
</tr>
<tr>
<td>Interlining</td>
<td>Per annum</td>
<td>160</td>
<td>340</td>
</tr>
<tr>
<td>Cost Reductions (increased airline efficiency due to competition) Per annum</td>
<td>Transatlantic</td>
<td>340</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>Intra-EU</td>
<td>2,200</td>
<td>2,300</td>
</tr>
<tr>
<td></td>
<td>US Domestic</td>
<td>1,200</td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>3,700</td>
<td>3,800</td>
</tr>
</tbody>
</table>

Table 59: Estimated Increase in Consumer Surplus (€ millions)

Consumer benefits for additional cargo capacity have not been calculated due to the different structure of the customer markets which are, in general, composed of firms rather than individuals, and therefore would not impact on utility at an agent level. Naturally, the increased volume of cargo would still have a positive impact on revenues, but this effect has not been quantified.

12.1.1.3 Employment Impact Benefits

Additional employment to service passenger traffic is given below. In total, the increased level of traffic will require the creation of around 70,000 new jobs (at current levels of productivity) by the end of the five year period, with a further 1,800 to 10,000 thousand new jobs created due to pricing efficiencies.

<table>
<thead>
<tr>
<th>Source of Benefit</th>
<th>Domain</th>
<th>US</th>
<th>EU</th>
<th>Total (EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Output Restrictions</td>
<td>Year 1</td>
<td>1,500 3,600 5,100</td>
<td>1,800 3,700 5,500</td>
<td>11,000</td>
</tr>
<tr>
<td></td>
<td>Year 2</td>
<td>3,200 7,800 11,000</td>
<td>3,800 8,000 12,000</td>
<td>23,000</td>
</tr>
<tr>
<td></td>
<td>Year 3</td>
<td>5,200 13,000 18,000</td>
<td>6,200 13,000 19,000</td>
<td>37,000</td>
</tr>
<tr>
<td></td>
<td>Year 4</td>
<td>7,500 18,000 26,000</td>
<td>8,900 19,000 28,000</td>
<td>54,000</td>
</tr>
<tr>
<td></td>
<td>Year 5</td>
<td>10,000 25,000 35,000</td>
<td>12,000 25,000 38,000</td>
<td>72,000</td>
</tr>
<tr>
<td>Interlining Per annum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower bound</td>
<td>250 610 860</td>
<td>300 620 920</td>
<td></td>
<td>1,800</td>
</tr>
<tr>
<td>Upper bound</td>
<td>1,500 3,500 5,000</td>
<td>1,700 3,600 5,300</td>
<td></td>
<td>10,000</td>
</tr>
</tbody>
</table>

Table 60: Employment Created in Europe and the US

Increased cargo services are expected to create approximately 10 to 20 thousand new jobs per annum.
### Table 61: Employment Created in Europe and the US (thousands)

<table>
<thead>
<tr>
<th>Type of carrier</th>
<th>Scenario</th>
<th>US</th>
<th>EU</th>
<th>Total (EU + US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated</td>
<td>Lower</td>
<td>700</td>
<td>1800</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td>1400</td>
<td>3500</td>
<td>4900</td>
</tr>
<tr>
<td>All Cargo</td>
<td>Lower</td>
<td>800</td>
<td>1900</td>
<td>2700</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td>1500</td>
<td>3600</td>
<td>5100</td>
</tr>
</tbody>
</table>

#### 12.1.2 Comparison with Brattle Group Report of 2002

Since this report is explicitly intended to provide an update to the Brattle Group report of 2002 it seems appropriate to provide a brief summary explanation of where there variances in the approach and comparison between that report and this study.

**12.1.2.1 Removal of Output Constraints**

Benefits are calculated here for a five year period since it is over five years that we identify a discernable impact of Open Skies agreements on traffic growth.

In terms of both traffic and consumer surplus this report is more conservative in the first year, but more optimistic overall. This is the only category in which we calculate greater economic benefits than Brattle. This is due to the method we have used to identify and calculate the impact of the removal of bilateral restrictions: rather than applying a fixed increase to the market our growth rate increases total volume each year.

Estimates for jobs created in direct employment numbers are broadly in line with the Brattle Group for the first year, but subsequently increase. However, a like for like comparison is not possible because this study also includes indirect jobs created (not calculated in Brattle); we also show five years’ of benefits as opposed to an annual figure.

**12.1.2.2 Interlining/Closer Airline Cooperation**

This study provides a slightly more conservative figure than Brattle since we have applied the benefit to a smaller proportion of traffic. The increase in the strength of alliances over the past few years means that the additional benefits due to an OAA could also mean that benefits are less than they were previously (although this is effectively an assumption of the analysis rather than an output).

**12.1.2.3 Airline Cost Savings**

In our analysis we include benefits in the US domestic market as well as in Europe on the basis that competition will affect both markets in an OAA. However, due in part to the decreased size of the transatlantic market, our estimates for traffic generation are slightly under Brattle’s figures, while our calculated consumer surplus benefit is marginally higher.

#### 12.2 COSTS OF FAILURE TO ACHIEVE AN OAA

This study focuses on the benefits to be gained from closer aviation relationships, building on the evidence of previous market liberalisation. However, it is important to recognise that the experience of the past three years (during which the negotiators worked hard but could not yet implement any agreements) also serve to demonstrate or indicate areas of risk if the
Parties just stay with the status quo and fail to establish the standards needed to ensure open access.

One may ask, for example, just what is it in the present situation that operators might wish to protect? Jobs, growth, profits and incomes will depend on organisational reforms. Even those who have been successful in competing and expanding nationally and regionally as well as in the global economy, such as the integrators, will depend on a regulatory appreciation of their economic benefit and joint policies that will ensure fairness and efficiency of market access as part of an overall strategy to facilitate jobs and trade. The loss of operating rights at key hubs preventing next day delivery in the EU, for example because of environmental restrictions, could mean a loss to EU GDP alone of €11 billion per year. Similarly rules denying investor rights that inhibit efficient development of US hubs prevent additional activity and deny operators, industry and consumers the accompanying benefits.

Collectively for both the EU, the US and their general economies as well as the respective industries, there is also an evident need for compatibility of standards in areas such as safety, security, the environment, public health, consumer protection and employment rights that could make the Joint Committee created in the initialed Agreement (and as supported by expert groups) one of the most important innovations in Atlantic aviation regulation.

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358 US airlines, for example, have been going through an excruciating restructuring process under which the major combination operators except Southwest Airlines and American Airlines (which closely avoided it) have been or still are in receivership resulting in huge losses for employees and shareholders (that often include the employees). Community carriers also need to reorganize while in international markets they, like their US counterparts, are thwarted by the historic ownership and nationality restrictions.

359 Oxford Economic Forecasting, The Economic Impact of Express Carriers in Europe. Such impacts and benefits are not further quantified in this study.
APPENDIX 1   CARGO SECTOR

This appendix expands on the material in chapter 4, giving a thorough overview of the cargo sector.

A1.1   Cargo Market Overview

A1.1.1   Importance of Air Cargo Service for Trade and Economic Development

Air transportation of freight and mail has existed since the beginning of aviation, but has expanded significantly in recent years based on the joint development of advanced air services and expanded demand for fast and time-definite transportation by manufacturers, merchants and consumers. Because it is comparatively expensive to ship goods by air, only two percent of the world’s cargo travels by air when measured by weight. However, when measured by value it has been estimated that more than 40% of the world’s cargo travels by air. The disparity between these two measures speaks to the fact that cargo shipped by air tends to be relatively small, light, and high value. Examples of the types of goods that tend to travel by air include pharmaceuticals, electronics, auto parts, fashions, and high-value perishables. Changes in the demand for air cargo services closely track changes in GDP.

Air transport is the fastest, most reliable option for shipping commodities between international markets, although typically at a higher cost relative to surface transportation (ocean, rail and truck). Air cargo is responsible for approximately half of the total trade value between the US and EU and the potential expansion and enhancement of air cargo services for these markets could have a significant effect on the regions’ economic and trade development future.

Both Boeing and Airbus project that the global air cargo market will grow at a faster rate than the global air passenger market over the next twenty years. Boeing’s most recent forecast expects worldwide air cargo to grow at an annual average rate of 6.2% over the period, while Airbus projects 5.9% average annual growth. Boeing and Airbus estimate average annual passenger growth of 4.8% and 5.3%, respectively, over the twenty year periods covered by their most recent forecasts. According to Boeing, there were 1,766 freighters in operation worldwide in 2003. Boeing projects that the world freighter fleet will increase to 3,456 in 2023.

A1.1.2   Overview of Air Cargo Services

This section provides a general overview of the air cargo service sector, and also identifies characteristics that distinguish air cargo markets from air passenger markets, particularly in regard to the proposed OAA.

12.2.1.1 Airport to Airport Carriers

The airport-to-airport carriers include scheduled passenger (“combination”) airlines carrying freight in their belly-holds (e.g. British Airways, Lufthansa, Delta), scheduled allcargo operators of freighters (such as Polar, Cargolux), and charter freighter operators. The combination airlines may operate freighter (i.e. all-cargo) aircraft in similar patterns to the all-cargo carriers, but their cargo services via passenger or combi aircraft are primarily driven by passenger demand patterns (e.g. arrival/departure times, gateways). The allcargo airlines typically operate on high volume routes between primary gateways, while charter operators target seasonal or speciality markets (e.g. military, heavy-lift). While the general all-cargo carriers may provide additional ground or handling services in support of their air traffic, the focus is on the air leg. A final category of all-cargo airline are “wet-
lease”) or ACMI (Aircraft, Crew, Maintenance and Insurance) operators that operate freighter aircraft for other airlines. These carriers account for over 8% of worldwide air cargo traffic.

12.2.1.2 Integrated Express Carriers

There are four large, international integrated (express) carriers (UPS, FedEx, DHL and TNT) whose overall approach is to control the entire shipment from pickup at the shipper’s dock/office to delivery at the consignee’s facility or general distribution point (“door-to-door”). These carriers utilise their ground and air networks to collect and distribute international traffic, linking domestic transport with international freighter flights at their primary hubs or regional gateway hubs.

Integrated carriers may also operate outside of their networks, utilizing other air carriers or service providers in order to provide comprehensive market coverage or expedited transportation. For example, integrated carriers will utilize low-cost belly capacity provided by combination carriers for points not in their network, and may also contract for customs brokerage in areas away from their gateway airports.

While originally specializing in small express shipments, the integrated carriers have expanded their services to include heavy freight and ground shipments. They also have expanded from mostly domestic or regionally-oriented markets to worldwide networks in an effort to provide a full range of services to the greatest combination of origins and destinations. For example, FedEx and UPS have developed intra-Europe networks that are linked to their intra-Asia and US domestic networks, while DHL is currently expanding its network connections in the US.

12.2.1.3 Surface Elements

Key participants in the air cargo service market are the airports that provide facilities and support services to air carriers and air cargo shippers. In addition to general aircraft support services and facilities, major international gateways have extensive cargo warehouses and transfer facilities, and even specialized truck access. A special form of cargo airport is the express hub (e.g. Memphis or Brussels) that has dedicated facilities and infrastructure in support of an integrated carrier’s network, typically generating night flights and extensive ground trucking activities.

Other firms provide service for or manage international cargo shipments in support of the airline or the shipper/consignee including:

- **freight forwarders** provide ground and other handling services that connect shipments to airport-to-airport services as an agent for the shipper or consignee

- **customs brokers** are primarily responsible for marshalling inbound shipments through local customs and inspection requirements, but may also provide forwarder services (e.g. local delivery) and, in fact, are often linked with forwarders in a single company

- **trucking firms**: air cargo shipments typically require some transfer by truck to/from both the origin and destination airports, often combining a local pickup or delivery with a linehaul transfer between a gateway and local airport. Air cargo trucking may be the responsibility of the local forwarder or broker, and it may also be handled directly by the shipper or consignee. These parties may operate their own trucks, or
contract all or a portion of the ground transfer to either a specialized air cargo or a common carrier trucker engaged in regional or local carriage.

- **specialized services** may be provided independently of forwarders/brokers and integrated carriers including warehousing and airport ground handlers. An increasingly important type of service provider is the third-party logistics (3PL) or distribution firm that may provide little or no direct transportation, but rather acts as the shippers’ or consignees’ agent in handling overall distribution systems.

**12.2.1.4 Differences between Cargo and Passenger Markets**

While air cargo services share some characteristics with air passenger markets (and in the case of combination carriers function within a single airline), air cargo patterns have unique elements that are relevant to the proposed OAA including:

- For the most part, air passenger markets are relatively balanced, while freight flows are almost entirely one-way and can produce great imbalances leading to unused capacity and disproportionate freight rates in one direction. All-cargo carriers may have a greater interest in expanded service rights that would allow them to better manage these imbalances, such as providing round the world services which follow individual trade flows.

- While air cargo can flow independently of air passenger services (as with the integrated carriers), all-cargo airlines typically need access to combination belly capacity to serve some markets, with the reverse also often being the case. This interdependence between all-cargo and combination cargo services has hampered the development of all-cargo airports and even remote cargo facilities at multi-use airports.

- There are also competing priorities within the freight sector. On the one hand, cargo routings of **general freight** may be less driven by direct flights and transit time than passenger markets, whereas on the other hand, **express** shipments may place greater emphasis on the certainty of an expedited delivery time. Cargo services are typically not sold relative to a particular routing, or even a particular airline, but rather by the level of service (next-day, deferred) and service guarantee versus price. OAA impacts should be considered based on the ability of express carriers to manage and guarantee their network delivery schedules not just their air operations. In general, the trend in cargo services has been to emphasize the certainty of transit time over the minimization of transit time, particularly in consideration of costs.

- While passenger carriers focus on transporting people from airport-to-airport via a single mode, transportation of cargo is generally a door-to-door process involving multiple modes that are typically managed by the transportation company rather than the “user” (i.e., shipper or consignee). Integrated carriers offer shippers and consignees door-to-door transportation, over an integrated ground and air network, while freight forwarders and often airlines provide local pickup/delivery services.

- Passenger airlines carry freight, but all-cargo airlines do not carry passengers (at any significant level). The passenger/combination carriers may account for a significant share of capacity for particular markets, and therefore have a great influence on freight rates. Any policy or trend that affects the passenger service market will thus also indirectly affect air cargo markets. For example, the reduction in widebody flights in the US domestic market with changes to airlines’ fleet mix removed a
significant amount of cargo capacity particularly for trans-continental routes (e.g. New York to California)

- While air passenger services directly affect international travel and tourism markets (as well as passenger-based service trade), the cost, efficiency and availability of air cargo services has its greatest impact on international merchandise trade and consequently regional economic development. With increasing dependence on air transport, manufacturing firms require efficient links to both source materials and final consumer markets.

A1.1.3 Overview of Air Cargo Demand

Air cargo markets are driven by the demand for fast and reliable transportation by shippers and consignees ranging from delivery of an overnight letter to a family member, to the transport of donor organs to hospitals, and to managed distribution of manufacturing components between suppliers and factories. The use of air services for international shipments is determined by a shipper or consignee in consideration of trade-offs between service and price relative to the type of shipment.

In 2003, the Boeing Company estimated that mail traffic accounted for 4% of world airline cargo traffic (measured in revenue tonne-kilometres for domestic and international markets combined) with freight accounting for 96%. Express services accounted for 11% of international traffic in 2003, up from 4.1% in 1992, indicating the continued expansion of the integrated carriers’ world networks. In contrast, US express carriers account for 60% of the US domestic market.

A1.1.4 Worldwide Cargo Patterns

The interaction between air cargo demand and supply patterns results in the flow of air commodities via various routings, service types and carriers. Traffic patterns reflect the underlying demand for shipping between various geographic regions, the type of commodities involved, and the way individual providers tailor their services to meet demand.

Geographical Breakdown - The geographical patterns of air trade reflect the flow of goods and components between consumer markets and commodity production centres whether for manufactured goods or consumables (e.g. perishables). The table below shows regional air cargo traffic as a percentage of worldwide cargo traffic for the five largest regional markets. As would be expected, the two largest air cargo markets connect Asia with North America and Europe; they combine to account for 38.5% of the world total. The top five regions combine to account for 71% of the world total.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Region</th>
<th>Share of World Total Revenue Tonne-KGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>North America-Asia</td>
<td>20.5%</td>
</tr>
<tr>
<td>2</td>
<td>Europe-Asia</td>
<td>18.0%</td>
</tr>
<tr>
<td>3</td>
<td>North America</td>
<td>14.3%</td>
</tr>
<tr>
<td>4</td>
<td>North America-Europe</td>
<td>10.6%</td>
</tr>
<tr>
<td>5</td>
<td>Intra-Asia</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

Source: Boeing World Air Cargo Forecast 2004/2005
Table 62: Largest Air Cargo Traffic Regional Markets, 2003

Service Breakdown - The pattern of air trade relative to service and carrier type similarly portrays the interaction between levels of service required for particular shipments and the availability and suitability of air and associated services. Although all-cargo services have
experienced significant growth in recent years, roughly half of worldwide air cargo continues to travel in the bellies of passenger aircraft. This high level of participation by passenger carriers indicates both their ability to satisfy demand for basic airport-to-airport transport and the relatively low cost of providing capacity that is ancillary to an individual flight’s main purpose and can be priced accordingly. All-cargo services supplement the passenger lift depending on the level and type of demand. High volume trade routes support freighter operations which offer similar airport-to-airport services to the combination carriers, albeit with increased level of services (e.g. flights timed to shipper rather than passenger demands or oversized upper-deck handling). High-end express services are provided to most worldwide markets, although the integrated networks are designed to satisfy the larger volume markets and use supplemental lift and services partners for small or emerging markets.

The pattern of air trade by service type differs significantly among various world markets reflecting the variability in the demand for and availability of various levels of service. Most markets with passenger traffic will have belly capacity and freight although the suitability of those services depends on what commodities are moving, the level of capacity that is “created” by passenger flows, and the extent to which all-cargo services are warranted. The US domestic market is probably the most dependent on express transit with express carriers accounting for 60% of total traffic. Express services have developed over a longer period of time in the US and the demands of high technology manufacturers and time-sensitive consumers support a high level of service. On the other hand, the level of non-express freighter services is relatively limited due to both the high level of express services and the high volume of passenger flights. Most US domestic all-cargo operations are limited to high volume long-haul routes that have seen a significant decrease in passenger lift due to the elimination of wide-body flights.

In contrast, relatively high-cost express services are in less demand on trade routes to or from developing regions which neither have high value consumer markets or high value manufactured products in significant amounts. While express services are available to almost all the countries worldwide, those services may depend on passenger lift and often are at lower service delivery commitments. Similarly, the level of passenger traffic dictates the availability of passenger lift and non-express freighter operations may have a greater importance for some regions, particularly those with specialty flows (e.g. oil field supplies and perishables).

The pattern of air trade by airline and airport reflects these underlying supply and demand conditions. The table below lists the ten largest air cargo carriers, in terms of scheduled FTKs (freight ton kilometres) flown, as reported by IATA for 2004. Two of the top four carriers are integrated carriers (FedEx and UPS) indicating both the high level of express traffic worldwide and the high level of concentration in that market. Note that all of the remaining carriers on the list are combination carriers. Five combination carriers from the Asia-Pacific region comprise the majority of the top ten based on the high volume of air trade to, from and within that region, as well as the lack of adequate surface options for expedited transportation over Asia’s large geographical region with markets often separated by water. The inclusion of two European passenger airlines reflects their operation of freighter aircraft and their extensive worldwide networks, while the exclusion of all US passenger airlines from the top ten indicates their relatively lower dependence on cargo in general, the limited level of freighter operations by those carriers, and their relatively low share of their home domestic market. While some all-cargo airlines rank among the top 25

360 These statistics are limited to IATA airlines and are based on the operating carrier, not the entity controlling the traffic. Integrated carrier traffic moving on other airlines’ flights are assigned to those airlines.
airlines (e.g. Cargolux), their absence from the top ten is due to smaller fleet sizes and participation in lower volume niche markets (e.g. heavylift or charter).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Airline</th>
<th>RTKs (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Federal Express Corporation</td>
<td>14,579</td>
</tr>
<tr>
<td>2</td>
<td>Korean Air Lines Co. Ltd.</td>
<td>8,264</td>
</tr>
<tr>
<td>3</td>
<td>Deutsche Lufthansa A.G.</td>
<td>8,040</td>
</tr>
<tr>
<td>4</td>
<td>United Parcel Service Company</td>
<td>7,353</td>
</tr>
<tr>
<td>5</td>
<td>Singapore Airlines Ltd.</td>
<td>7,143</td>
</tr>
<tr>
<td>6</td>
<td>Cathay Pacific Airways Ltd.</td>
<td>5,876</td>
</tr>
<tr>
<td>7</td>
<td>China Airlines</td>
<td>5,642</td>
</tr>
<tr>
<td>8</td>
<td>Eva Airways Corporation</td>
<td>5,477</td>
</tr>
<tr>
<td>9</td>
<td>Air France</td>
<td>5,388</td>
</tr>
<tr>
<td>10</td>
<td>Japan Airlines International</td>
<td>4,924</td>
</tr>
</tbody>
</table>

Source: IATA

Table 63: Top Ten Air Cargo Carriers By Scheduled RTK, 2004

The general pattern of air cargo trade by airport reflects both the underlying patterns of origins and destinations and the ability of primary cargo carriers to route traffic via their hub and gateway airports. The table below lists the 25 largest airports by total cargo volume for 2005. Three of the top ten airports depend primarily on integrated carriers for their high traffic levels. Memphis occupies the number one spot because it is FedEx’s primary hub. UPS’ primary hub, Louisville, ranks number ten. Anchorage is a major transfer point for both FedEx and UPS as well as handling traffic for other passenger and all-cargo airlines. Most of the other airports in the top ten are located in the Asia-Pacific region and each is a primary gateway for major cargo markets and/or a hub for major cargo airline. Frankfurt is the largest cargo airport in Europe and the only European airport that ranks among the top ten.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Airport</th>
<th>Cargo Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Memphis (MEM)</td>
<td>3,598,500</td>
</tr>
<tr>
<td>2</td>
<td>Hong Kong (HKG)</td>
<td>3,437,050</td>
</tr>
<tr>
<td>3</td>
<td>Anchorage (ANC)</td>
<td>2,609,498</td>
</tr>
<tr>
<td>4</td>
<td>Tokyo (NRT)</td>
<td>2,290,346</td>
</tr>
<tr>
<td>5</td>
<td>Seoul (ICN)</td>
<td>2,149,937</td>
</tr>
<tr>
<td>6</td>
<td>Frankfurt (FRA)</td>
<td>1,963,141</td>
</tr>
<tr>
<td>7</td>
<td>Los Angeles (LAX)</td>
<td>1,928,894</td>
</tr>
<tr>
<td>8</td>
<td>Shanghai (PVG)</td>
<td>1,856,328</td>
</tr>
<tr>
<td>9</td>
<td>Singapore (SIN)</td>
<td>1,854,610</td>
</tr>
<tr>
<td>10</td>
<td>Louisville (SDF)</td>
<td>1,814,730</td>
</tr>
<tr>
<td>11</td>
<td>Paris (CDG)</td>
<td>1,770,940</td>
</tr>
<tr>
<td>12</td>
<td>Miami (MIA)</td>
<td>1,761,926</td>
</tr>
<tr>
<td>13</td>
<td>Taipei (TPE)</td>
<td>1,705,320</td>
</tr>
<tr>
<td>14</td>
<td>New York (JFK)</td>
<td>1,649,055</td>
</tr>
<tr>
<td>15</td>
<td>Chicago (ORD)</td>
<td>1,547,859</td>
</tr>
<tr>
<td>16</td>
<td>Amsterdam (AMS)</td>
<td>1,495,918</td>
</tr>
<tr>
<td>17</td>
<td>London (LHR)</td>
<td>1,389,591</td>
</tr>
<tr>
<td>18</td>
<td>Dubai (DXB)</td>
<td>1,314,904</td>
</tr>
<tr>
<td>19</td>
<td>Bangkok (BKK)</td>
<td>1,140,836</td>
</tr>
<tr>
<td>20</td>
<td>Indianapolis (IND)</td>
<td>1,082,339</td>
</tr>
</tbody>
</table>
Table 64: Top 25 Airports By Total Cargo Volume, 2005

<table>
<thead>
<tr>
<th>Rank</th>
<th>Airport</th>
<th>Cargo Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Newark (EWR)</td>
<td>957,374</td>
</tr>
<tr>
<td>22</td>
<td>Osaka (KIX)</td>
<td>869,202</td>
</tr>
<tr>
<td>23</td>
<td>Tokyo (HND)</td>
<td>799,062</td>
</tr>
<tr>
<td>24</td>
<td>Beijing (PEK)</td>
<td>782,066</td>
</tr>
<tr>
<td>25</td>
<td>Atlanta (ATL)</td>
<td>764,717</td>
</tr>
</tbody>
</table>

Source: ACI

A1.2 PROFILE OF EU-US TRADE

Overview

Our analysis of the impact of Open Skies agreements on passenger levels can broadly be divided into three stages:

Air trade accounts for half of the total trade between the US and EU. This appendix provides background detail on the EU-US air trade market in terms of:

- Value and volume by EU market
- Value and volume by commodity type
- Carrier and routing patterns
- Distribution by commodity value (express vs. freight).

EU-US Air Trade Value by EU market

Total air trade between the EU and US was valued at $228 billion in 2005 (in current US dollars) including $124 billion in westbound trade and $104 billion in eastbound trade. The westbound market averaged 4.6% annual growth from 2000 to 2005, while eastbound trade increased at an average of 1.4% per year. Boeing projects that the North America-Europe air cargo market will grow at an average annual rate of 5.6% through 2023, with eastbound growth of 5.2% and westbound growth of 5.8%.

Germany and the United Kingdom are the US’s top EU trading partners with $45 and $44 billion of total air trade respectively. Germany is the top exporting state to the US while the UK is the top importing state. Other top states are Ireland, France and the Netherlands. The fastest growing markets from 2000 to 2005 were Estonia, Denmark, the Czech Republic, Lithuania, and Latvia. Of the top markets, the highest total trade growth occurred for Ireland (7.2% per year), Belgium (6.7% per year) and the Netherlands (7.2% per year).

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>$2,069</td>
<td>9.5%</td>
<td>$845</td>
<td>0.7%</td>
<td>$2,914</td>
<td>6.5%</td>
</tr>
<tr>
<td>Belgium</td>
<td>$5,800</td>
<td>3.6%</td>
<td>$7,626</td>
<td>9.5%</td>
<td>$13,425</td>
<td>6.7%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>$12</td>
<td>0.0%</td>
<td>$38</td>
<td>1.2%</td>
<td>$50</td>
<td>0.9%</td>
</tr>
<tr>
<td>Denmark</td>
<td>$2,393</td>
<td>16.6%</td>
<td>$1,044</td>
<td>6.1%</td>
<td>$3,437</td>
<td>12.8%</td>
</tr>
<tr>
<td>Estonia</td>
<td>$36</td>
<td>29.2%</td>
<td>$36</td>
<td>20.0%</td>
<td>$72</td>
<td>24.1%</td>
</tr>
<tr>
<td>Finland</td>
<td>$1,165</td>
<td>9.8%</td>
<td>$803</td>
<td>-4.5%</td>
<td>$1,968</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
The EU-US air trade market accounted for 2.0 million tonnes in 2005 declining from 2000 at an annual rate of 0.9%. In terms of weight, the market is imbalanced with 1.1 million tonnes of traffic westbound compared to 0.9 million tonnes eastbound. Germany and the UK are the top markets in terms of weight, and combined account for 44% of the US-EU market. The next largest markets in two-way trade are France, Italy, the Netherlands, and Belgium. Of the top markets, Belgium was the fastest growing market increased from 2000 to 2005 based on 3.1% annual growth in its imports from the US. The markets with the highest growth rates were the smaller Central European states of Estonia, Poland, and the Czech Republic, plus Greece, all of which are relatively small.
### EU-US OAA Confidential Final Report

#### EU-US Air Trade Volume by EU market

The US-EU air trade market represents a diverse combination of commodity flows each with unique shipment characteristics. The top industry shipping westbound (in terms of trade value in 2004 at the 4-digit NAICS industry-level\(^1\)) was pharmaceuticals and medicines with $36 billion in total exports to the US. Other top industries included high-tech sectors such as technical equipment, aerospace products, and semiconductors.

#### Table 66: US-EU Air Trade Weight by Market (2000-2005)

<table>
<thead>
<tr>
<th>Commodity Category</th>
<th>US Dollars (Metric Tonnes)</th>
<th>Value per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceuticals and Medicines</td>
<td>$36,200 (46,241)</td>
<td>$783</td>
</tr>
<tr>
<td>Navigational, Measuring, Electromedical, and Controlling Instruments</td>
<td>$8,985 (55,096)</td>
<td>$163</td>
</tr>
<tr>
<td>Aerospace Products And Parts</td>
<td>$7,090 (16,408)</td>
<td>$432</td>
</tr>
<tr>
<td>US Goods Returned</td>
<td>$6,745 (26,140)</td>
<td>$258</td>
</tr>
<tr>
<td>Semiconductors and Other Electronic Components</td>
<td>$6,083 (31,443)</td>
<td>$193</td>
</tr>
<tr>
<td>Medical Equipment and Supplies</td>
<td>$5,752 (28,451)</td>
<td>$202</td>
</tr>
<tr>
<td>Miscellaneous Manufactured Commodities</td>
<td>$5,313 (26,954)</td>
<td>$197</td>
</tr>
<tr>
<td>Used or Second-Hand Merchandise</td>
<td>$3,697 (4,416)</td>
<td>$837</td>
</tr>
<tr>
<td>Other General Purpose Machinery</td>
<td>$3,619 (72,768)</td>
<td>$50</td>
</tr>
<tr>
<td>Computer Equipment</td>
<td>$3,195 (17,532)</td>
<td>$182</td>
</tr>
</tbody>
</table>

\(^1\) Detailed 10-digit Harmonized Schedule (HS10) commodity data is aggregated by producing industry at the 4-digit North American Industry Classification Systems (NAICS).
Fabricated Metal Products (68,000 MT) and Motor Vehicle Parts (59,000 MT). The top commodities by weight also includes some high-value commodities such as pharmaceuticals, instruments, semiconductors and medical equipment and supplies, as well as lower valued agricultural commodities (Vegetables and Melons).

<table>
<thead>
<tr>
<th>Commodity Category</th>
<th>US Dollars m</th>
<th>(Metric Tonnes)</th>
<th>Value per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other General Purpose Machinery</td>
<td>$3,619</td>
<td>72,768</td>
<td>$50</td>
</tr>
<tr>
<td>Other Fabricated Metal Products</td>
<td>$2,034</td>
<td>67,834</td>
<td>$30</td>
</tr>
<tr>
<td>Motor Vehicle Parts</td>
<td>$1,157</td>
<td>58,993</td>
<td>$20</td>
</tr>
<tr>
<td>Navigational, Measuring, Electromedical, and Controlling Instruments</td>
<td>$8,985</td>
<td>55,096</td>
<td>$163</td>
</tr>
<tr>
<td>Engines, Turbines and Power Transmission Equipment</td>
<td>$1,450</td>
<td>49,355</td>
<td>$29</td>
</tr>
<tr>
<td>Pharmaceuticals and Medicines</td>
<td>$36,200</td>
<td>46,241</td>
<td>$783</td>
</tr>
<tr>
<td>Vegetables and Melons</td>
<td>$123</td>
<td>33,641</td>
<td>$4</td>
</tr>
<tr>
<td>Semiconductors and Other Electronic Components</td>
<td>$6,083</td>
<td>31,443</td>
<td>$193</td>
</tr>
<tr>
<td>Medical Equipment and Supplies</td>
<td>$5,752</td>
<td>28,451</td>
<td>$202</td>
</tr>
<tr>
<td>Agriculture and Construction Machinery</td>
<td>$605</td>
<td>28,034</td>
<td>$22</td>
</tr>
</tbody>
</table>

Table 68: US-EU Top Westbound Shipping Industries in Total Air Weight (2004)

The fastest growing westbound markets (in terms of net weight increase) are some of the same commodities including Engines, Turbines, and Power Transmission Equipment, Pharmaceuticals and Medicines, Other Fabricated Metal Products, Navigational, Measuring, Electromedical, and Control Instruments, and Medical Equipment and Supplies.

The profile of top eastbound shipping industries is very similar to the westbound patterns, indicating the degree to which air cargo services allow US and EU companies to successfully compete in each others’ markets as well as the prominence of internal shipments by multinational companies (e.g. semi-conductors). The pharmaceutical industry is the top eastbound industry in terms of air value with $15 billion followed by the aerospace industry ($13 billion), computer equipment ($10 billion), technical instruments ($9 billion), and semiconductors ($7 billion).

<table>
<thead>
<tr>
<th>Commodity Category</th>
<th>US Dollars M</th>
<th>Metric Tonnes</th>
<th>Value per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceuticals and Medicines</td>
<td>$15,396</td>
<td>36,851</td>
<td>$418</td>
</tr>
<tr>
<td>Aerospace Products and Parts</td>
<td>$13,174</td>
<td>32,912</td>
<td>$400</td>
</tr>
<tr>
<td>Computer Equipment</td>
<td>$10,028</td>
<td>49,703</td>
<td>$202</td>
</tr>
<tr>
<td>Navigational, Measuring, Electromedical, and Control Instruments</td>
<td>$8,861</td>
<td>43,139</td>
<td>$205</td>
</tr>
<tr>
<td>Semiconductors and Other Electronic Components</td>
<td>$7,029</td>
<td>23,012</td>
<td>$305</td>
</tr>
<tr>
<td>Medical Equipment and Supplies</td>
<td>$5,869</td>
<td>27,413</td>
<td>$214</td>
</tr>
<tr>
<td>Communications Equipment</td>
<td>$4,239</td>
<td>15,425</td>
<td>$275</td>
</tr>
<tr>
<td>Miscellaneous Manufactured Commodities</td>
<td>$3,147</td>
<td>20,018</td>
<td>$157</td>
</tr>
<tr>
<td>Other General Purpose Machinery</td>
<td>$2,379</td>
<td>38,274</td>
<td>$62</td>
</tr>
<tr>
<td>Basic Chemicals</td>
<td>$2,226</td>
<td>46,417</td>
<td>$48</td>
</tr>
</tbody>
</table>

Table 69: US-EU Top Eastbound Shipping Industries in Total Air Value, 2004

The US’ strength in computer and chemical manufacturing is indicated by the high volume of eastbound air trade in computer equipment, basic chemicals, and resins and rubber. Other top commodities in terms of air weight are also high value flows cited above, as well as lower-valued products such as motor vehicle parts and printed materials, each of which is
probably moving by air based on “urgency” (i.e. emergency need for US auto parts or the short shelf-life for newspapers, magazines and books).

<table>
<thead>
<tr>
<th>Commodity Category</th>
<th>US Dollars M</th>
<th>Metric Tonnes</th>
<th>Value per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Equipment</td>
<td>$10,028</td>
<td>49,703</td>
<td>$202</td>
</tr>
<tr>
<td>Basic Chemicals</td>
<td>$2,226</td>
<td>46,417</td>
<td>$48</td>
</tr>
<tr>
<td>Nav., Measuring, Electromedical, Cntrl Instruments</td>
<td>$8,861</td>
<td>43,139</td>
<td>$205</td>
</tr>
<tr>
<td>Other General Purpose Machinery</td>
<td>$2,379</td>
<td>38,274</td>
<td>$62</td>
</tr>
<tr>
<td>Pharmaceuticals and Medicines</td>
<td>$15,396</td>
<td>36,851</td>
<td>$418</td>
</tr>
<tr>
<td>Aerospace Products and Parts</td>
<td>$13,174</td>
<td>32,912</td>
<td>$400</td>
</tr>
<tr>
<td>Medical Equipment and Supplies</td>
<td>$5,869</td>
<td>27,413</td>
<td>$214</td>
</tr>
<tr>
<td>Resin, Synthetic Rubber, &amp; Artificial &amp; Synthetic Fibres &amp; Filament</td>
<td>$270</td>
<td>26,850</td>
<td>$10</td>
</tr>
<tr>
<td>Motor Vehicle Parts</td>
<td>$959</td>
<td>24,453</td>
<td>$39</td>
</tr>
<tr>
<td>Printed Matter and Related Products</td>
<td>$581</td>
<td>23,219</td>
<td>$25</td>
</tr>
</tbody>
</table>

Table 70: US-EU Top Eastbound Shipping Industries in Total Air Weight, 2004

The fastest growing eastbound markets in terms of shipment weight includes some of the top volume commodities (resins and rubber, basic chemicals, medical equipment and other high tech products), but also includes vegetables and melons (also a growing westbound market), fruits and tree nuts, and soaps, cleaning compounds and toilet preparations.

EU-US AIR TRADE CARRIER AND ROUTING PATTERNS

As the OAA will primarily affect freighter services, further analysis concentrates on that segment of the market. As shown in the following table, the top airline in total traffic for 2005 was Atlas Air, an ACMI and charter airline with substantial military traffic. The next largest airlines were the integrated carriers, FedEx and UPS, each with 11% of the market. Other top carriers include all-cargo airlines such as Polar, Gemini, Martinair, and Air Atlanta Icelandic and freighter operations by passenger airlines such as Air France, Lufthansa, and Singapore Airlines. Between 2000 and 2005, the top European passenger airlines has varying growth rates with Air France and Singapore Airline’s traffic increasing and Lufthansa’s dropping significantly. UPS’ traffic increased while FedEx’s declined, and all of the top all-cargo airlines increased traffic with Atlas more than quadrupling its traffic. The performance of individual airlines as reported to the DoT is shown below.
--- | --- | --- | --- | --- | ---
Atlas Air- Inc. | 0.2 | 35.8 | 194.8% | 158.3 | 15% | 38.3%
United Parcel Service | 55.4 | 81.0 | 7.9% | 117.8 | 11% | 8.5%
Federal Express Corporation | 88.4 | 122.8 | 6.8% | 111.2 | 11% | -2.1%
Air France | 89.4 | 78.9 | -2.5% | 96.0 | 9% | 4.4%
Polar Air Cargo Airways | 0.2 | 41.0 | 187.2% | 76.7 | 7% | 14.7%
Lufthansa German Airlines | 160.0 | 174.2 | 1.7% | 66.2 | 6% | -19.0%
Gemini Air Cargo | - | 44.1 | 0.0% | 62.2 | 6% | 7.8%
Martinair Holland N.V. | 8.2 | 32.9 | 31.9% | 56.8 | 5% | 12.7%
Air Atlanta Icelandic | - | - | 0.0% | 50.5 | 5% | 0.0%
Singapore Airlines Ltd. | 1.0 | 6.1 | 44.4% | 39.4 | 4% | 50.2%
Top 5 Carriers | 145.2 | 359.5 | 19.9% | 560.0 | 54% | 10.2%
All Carriers | 625.0 | 855.5 | 6.5% | 1,040.9 | 100% | 4.4%

* 2005=12 months ending July 31, 2005

Table 71: Integrated and All-Cargo Traffic by Carrier (1995-2005*) – tonnes (thousands)

The top EU states (based on the location of gateway airports) in terms of scheduled all-cargo traffic were Germany, France, the UK, Belgium and the Netherlands which combined accounted for 85% of the traffic.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>207.0</td>
<td>223.8</td>
<td>1.6%</td>
<td>303.7</td>
<td>29.2%</td>
<td>6.9%</td>
</tr>
<tr>
<td>France</td>
<td>135.6</td>
<td>168.9</td>
<td>4.5%</td>
<td>178.4</td>
<td>17.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>UK</td>
<td>72.1</td>
<td>131.0</td>
<td>12.7%</td>
<td>175.1</td>
<td>16.8%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Belgium</td>
<td>36.1</td>
<td>76.4</td>
<td>16.1%</td>
<td>115.5</td>
<td>11.1%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>59.9</td>
<td>71.7</td>
<td>3.7%</td>
<td>111.8</td>
<td>10.7%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>74.4</td>
<td>96.7</td>
<td>5.4%</td>
<td>76.7</td>
<td>7.4%</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Italy</td>
<td>21.0</td>
<td>48.6</td>
<td>18.3%</td>
<td>48.2</td>
<td>4.6%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.0</td>
<td>10.2</td>
<td>60.4%</td>
<td>21.1</td>
<td>2.0%</td>
<td>17.3%</td>
</tr>
<tr>
<td>Ireland</td>
<td>10.6</td>
<td>14.3</td>
<td>6.0%</td>
<td>3.8</td>
<td>0.4%</td>
<td>-24.9%</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.6</td>
<td>6.2</td>
<td>59.9%</td>
<td>3.8</td>
<td>0.4%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.1</td>
<td>0.3</td>
<td>22.5%</td>
<td>1.7</td>
<td>0.2%</td>
<td>51.0%</td>
</tr>
<tr>
<td>Spain</td>
<td>4.5</td>
<td>4.0</td>
<td>-2.4%</td>
<td>0.7</td>
<td>0.1%</td>
<td>-30.9%</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.2</td>
<td>0.2</td>
<td>-6.5%</td>
<td>0.1</td>
<td>0.0%</td>
<td>-4.2%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>-</td>
<td>0.2</td>
<td>0.0%</td>
<td>0.1</td>
<td>0.0%</td>
<td>-11.5%</td>
</tr>
<tr>
<td>Austria</td>
<td>0.7</td>
<td>-</td>
<td>-100.0%</td>
<td>0.1</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Greece</td>
<td>0.3</td>
<td>0.1</td>
<td>-17.5%</td>
<td>0.1</td>
<td>0.0%</td>
<td>-17.2%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>-</td>
<td>-</td>
<td>0.0%</td>
<td>0.0</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Finland</td>
<td>0.8</td>
<td>2.9</td>
<td>29.4%</td>
<td>-</td>
<td>0.0%</td>
<td>-100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>625.0</td>
<td>855.5</td>
<td>6.5%</td>
<td>1,040.9</td>
<td>100%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Table 72: US-EU Integrated and All-Cargo Traffic by EU State (1995-2005*) – Tonnes (000)

The top EU gateway airport for freighter traffic in 2005 was Frankfurt, the primary hub for Lufthansa, with 188,600 tonnes increasing 5.1% per year from 2000 to 2005. The next largest was Paris-CDG, the Europe hub for FedEx and a major passenger gateway as well. Amsterdam is also a passenger and cargo hub and had one of the highest growth rates from
2000 to 2005. Brussels is DHL’s hub and Cologne is UPS’ hub. Other top airports include emerging cargo gateways in the UK, (Prestwick, Stansted and East Midlands) with Prestwick the fastest growing major cargo airport for this market.

<table>
<thead>
<tr>
<th>EU Airports with &gt; 100 all cargo airports</th>
<th>1995</th>
<th>2000</th>
<th>CAGR 1995-2000</th>
<th>2005*</th>
<th>% of Total</th>
<th>CAGR 2000-2005*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frankfurt Intl Airport</td>
<td>148.9</td>
<td>150.4</td>
<td>0.2%</td>
<td>188.6</td>
<td>18.1%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Charles De Gaulle, Paris</td>
<td>108.5</td>
<td>168.3</td>
<td>9.2%</td>
<td>176.3</td>
<td>16.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Amsterdam- Netherlands</td>
<td>58.1</td>
<td>71.7</td>
<td>4.3%</td>
<td>111.6</td>
<td>10.7%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Brussels- Belgium</td>
<td>35.3</td>
<td>68.8</td>
<td>14.3%</td>
<td>104.1</td>
<td>10.0%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Cologne/Bonn Metro Area</td>
<td>57.1</td>
<td>72.5</td>
<td>4.9%</td>
<td>82.8</td>
<td>8.0%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>74.4</td>
<td>96.7</td>
<td>5.4%</td>
<td>76.7</td>
<td>7.4%</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Prestwick Airport</td>
<td>11.4</td>
<td>28.1</td>
<td>19.8%</td>
<td>71.6</td>
<td>6.9%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Stansted Airport</td>
<td>35.9</td>
<td>51.0</td>
<td>7.2%</td>
<td>57.7</td>
<td>5.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Malpensa Airport, Milan</td>
<td>15.7</td>
<td>47.4</td>
<td>24.7%</td>
<td>46.0</td>
<td>4.4%</td>
<td>-0.7%</td>
</tr>
<tr>
<td>East Midlands, UK</td>
<td>19.9</td>
<td>44.5</td>
<td>17.4%</td>
<td>44.2</td>
<td>4.2%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>All Other</td>
<td>59.7</td>
<td>56.1</td>
<td>-1.2%</td>
<td>81.3</td>
<td>7.8%</td>
<td>8.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>625.0</td>
<td>855.5</td>
<td>6.5%</td>
<td>1,040.9</td>
<td>100.0%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Table 73: US-EU Scheduled Air Cargo Traffic by EU Gateway Airport (1995-2005*) – Tonnes (000)

The top US gateway airports in 2005 were New York-JFK (252,900 tonnes), Chicago-O’Hare (182,300 tonnes), Philadelphia, Atlanta, Memphis, and Newark. Of the top airports, Chicago, Philadelphia and Atlanta had significant growth from 2000 to 2005 while JFK experienced small decline. Memphis’s traffic grew slightly, while Newark’s declined. As would be expected, the military load points grew significantly. From 1995 to 2000, all of these top airports grew, particularly emerging gateways such as Philadelphia, Atlanta and Los Angeles. This pattern reflects a long-term trend of reduced dominance by JFK in the European sector as new gateways emerged and the integrated carriers expanded their international services. JFK’s share of all-cargo traffic dropped from 32% in 1995 to 30% in 2000 and to 24% by 2005.

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>John F Kennedy Intl Airport</td>
<td>198.1</td>
<td>254.9</td>
<td>5.2%</td>
<td>252.9</td>
<td>24.3%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>O’Hare Intl Airport</td>
<td>112.7</td>
<td>146.7</td>
<td>5.4%</td>
<td>182.3</td>
<td>17.5%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Philadelphia Intl Airport</td>
<td>28.9</td>
<td>52.8</td>
<td>12.8%</td>
<td>80.0</td>
<td>7.7%</td>
<td>9.5%</td>
</tr>
<tr>
<td>William B Hartsfield Intl</td>
<td>23.7</td>
<td>39.1</td>
<td>10.6%</td>
<td>76.3</td>
<td>7.3%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Memphis Intl Airport</td>
<td>55.7</td>
<td>69.1</td>
<td>4.4%</td>
<td>74.3</td>
<td>7.1%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Newark Intl Airport</td>
<td>49.3</td>
<td>53.4</td>
<td>1.6%</td>
<td>44.1</td>
<td>4.2%</td>
<td>-4.1%</td>
</tr>
<tr>
<td>Charleston- South Carolina- US</td>
<td>-</td>
<td>-</td>
<td>0.0%</td>
<td>42.4</td>
<td>4.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Los Angeles Intl Airport</td>
<td>31.2</td>
<td>46.0</td>
<td>8.1%</td>
<td>39.3</td>
<td>3.8%</td>
<td>-3.4%</td>
</tr>
<tr>
<td>Madison County Airport</td>
<td>6.0</td>
<td>48.6</td>
<td>51.7%</td>
<td>36.9</td>
<td>3.5%</td>
<td>-5.8%</td>
</tr>
<tr>
<td>Dover AFB- Dvr-Chs- DE- US</td>
<td>0.2</td>
<td>0.3</td>
<td>15.4%</td>
<td>34.2</td>
<td>3.3%</td>
<td>177.3%</td>
</tr>
<tr>
<td>All Other</td>
<td>119.2</td>
<td>144.6</td>
<td>3.9%</td>
<td>178.2</td>
<td>17.1%</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>625.0</td>
<td>855.5</td>
<td>6.5%</td>
<td>1,040.9</td>
<td>100.0%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>


A total of seventeen US airports had more than 100 all-cargo scheduled flights (in or out) in 2005 including the top ten traffic airports plus Louisville (UPS’ domestic hub), Cincinnati.
(DHL’s former hub), San Juan, Seattle/Tacoma, Indianapolis, Houston and Dallas-Fort Worth.

The primary EU and US airports accounted for 42 airport pairs with more than 100 scheduled freighter flights in 2005, a slight increase over 2000 (39 pairs) and 1995 (37 pairs). Germany is the top EU market with 10 airport pairs followed by the UK the Netherlands, France and Belgium. The only market with a significant change from 1995 or 2000 was Belgium which added 5 airport pairs between 2000 and 2005.

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2000</th>
<th>2005*</th>
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</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Denmark</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Finland</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Germany</td>
<td>9</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Italy</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Poland</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Portugal</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spain</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sweden</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Grand Total</td>
<td>37</td>
<td>39</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 75: US-EU Scheduled Air Cargo: Number of Airport Pairs with 100 or More Annual Departures (1995-2005*)

EU-US AIR TRADE BY COMMODITY VALUE

A critical factor in the distribution of air trade service patterns is commodity value. The primary market of the integrated carriers consists of high value “express” commodities that require the highest level of service and achieve the greatest savings from expedited and guaranteed transportation. On the other hand, higher volume, but comparatively lower valued air “freight” commodities make up the primary market for airport-to-airport services by freighter operators. According to data from the US Census Bureau, in 2005, 72% of US-Europe air trade by weight was classified as freight commodities while the other 28% was classified as express. While express commodity trade grew faster than the all commodity average in both directions from 1995 to 2000, a significant decline in eastbound express trade from 2000 to 2005 resulted in a net decline in traffic over the period.

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362 The classification of “express” commodities was based on an average value of $100 per kilogram or greater by commodity in 2005. While average value is a strong indicator of express volumes, it is not the sole determinant, so these statistics are used to represent general trends in express commodity trade, rather than absolute carrier traffic.
As shown below, the express trade weight increased consistently from 1992 to 2000 before the dip in the 2001 to 2003 period and what appears to be a return to previous growth levels.

The significance of express commodities is much higher in terms of value. Express commodities accounted for 81% of the total US-Europe air trade value in 2005, or over a third of total trade between the two regions (including all modes). The express share increased from 74% in 1990 and 79% in 2000 in a period where the express share of weight remained relatively constant.
Similar to the weight volumes, express air trade increased rapidly from 1992 to 2000 before experiencing the 2001-2003 decline and a return to strong growth. Total air trade value averaged 4.9% annual growth from 1990 to 2005 (in constant dollar terms) with express trade increasing 5.5% per year compared to 3.3% for freight and 5.0% for all commodities. In comparison, air express weight increased just 3.6% per year compared to 4.0% per year for freight.

**Figure 74: US – EU Air Trade Value – Express vs. Freight Commodities (in Constant 2000 Dollars)**

Growth since 2000 is even more weighted towards express commodities with an increase in constant dollar trade of 7% over the period compared to a 6% decline for freight commodity value. These patterns indicate that the expansion in US-EU air trade has been based on
increased commodity values and a greater orientation towards commodities that require express service. Since 2000, express commodity weight has declined slightly, while average value and total value have increased.

The average value of an express commodity was $333 per KG in 2005 compared to $114 per KG for all air cargo. In nominal terms, the average value of express commodities increased 4.1% per year from 2000 to 2005 similar to overall value growth of 4.0% per year. Note that the eastbound express value increased at more than double the rate of decline in overall value, while westbound value declined relative to the overall average.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>US-EU25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express</td>
<td>$212</td>
<td>$253</td>
<td>3.6%</td>
<td>$313</td>
<td>4.3%</td>
</tr>
<tr>
<td>Total</td>
<td>$83</td>
<td>$102</td>
<td>4.2%</td>
<td>$113</td>
<td>2.0%</td>
</tr>
<tr>
<td>Air Share of Total</td>
<td>255%</td>
<td>248%</td>
<td></td>
<td>278%</td>
<td></td>
</tr>
<tr>
<td>EU25-US</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express</td>
<td>$231</td>
<td>$298</td>
<td>5.2%</td>
<td>$352</td>
<td>3.4%</td>
</tr>
<tr>
<td>Total</td>
<td>$68</td>
<td>$87</td>
<td>5.0%</td>
<td>$115</td>
<td>5.9%</td>
</tr>
<tr>
<td>Air Share of Total</td>
<td>339%</td>
<td>343%</td>
<td></td>
<td>306%</td>
<td></td>
</tr>
<tr>
<td>Combined Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express</td>
<td>$219</td>
<td>$273</td>
<td>4.5%</td>
<td>$333</td>
<td>4.1%</td>
</tr>
<tr>
<td>Total</td>
<td>$75</td>
<td>$94</td>
<td>4.4%</td>
<td>$114</td>
<td>4.0%</td>
</tr>
<tr>
<td>Air Share of Total</td>
<td>290%</td>
<td>291%</td>
<td></td>
<td>292%</td>
<td></td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 78: US - EU Air Average Value by Commodity Type (1995-2005) (per KG)

In terms of average value in constant dollar terms over the 1995 to 2005 period, both express and freight commodities remained relatively stable through 1999 before express commodity value started to increase from just over $250 per KG in 1999 to nearly $300 per KG in 2005.
The EU-US air express market declined between 2000 and 2005 in terms of shipment weight at an annual average of 0.5% per year. Shipment value increased 3.6% per year in current dollar terms and 1.2% in constant value terms. Express traffic increased westbound from 2000 to 2005 (at 2.0% per year) but decreased eastbound (-2.7% per year). The 2000-2005 period contrasts sharply with the previous five year period when total traffic increased at an average of 8.0% per year with westbound traffic up 11.0% per year.

### Table 79: US-EU Air Express Trade by Direction (1995-2005)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Eastbound</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (000 MT)</td>
<td>237</td>
<td>316</td>
<td>276</td>
<td>5.9%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$50.2</td>
<td>$80.0</td>
<td>$86.5</td>
<td>9.8%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$212</td>
<td>$253</td>
<td>$313</td>
<td>3.6%</td>
<td>4.3%</td>
</tr>
<tr>
<td><strong>Westbound</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (tonnes)</td>
<td>149</td>
<td>251</td>
<td>278</td>
<td>11.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$34.3</td>
<td>$74.8</td>
<td>$97.9</td>
<td>16.8%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$231</td>
<td>$298</td>
<td>$352</td>
<td>5.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (tonnes)</td>
<td>386</td>
<td>568</td>
<td>554</td>
<td>8.0%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$84.5</td>
<td>$154.8</td>
<td>$184.4</td>
<td>12.9%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$219</td>
<td>$273</td>
<td>$333</td>
<td>4.5%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

The top EU trade markets for air express in 2005 were Germany, UK, Italy, the Netherlands and Spain. Germany was the top market in both directions with the Netherlands being particularly strong in the eastbound direction and Italy and Sweden imbalanced in the westbound direction. All of the top markets declined in absolute tonnage from 2000 to 2005 except for Germany (with growth in both directions) and Sweden (based on strong
westbound growth). The greatest percentage decline was for the UK and Ireland markets that are two of the remaining non-open markets. Both markets experienced severe declines in their eastbound markets, although Ireland had above average growth westbound.

<table>
<thead>
<tr>
<th>Weight (tonnes)</th>
<th>Westbound</th>
<th>Eastbound</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>69,876</td>
<td>6.2%</td>
<td>60,483</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>50,098</td>
<td>-2.2%</td>
<td>56,094</td>
</tr>
<tr>
<td>Italy</td>
<td>27,367</td>
<td>-1.3%</td>
<td>17,434</td>
</tr>
<tr>
<td>Netherlands</td>
<td>13,399</td>
<td>5.3%</td>
<td>43,521</td>
</tr>
<tr>
<td>Spain</td>
<td>5,377</td>
<td>0.4%</td>
<td>7,800</td>
</tr>
<tr>
<td>Sweden</td>
<td>18,139</td>
<td>4.1%</td>
<td>4,997</td>
</tr>
<tr>
<td>Republic Of Ireland</td>
<td>21,074</td>
<td>4.8%</td>
<td>13,560</td>
</tr>
<tr>
<td>All Other</td>
<td>72,595</td>
<td>1.6%</td>
<td>72,360</td>
</tr>
<tr>
<td>Total</td>
<td>277,925</td>
<td>2.0%</td>
<td>276,248</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 80: US-EU Air Express Trade by EU Market, 2005

It is important to recognize that the aggregate change in express trade does not necessarily represent macro trends, but rather are the aggregations of hundreds of different trends in commodity production and consumption, not just between the EU and the US, but within those regions as well. The top express commodities moving in EU-US trade included medical products (medicine, instruments, X-ray equipment and orthopaedic item), returned or non-imported items, office machines and parts, and high tech items. The variability of air trade is shown by the varying growth rates for these commodities. The medical items all had strong growth of over 10% per year, while ADP machines and office machine parts fell significantly.

<table>
<thead>
<tr>
<th>Total Weight (tonnes)</th>
<th>2000-2005 Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicaments NESOI, Mixed Or Not, In Dosage Etc Fm</td>
<td>28,235</td>
</tr>
<tr>
<td>Medical, Surgical, Dental Or Vet Inst, No Elec, P</td>
<td>27,609</td>
</tr>
<tr>
<td>Expts Of Repaired Impts; Impts Of Returned Expts</td>
<td>27,151</td>
</tr>
<tr>
<td>Turbojets, Turbopropellers &amp; Oth Gas Turbines, Pt</td>
<td>17,927</td>
</tr>
<tr>
<td>X-ray Etc Apparatus; Tubes, Panels, Screen Etc, P</td>
<td>13,969</td>
</tr>
<tr>
<td>Trans Appar For Radiotele Etc; Tv Camera &amp; Rec</td>
<td>13,288</td>
</tr>
<tr>
<td>Automatic Data Process Machines; Magn Reader Etc</td>
<td>12,602</td>
</tr>
<tr>
<td>Orthopedic Appl; Artif Body Pts; Hear Aid; Pts Et</td>
<td>12,832</td>
</tr>
<tr>
<td>Inst Etc For Physical Examination</td>
<td>11,588</td>
</tr>
<tr>
<td>Parts Etc For Typewriters &amp; Other Office Machines</td>
<td>9,428</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 81: US-EU Air Express Trade: Top Ten Westbound Commodities, 2005

The overall trend of increased westbound trade not only varies by country, but by commodity and industry with the aggregate EU market. The air export of high-valued medicines ("medicaments") from the EU to US increased 95% in weight from 2000 to 2005, but the leading exporters, Germany (19% of market) increased by 106%, while the second largest exporters, UK (17%) increased just 36% and Ireland (9%) increased 261%. A similar situation occurred for turbojets, turboprops and related items, the express shipment of
which increased 20% in the aggregate. The leading exporters, UK and France (35% and 34% respectively), had differing growths with UK up 32% and France up just 15%, while the third leading exporter, Germany, declined 19%.

Reflecting the inter-connectedness of world markets, some of the top westbound express commodities also move eastbound in large quantities. Again, medical-related commodities top the list (instruments, medicine, lab chemicals) joined by office equipment and parts, industrial components, and telecommunications equipment. The eastbound flow of medical items grew from 2000 to 2005 (but not as fast as westbound), while other commodities declined in traffic. Within specific markets, the relative growth rates among the top EU destination markets again show no consistent pattern relative to aggregate growth.

| Medical, Surgical, Dental Or Vet Inst, No Elec, P | 31,291 | 5.9% |
| Automatic Data Process Machines; Magn Reader Etc | 29,774 | -5.8% |
| Parts Etc For Typewriters & Other Office Machines | 21,847 | -13.3% |
| Turbojets, Turbopropellers & Oth Gas Turbines, Pt | 21,541 | 6.2% |
| Parts Of Balloons Etc, Aircraft, Spacecraft Etc | 18,253 | 0.6% |
| Medicaments Nesoi, Mixed Or Not, In Dosage Etc Fm | 14,416 | 4.1% |
| Composite Diagnostic/lab Reagents, Exc Pharmaceut | 11,103 | -1.7% |
| Electric Apparatus For Line Telephony Etc, Parts | 10,281 | -7.2% |
| Inst Etc For Physical Examination | 9,063 | 4.9% |
| Machines Etc Having Individual Functions Nesoi, P | 7,511 | -9.4% |

Source: US Bureau of the Census, Foreign Trade Statistics

Table 82: US-EU Air Express Trade: Top Ten Eastbound Commodities, 2005

The EU-US air freight market declined between 2000 and 2005 in terms of shipment weight at an annual average of 1.1% per year. Shipment value increased slightly at 1.1% per year, but, if measured in constant dollars, would have declined as well. In contrast to the express commodity market, westbound shipment volumes declined from 2000 to 2005 while eastbound shipment weight increased marginally. The 2000-2005 period contrasts sharply with the previous five year period when total traffic increased at an average of 6.2% per year with westbound traffic up 7.8% per year.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Eastbound</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (000 MT)</td>
<td>516</td>
<td>635</td>
<td>646</td>
<td>4.2%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$12.3</td>
<td>$16.9</td>
<td>$17.4</td>
<td>6.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$24</td>
<td>$27</td>
<td>$27</td>
<td>2.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Westbound</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (tonnes)</td>
<td>612</td>
<td>891</td>
<td>798</td>
<td>7.8%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$17.3</td>
<td>$24.2</td>
<td>$26.0</td>
<td>6.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$28</td>
<td>$27</td>
<td>$33</td>
<td>-0.9%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipment Weight (tonnes)</td>
<td>1,128</td>
<td>1,526</td>
<td>1,444</td>
<td>6.2%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Shipment Value ($ bn)</td>
<td>$29.6</td>
<td>$41.1</td>
<td>$43.4</td>
<td>6.8%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Average Value per KG</td>
<td>$26</td>
<td>$27</td>
<td>$30</td>
<td>0.5%</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics

Table 83: US-EU Air Freight Trade by Direction, 1995-2005
The top EU trade markets for air freight in 2005 were Germany, UK, Italy and the Netherlands, each with over 100,000 tonnes of two-way trade. The UK was the top eastbound market, while Germany was the top westbound market. All of the top markets declined in absolute tonnage from 2000 to 2005 with the greatest decline by Spain followed by the Netherlands and UK. The markets with the least decline were Ireland, Germany and Italy. All of the markets declined in terms of westbound traffic led by Ireland, the Netherlands, and Spain with Germany just slightly declining. Eastbound, several of the markets increased traffic led by the Netherlands, Ireland and Spain. Eastbound traffic for Germany and the UK declined.

<table>
<thead>
<tr>
<th>Weight (tonnes)</th>
<th>Westbound</th>
<th></th>
<th>Eastbound</th>
<th></th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>219,848</td>
<td>-0.3%</td>
<td>114,630</td>
<td>-1.7%</td>
<td>334,478</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>135,147</td>
<td>-3.4%</td>
<td>182,158</td>
<td>-1.2%</td>
<td>317,304</td>
</tr>
<tr>
<td>Italy</td>
<td>118,404</td>
<td>-1.7%</td>
<td>41,949</td>
<td>0.8%</td>
<td>160,353</td>
</tr>
<tr>
<td>Netherlands</td>
<td>61,965</td>
<td>-7.3%</td>
<td>63,335</td>
<td>3.8%</td>
<td>125,300</td>
</tr>
<tr>
<td>Spain</td>
<td>26,700</td>
<td>-6.8%</td>
<td>29,322</td>
<td>1.9%</td>
<td>56,022</td>
</tr>
<tr>
<td>Sweden</td>
<td>30,015</td>
<td>-2.4%</td>
<td>15,745</td>
<td>1.0%</td>
<td>45,760</td>
</tr>
<tr>
<td>Republic Of Ireland</td>
<td>9,387</td>
<td>-8.3%</td>
<td>26,361</td>
<td>3.1%</td>
<td>35,748</td>
</tr>
<tr>
<td>All Other</td>
<td>196,511</td>
<td>-0.5%</td>
<td>172,528</td>
<td>1.6%</td>
<td>369,039</td>
</tr>
<tr>
<td>Total</td>
<td>797,977</td>
<td>-2.2%</td>
<td>646,028</td>
<td>0.3%</td>
<td>1,444,004</td>
</tr>
</tbody>
</table>

Source: US Bureau of the Census, Foreign Trade Statistics
Table 84: US-EU Air Trade by EU Market, 2005

The top commodities moving in EU-US trade include machinery and other parts, perishables, published materials, and dress ware. The highest volume commodity moving in a westbound direction in 2005 was plumbing parts (taps, cocks and valves), probably moving on an expedited basis for repair purposes. Other types of parts and components also topped the list including motor vehicle parts, machinery parts, transmission components, and pumps. Over 18,000 tonnes of vegetables were shipped westbound, probably seasonal specialty items (e.g. bell peppers). As shown, the growth patterns vary significantly among these commodities with machinery traffic increasing 8.9% from 2000 to 2005, while vehicle parts and vegetables declined 4-5% per year. This level of variability is the reason why freighter services must be flexible and adjust to underlying industrial and consumer patterns that can shift quickly.

<table>
<thead>
<tr>
<th>Weight (tonnes)</th>
<th>Total</th>
<th>2000-2005 Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taps, Cocks, Valves Etc For Pipes, Tanks Etc, Pts</td>
<td>42,674</td>
<td>5.9%</td>
</tr>
<tr>
<td>Parts &amp; Access For Motor Vehicles (head 8701-8705)</td>
<td>35,627</td>
<td>-5.6%</td>
</tr>
<tr>
<td>Parts For Machinery Of Headings 8425 To 8430</td>
<td>21,398</td>
<td>8.9%</td>
</tr>
<tr>
<td>Vegetables Nesoi, Fresh Or Chilled</td>
<td>18,211</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Transmission Shafts, Bearings, Gears Etc; Parts</td>
<td>17,761</td>
<td>3.7%</td>
</tr>
<tr>
<td>Pumps For Liquids; Liquid Elevators; Parts Thereo</td>
<td>15,998</td>
<td>5.9%</td>
</tr>
<tr>
<td>Electrical Apparatus For Switching Etc, Nov 1000</td>
<td>15,020</td>
<td>-3.9%</td>
</tr>
<tr>
<td>Electric Apparatus For Line Telephony Etc, Parts</td>
<td>12,323</td>
<td>-0.8%</td>
</tr>
</tbody>
</table>

363 These statistics combine traffic for the EU and EEA markets.
The production of these commodities within the EU overall market also varies significantly, as does the growth patterns among the EU producers of a particular commodity. For example, Germany was the top producer of the plumbing parts in 2005 with 34% of westbound trade, having experienced double the percentage growth for the combined market. The second largest producer (UK) had below average growth while the fourth largest (Italy) had declining traffic. On the other hand, some commodities are concentrated in one or two primary markets. The vegetables primarily originate in the Netherlands (85%) and footwear mostly comes from Italy (68%). The freighter operators must tailor their services to follow these various trends that combine to create their aggregate market.

Eastbound flows exhibit the same variability in terms of commodities and markets. Several of the top commodities move on a two-way basis indicating that US and EU companies often compete in each other’s markets. Motor vehicle parts were the top commodity by weight with over 19,100 tonnes in 2005 despite a 26% decline in overall traffic between 2000 and 2005. Germany and the UK were the top destinations for these products with 30% and 14% of the market respectively, although both experienced greater drops in traffic than the aggregate market. Other top commodities included machinery parts (17,400 tons and a 21% net increase over 2000), binder for found moulds (13,700 tonnes up 46%), printed matter (12,600 tonnes, down 22%), and live crustaceans, probably lobsters (11,000 tonnes, up 9%). Other commodities moving eastbound include horse meat, beauty products, lettuce, and seeds for planting.

### Table 86: US-EU/EFTA Air Trade: Top Ten Eastbound Commodities, 2005

<table>
<thead>
<tr>
<th>Weight (tonnes)</th>
<th>Total</th>
<th>2000-2005 Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts &amp; Access For Motor Vehicles (head 8701-8705)</td>
<td>19,136</td>
<td>-5.8%</td>
</tr>
<tr>
<td>Parts For Machinery Of Headings 8425 To 8430</td>
<td>17,376</td>
<td>3.9%</td>
</tr>
<tr>
<td>Binders For Found Molds; Chemical Prod Etc Nesoi</td>
<td>13,669</td>
<td>7.9%</td>
</tr>
<tr>
<td>Books, Brochures &amp; Similar Printed Matter</td>
<td>12,575</td>
<td>-4.8%</td>
</tr>
<tr>
<td>Crustens Lve Frsh Etc, Ckd Etc.; Flrs Mls H Cnsum</td>
<td>11,900</td>
<td>1.7%</td>
</tr>
<tr>
<td>Parts For Engines Of Heading 8407 Or 8408</td>
<td>11,641</td>
<td>4.2%</td>
</tr>
<tr>
<td>Taps, Cocks, Valves Etc For Pipes, Tanks Etc, Pts</td>
<td>10,816</td>
<td>2.3%</td>
</tr>
<tr>
<td>Meat Of Horses, Asses, Mules, Hinnies Fr, Chld, F</td>
<td>10,712</td>
<td>14.5%</td>
</tr>
<tr>
<td>Beauty, Make-up &amp; Skin-care Prep; Manicure Etc Pr</td>
<td>9,788</td>
<td>10.7%</td>
</tr>
<tr>
<td>Centrifuges; Filter Etc Mach For Liq Or Gases; Pt</td>
<td>8,871</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

### A1.5 INTEGRATED EXPRESS CARRIERS’ HUB STRUCTURES

#### Integrated Air Carrier Cargo Market

**Introduction**

The impact of OAA liberalization differs significantly by type of carrier. Integrated carriers rely on inter-connected hub networks to link worldwide markets within a common service structure. The express markets served by these carriers have expanded significantly in recent years based on the ability for these networks to expand and adapt to market demand, while also stimulating demand with increased reliability and expedited delivery.
The integrated carrier market has expanded in concert with the growing importance of air cargo in general. The networks for the primary integrated carriers share many characteristics. They seem to be converging to a common structure based on multi-region hub networks. These networks are linked by efficient intra-continental connecting flights that produce increasingly efficient air transport service that is merged with other value-added services to satisfy worldwide demand.

The OAA affects the extent to which this convergence can and will continue by providing needed flexibility and expandability in three of the primary sectors for these worldwide networks - EU-US transatlantic, intra-EU and intra-US. Integrated carriers will be able to better operate and control air services beyond their domestic markets, either by

1) owning and operating a single, efficient multi-use airline (in some cases, replacing regional “non-integrated” airlines)

2) being able to better wet-lease or charter the most cost-efficient air services regardless of county domicile. Full access to all available traffic moving within these market sectors will allow more efficient flight planning and lower unit operating costs.

Finally, the ability to continue the integration of air, ground and value-added services will be enhanced by removing local operating impediments (“doing business issues”) in some markets and permitting desirable mergers and acquisitions.

The beneficiaries of allowing the continued expansion of integrated carrier networks are the EU and US businesses which increasingly depend on reliable, multi-layered delivery options to support manufacturing processes and distribution/logistics systems for both components and final products. The large variety of delivery services provided by these carriers allows businesses to match level of service and cost to their wide variety of needs. In particular, the ability to operate in a multi-national environment requires seamless and comparable access to worldwide production areas and consumer markets. In the US, recent job creation has been attributed to both the growth of new innovative small businesses and the expansion of large multi-national businesses dependent on foreign trade. Both of these sectors depend on integrated express services - small businesses in order to compete in large geographical markets and multi-national businesses to efficiently manage both in-house and external logistics and trade. Continued expansion of integrated carrier networks will create jobs for those carriers, and also jobs for businesses that can expand their markets with better transportation and logistics.

The ultimate beneficiaries are the customers whose products are delivered as they want them, when they want them, and at a reasonable delivered cost. Integrated express services have not only accelerated delivery time for items that lose value over time (e.g. seafood or DVDs), but they have expanded the options for buying products, leading to greater product variety, increased competition, and often lower costs considering delivered “value”.

This section of the report analyses the current status of this critical sector of the service market, describing the general patterns for developing and operating express networks and specific patterns relative to the three US-EU geographical markets. Future requirements for network expansion are then related to the anticipated impacts of an OAA.

**Overview of Worldwide Integrator Market**

The emergence of integrated air express carriers since the 1970s has resulted in a highly developed worldwide network of services tailored to the shipment of high-value and perishable commodities. While traditional airport-to-airport cargo services still handle a
significant amount of traffic, the express market represents the fastest growing market segment and is the most sensitive to regulatory conditions.

Oxford Economic Forecasting (OEF)\textsuperscript{364} estimates that the global express industry generated total revenues of $130 billion in 2003 and was responsible for 1.25 million direct jobs. According to the European Express Association (EEA) website, the express industry:

- Operates in more than 220 countries world-wide
- Moves more than 6 million packages daily
- Operates and owns more than 1,200 aircraft
- Operates 2,000 commercial flights daily
- Operates and owns more than 200,000 trucks and delivery vehicles.

While the express companies are large global employers in and of themselves, their economic impact extends to many others sectors of the economy because of their role as commerce and international trade facilitators. A March 2005 study by OEF outlines the role of the express industry in facilitating trade, competitiveness, productivity, and investment. OEF notes that express services “help to improve the competitiveness of almost all aspects of companies’ operations, including sales, logistics and storage, production and customer support functions.”

The worldwide express market is dominated by the four major global integrators (FedEx, UPS, DHL, and TNT).\textsuperscript{365} The table below provides revenue, profit, and employment information for each of the parent companies of the four major integrators for the years 2000 and 2005 (for the fiscal years ending in May 2000 and May 2005 for FedEx). Combined, these companies accounted for over 100 billion euros in 2005 yielding 7.4 billion euros of net income. Their combined employment (for all operating units) exceeds 1.2 million worldwide.

<table>
<thead>
<tr>
<th>Item</th>
<th>FedEx Corp.</th>
<th>UPS</th>
<th>DPWN</th>
<th>TNT N.V.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>€14.8</td>
<td>€23.7</td>
<td>€24.0</td>
<td>€34.4</td>
</tr>
<tr>
<td>Operating Income/EBIT</td>
<td>€1.0</td>
<td>€2.0</td>
<td>€3.6</td>
<td>€4.9</td>
</tr>
<tr>
<td>Net Income</td>
<td>€0.6</td>
<td>€1.2</td>
<td>€2.3</td>
<td>€3.1</td>
</tr>
<tr>
<td>Employees</td>
<td>163,324</td>
<td>250,000</td>
<td>359,000</td>
<td>407,200</td>
</tr>
</tbody>
</table>

Source: Company reports. Monetary amounts in billions. Amounts reported in US dollars converted to Euros at the rate of 1 Euro = $1.24.

Table 87: Financial and Employment Statistics for the Major Integrators, 2000 vs. 2005

These integrated carriers share common service structures and developmental patterns including:

- Development from a core regional market sector

\textsuperscript{364} The Impact of the Express Deliver Industry on the Global Economy, OEF March 2005

\textsuperscript{365} A number of smaller niche or regional carriers (including passenger airlines) offer “express” services including door-to-door delivery in many cases. The primary integrated carriers of interest for this study each operate networks serving both EU-US and intra-regional markets.
• Provision of multiple levels and types of services albeit with a concentration in the express market

• Operation of worldwide networks serving both domestic and international markets

• Delivery networks that mix air and ground services using both in-house and contract equipment.

FedEx started operating a domestic air express network in the US in 1973, but now provides air, ground, and even ocean services on an expedited and deferred basis throughout the world. Alternatively, UPS started as a ground parcel delivery carrier, added air service delivery using contract carriers in the early 1980s, started its own airline, and now serves a comparable array of markets and cargo types to FedEx. DHL and TNT both started their express networks in their “home” markets (Europe for DHL and Australia for TNT), but expanded earlier into international markets than the US carriers. Each of these carriers competes with each other in the EU-US and intra-EU markets, and all but TNT have intra-US networks.
Case Study: A Brief Overview of FedEx’s Development

Phase 1: Start up from Home Base

Federal Express was founded in 1971. The company’s first night of continuous operations from its Memphis base was in 1973. On its first night of operations, the company’s network was comprised of 25 US cities served using nightly flights and local pickup/delivery services.

Phase 2: Expand Home Network

The catalyst for Federal Express’ growth was the deregulation of the US domestic cargo market in 1977. Deregulation allowed Federal Express to buy larger aircraft that could not have operated under regulation. Deregulation also provided FedEx with the freedom to operate any domestic route and charge any price that it wanted. In 1981, FedEx opened its “Superhub” in Memphis. In 1983, Federal Express’ annual revenue reached the $1 billion mark. The flexibility of a deregulated marketplace allowed Federal Express to add more points to its route network. As Federal Express grew, it opened other hubs, the first of which was at Indianapolis in 1987. Today Memphis still dominates the domestic system with 32% of departing tons. FedEx’s national hub at Indianapolis is second with 8% of departing tons. FedEx flies to more than 100 domestic destinations from Memphis and more than 40 from Indianapolis.

Phase 3: Expand to Other World Regions

Asia

FedEx launched operations in Asia in 1984 with its acquisition of Gelco Express International. FedEx bought Flying Tigers in 1989, a purchase that included valuable international route rights to Asia. In 1995, FedEx opened an Asia-Pacific hub in Subic Bay, Philippines and launched an intra-Asia network. This network handles both intra-Asia and extra-Asia traffic.

Europe

Federal Express began service to Europe in 1984. The company established a hub at Brussels in 1985 to serve the intra-Europe market, however, it was closed in 1992 in the face of intense competitive pressure and the resulting large financial losses. From 1992, Federal Express maintained a comparatively small intra-Europe flight operation consisting of a limited number of flights supplemented by contract ground services designed to connect with FedEx’s intercontinental routes. Aided by liberalization of the US-France air services bilateral in 1998, FedEx moved to re-establish its presence in the intra-Europe market. In September 1999, it opened a $200 million facility at Paris CDG. At the same time, it rolled out an intra-Europe network offering overnight delivery among 38 European cities for both intra-Europe and intercontinental traffic.

Phase 4: Expand Product Line

FedEx has expanded its product lines by leveraging the power of its network and the other capabilities it has honed through the development of its express network. While still probably best known for express document shipments by air, FedEx also operates an extensive ground delivery network in the US, which was greatly expanded by FedEx’s 1998 purchase of Caliber Systems, Inc. In February 2004, FedEx purchased Kinko’s, a chain of retail stores specializing in document solutions. FedEx also offers a range of supply chain, customs clearance, and freight forwarding services that have been expanded by worldwide acquisitions of specialist firms.

While express services are a key core business for each carrier, all have diversified operations, of which express transportation is just a part. The integrated carriers sell levels of service rather than modes of transport and their networks reflect the highly diversified service mix, particularly the combination of air and ground services.
In addition to its express business, FedEx also has ground, freight, and document/business solutions divisions. DHL is a division of Deustche Post World Net (DPWN), which also owns Deustche Post and Postbank. TNT has mail and logistics divisions, although it plans to divest most of its logistics operations. The following four figures show the distribution of revenue across segments for each of the four major integrators.

![FedEx Revenue by Segment](source)

**Figure 3: FedEx Revenue by Segment (Year ended May 2005)**

![UPS Revenue by Segment](source)

**Figure 4: UPS Revenue by Segment (2005)**
Table 88 below provides segment/division level figures for each of the four companies for 
express operations for the year 2005. “Express” operations are a major part of all of these 
companies’ businesses, although differences indicate that each carrier has a unique 
makeup. Combined, these companies accounted for over 50 billion euros in express 
revenues and account for over 400,000 employees. FedEx and TNT derive over 50 percent 
of their revenues from their express divisions with DHL’s share at 39% and UPS at 40%. 
While the express division of FedEx accounts for 49% of corporate employment, DHL and

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366 Part of the difference may also result from differences in the corporate structures and accounting. “Express” divisions typically also handle “deferred” traffic that may also be handled by ground divisions, while the ground divisions provide overnight services within limited geographical regions.

367 This assumes that UPS has the same share of express employment for the four carriers and its share of revenues.
TNT have 29% and 28% shares respectively. For each of these carriers, the express share of employment is much less than the share of revenues, thereby indicating the relatively high level of productivity for these sectors compared to ground and other units.

<table>
<thead>
<tr>
<th>Item</th>
<th>FedEx Express</th>
<th>UPS Express</th>
<th>DPWN Express Division</th>
<th>TNT Express</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>€15.7</td>
<td>€13.8</td>
<td>€18.2</td>
<td>€5.3</td>
</tr>
<tr>
<td>Employees</td>
<td>123,348</td>
<td>n/a</td>
<td>131,927</td>
<td>45,000</td>
</tr>
<tr>
<td>Revenue % of Company Total</td>
<td>66%</td>
<td>40%</td>
<td>39%</td>
<td>53%</td>
</tr>
<tr>
<td>Employees % of Company Total</td>
<td>49%</td>
<td>n/a</td>
<td>29%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Source: Company reports. Monetary amounts in billions. Amounts reported in US dollars converted to Euros at the rate of 1 Euro = $1.24.

Table 88: Financial and Employment Statistics for the “Express” Operations of the Major Integrators, 2005

The relationship between domestic and international operations similarly indicates the unique structure for each carrier, while indicating a common participation in both types of markets. The graph below shows the distribution of revenue by domestic and international for each of the four companies for the year 2005 based on data from company reports.

Figure 76: Integrated Express Carriers Revenue Split Domestic/International

All four of the major integrators generate the majority of their revenues in their “domestic” markets (the US in the case of FedEx and UPS and Europe in the case of DHL and TNT). However, non-domestic traffic accounts for a significant percentage of total revenues for all of the integrators. Because their home markets are mature, each of the integrators is dedicating substantial resources toward much faster growing international markets. Unsurprisingly, the rapidly growing Asia-Pacific market in general and China in particular are areas of focus for the integrators. These companies are also dedicating resources to

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368 These carriers do not distinguish between intra-Europe and extra-Europe activities, but rather assign revenues and employment to the regions that originate the traffic.
expanding their presence in other rapidly expanding areas of the world including India and the Middle East. Globalization will push each of the major integrators to become even more internationally oriented than they are today.

**Integrated Carrier Networks**

An analysis of the current status and development patterns for these integrated carrier networks reveals both the common elements for those networks and how each carrier responds to market demand under existing supply market constraints (including regulation). The following describes the networks for each of the carriers.

**FedEx**

FedEx’s intra-US air network has its primary hub in Memphis, Tennessee with a national hub at Indianapolis, Indiana, and regional hubs in Newark, New Jersey; Oakland, California; and Fort Worth, Texas. An additional regional hub is currently in development in Greensboro, NC. Major sorting facilities are also located at Los Angeles, California and Chicago, Illinois. The expansion from a single national hub at Memphis has coincided with both traffic and service expansion. The regional hubs permit more efficient, and therefore faster, handling of traffic remaining in a single US region (e.g. US Southeast), while also relieving congestion at the main hub.

FedEx’s expansion into international markets resulted in the development of “gateway” airports. Newark is its primary European gateway with San Francisco and Anchorage as its major Pacific gateways. FedEx has recently opened a facility in Miami designed to serve the Caribbean and Latin America. Overseas, FedEx has major sorting operations in Paris, France for its EuroOne network and Subic Bay, Philippines for its AsiaOne network. Additionally, FedEx plans on moving its primary AsiaOne hub to Guangdong, China, while it retained Subic Bay as a regional hub. These hubs are used to sort both intra- and inter-regional traffic (e.g. intra-EU and US-EU). Other points outside of the US with substantial FedEx operations include Tokyo Narita, London Stansted, Toronto, Hong Kong, Taiwan, Dubai, and Frankfurt which are used to serve these major markets directly and bypass the primary regional hub. FedEx also operates a regional Scandinavian hub at Copenhagen for intra-EU traffic to and from those markets.

FedEx’s expansion into pure truck operations has resulted in an independent ground network used to serve the truckload and less-than-truckload US domestic market.

**UPS**

Like FedEx, UPS’s domestic air network has a primary US hub which is supplemented by regional hubs and major sorting facilities across the US and the world. UPS’ primary air hub is located at Louisville, Kentucky. The company’s regional air hubs serving the US market are located at Columbia, South Carolina; Dallas, Texas; Ontario, California; Rockford, Illinois; Dayton, Ohio; and Hartford, Connecticut. Philadelphia, Pennsylvania is its European gateway and Anchorage, Alaska is its Pacific gateway. Outside of the US, UPS connects its intra-Europe and intra-Asia traffic at Cologne, Germany and Clark Air Force Base in Pampanga, Philippines respectively. UPS also maintains sort facilities at its former intra-Asia hub in Taipei and is scheduled to open a new China hub at Shanghai in 2007.

UPS operates an extensive ground network based on its original ground parcel network. In simple terms, UPS expanded from a ground carrier to an air carrier, while FedEx did the opposite. This historical difference affects the way in which each handles traffic at many of
its US service airports. FedEx typically handles and sorts local traffic at an airport facility and may have a separate ground facility located elsewhere in the city for its ground network. UPS typically does not have sorting facilities at its US service airports, but rather loads directly to or from a truck (sometimes via a temporary holding facility) with sorting at a single off-airport ground hub.

Like FedEx, UPS has expanded its service and market portfolio in recent years, both through acquisition and expansion of existing units. UPS’s purchase of Menlo Logistics and its heavy-freight express carrier, Emery, indicates a further expansion of its air express services to larger industrial shipments. UPS will close the Emery sort hub in Dayton, OH and consolidate operations at its Louisville hub.

**DHL**

Like FedEx and UPS, DHL operates an extensive worldwide air network. According to DHL’s website, DHL owns four airlines:

- European Air Transport is based in Brussels and provides capacity for DHL’s European network as well as longhaul services to the Middle East and Africa
- DHL Air UK is based at East Midlands airport in the UK. The airline provides services on DHL’s European Network
- DHL’s Middle East airline is based at Bahrain International Airport and serves a wide variety of Middle East destinations
- DHL’s Latin American airline is based in Panama City and serves a wide range of destinations in Central and South America.

As mentioned above, over the past few years, DHL has been making an aggressive push to expand its presence in the US domestic market including the purchase of the non-airline assets of Airborne, a US domestic express carrier that specialized in business-to-business shipping. DHL uses two contract air carriers for its domestic US services, the ABX airline that was spun off after the DHL purchase, and Asstair Air Cargo, the original contract carrier for DHL’s US operations. DHL must use these contract carriers in order to comply with US airline ownership and control laws.

The consolidation of DHL’s and ABX’s intra-US services has resulted in the closing of the DHL hub at Cincinnati, Ohio and expansion of the old ABX air hub at Wilmington, Ohio. DHL has invested and continues to invest hundreds of millions of dollars to develop its ground network in the US to better compete with FedEx and UPS including various ground hubs throughout the country.

DHL’s European hub is currently at Brussels, but will move to Leipzig, Germany in 2008 to better accommodate expansion of its night time operations. In Asia, DHL has been a major express carrier for many years, initially using passenger flights supplemented with freighter capacity on major routes. DHL is currently developing a dedicated intra-Asia network with a hub in Hong Kong.

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369 A “service airport” handles local origin and destination traffic for a market, while a “hub” airport transfers traffic moving between service airports as well as its own local traffic.
TNT

TNT is the smallest of the major express players and its network is the most geographically focused with 82% of its express revenues coming from its home market (Europe). In contrast to its three larger competitors, which each operate multiple hubs across multiple continents, TNT has a single air hub (at Liege, Belgium) and its dedicated air network is focused on a single continent. While TNT recently announced plans to acquire two 747s for use on routes to China, it relies primarily on airlift purchased from commercial passenger airlines to transport goods outside of Europe. TNT’s airline, TNT Airways, operates a fleet of 42 aircraft across a network of more than 60 airports. TNT’s Express division operates over 19,000 road vehicles and claims that it has the largest road express delivery infrastructure in Europe with a ground hub at Arnhem.

Comparison

The three largest integrators (FedEx, UPS, and DHL) are similarly structured in that they operate worldwide networks comprised of multiple regional networks linked by intercontinental flights. All three also rely on extensive ground pickup and delivery networks that are coordinated with air hub-and-spoke systems to offer customers door-to-door transportation options that link almost any two points across the world. TNT, the fourth largest integrator, operates in the same basic fashion, although it is more regionally oriented than FedEx, UPS, and DHL and thus relies more on ground transportation for express shipments than the big three.

Their worldwide network structures have common elements:

- Regional air and ground networks providing a wide range of services spanning different modes, shipment sizes, and delivery objectives
- Inter-regional networks of hub-to-hub and direct flights for handling EU-US and other overseas markets
- A combination of uses for airports including primary sort hubs, secondary sort hubs, international gateways and service airports
- Local and regional pickup and delivery networks at “service airports” providing the ground elements of the total door-to-door delivery package
- An array of value-added services ranging from standard tracking and tracing plus guaranteed delivery times to third-party logistics, forwarding, customs brokering, and warehousing services designed to better satisfy existing customers, expand customer bases, and better utilize existing networks and market infrastructure.

Each carrier is trying to deliver the widest array of service options to the largest group of shippers, tailoring their networks to produce the fastest delivery at the lowest cost while maintaining shipment integrity and certainty of delivery. The following sections describe the interaction of market demand and supply constraints in each of the primary OAA markets as described by current and historical patterns for these networks.
Development of Integrated Carrier Networks in EU/US Markets

EU-US Networks


![FedEx Atlantic Entity Onboard Freight Tonnes](image)

Source: DoT T100 data

**Figure 77: FedEx Entity Onboard Freight Tonnes**

FedEx operates its primary US hub at Memphis and has a regional hub at Indianapolis and a European gateway/regional hub at Newark. In 2005, FedEx carried 118,000 tonnes of cargo to and from EU airports and 67% of the traffic was routed via Memphis. The primary US gateway to Europe, Newark, handled 20% of the traffic with Indianapolis having 11%. The pattern of development over the last 10 years shows the use of Indianapolis as a gateway sometime between 1995 and 2000, although traffic has declined since then. Similarly, the national and gateway airports grew equally between 1995 and 2000, but Memphis has increased its share of traffic, while Newark has had a decline in total traffic from 2000 to 2005. (Note that this may be a result of traffic moving on round-the-world flights between Europe and Asia.) The growth in the number of departures has a similar pattern between airports, although the growth in Memphis flights relative to total flights is higher and the decline in Indianapolis flights was greater.

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<tbody>
<tr>
<td>Memphis Intl Airport</td>
<td>55,713</td>
<td>69,125</td>
<td>4.4%</td>
<td>74,272</td>
<td>1.4%</td>
</tr>
<tr>
<td>Newark Intl Airport</td>
<td>29,407</td>
<td>36,114</td>
<td>4.2%</td>
<td>22,342</td>
<td>-9.2%</td>
</tr>
<tr>
<td>Indianapolis- Indiana</td>
<td>0</td>
<td>14,853</td>
<td>0.0%</td>
<td>11,954</td>
<td>-4.2%</td>
</tr>
<tr>
<td>All Other</td>
<td>3,320</td>
<td>2,721</td>
<td>-3.9%</td>
<td>2,641</td>
<td>-0.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88,440</strong></td>
<td><strong>122,812</strong></td>
<td><strong>6.8%</strong></td>
<td><strong>111,209</strong></td>
<td><strong>-2.0%</strong></td>
</tr>
</tbody>
</table>
The US routing patterns for UPS are more oriented towards its primary gateway to Europe than for FedEx. In 2005, UPS handled 118,000 tonnes of US-EU traffic with 68% routed via its Philadelphia gateway and only 16% via its primary hub at Louisville, just slightly more than was routed by an alternative East Coast gateway, Newark. This routing pattern has been relatively consistent over the last 10 years, although both Philadelphia and Louisville expanded their shares while Newark’s absolute traffic declined.

The service patterns in terms of departures have a similar distribution by US airport with Philadelphia’s departures growing faster than its traffic levels over the period, while Louisville’s departures grew slower from 2000 to 2005 and actually declined from 1995 to 2000.

The routing patterns for the EU carriers (DHL and TNT) are more difficult to determine due to the high use of contract carriers. The last year that the US airline, DHL Airways, handled significant T-100 traffic was 2001 when a total of 54,000 tonnes moved between the US and EU. Nearly three-quarters of the traffic moved via JFK with only one-quarter via its Cincinnati hub and limited traffic by other gateways. This pattern is somewhat similar to that of UPS with the heavy reliance on the East Coast gateway relative to the national hub. It is likely that DHL’s expansion in the US domestic market will result in expansion patterns in the Transatlantic that are similar to UPS and FedEx, i.e., expansion of both hub and
gateway routings. TNT’s airline does not operate US-EU flights although they route traffic via both dedicated flights operated by other airlines and multi-user all-cargo and passenger flights. TNT has limited US express traffic accounting for just 31 million euros for all of North America in 2004 according to its annual report.

![DHL's U.S.-EU Enplaned Air Cargo U.S. Airport (2005)](image)

**Figure 78: DHL US-US Air Cargo by Airport**

The distribution of US integrated carrier traffic by EU airport has similar characteristics to that of the US networks, albeit driven by the unique geographical features of that market. FedEx has its intra-EU hub at Paris-CDG and also routes US traffic to and from the UK and Germany with direct flights. In 2005, FedEx routed 54% of its traffic via Paris, but the remainder was almost equally split between London-Stansted that is used for handling both UK and Ireland traffic and Frankfurt that is a direct “bypass” routing for this high volume market. The historical pattern shows the building of the Paris hub that was opened for intra-EU traffic in 1992 with traffic averaging 9.7% annual growth from 1995 to 2000 followed by a net decline that exceeded the total (-3.8% per year versus -2.0%). Similarly, the Stansted gateway grew from 1995 to 2000 (at 6.7% per year), but has declined significantly through 2005. In comparison, the Frankfurt gateway more than tripled from 2000 to 2005, a period just after an Open Skies agreement was implemented in 1999. Note that the decline in traffic via “All Other” airports from 1995 to 2005 included a loss of over 5,000 tonnes at Prestwick, Scotland.
UPS routes nearly half of its US-EU traffic via direct flights to its Cologne hub with East Midlands, Paris and London-Stansted all with significantly traffic shares. Unlike FedEx, UPS had higher growth at its hub from 2000 to 2005 than for the previous five years, a period during which nearly 700 direct flights were initiated to Paris and Stansted. The UK airports had the highest growth between 2000 and 2005 with flights and traffic more than doubling.

### Table 91: Airport Patterns for FedEx Transatlantic Operations

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<tbody>
<tr>
<td>Enplaned Tonnes</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Charles De Gaulle Airport</td>
<td>46,105</td>
<td>73,280</td>
<td>9.7%</td>
<td>60,509</td>
<td>-3.8%</td>
</tr>
<tr>
<td>Stansted Airport</td>
<td>29,848</td>
<td>41,275</td>
<td>6.7%</td>
<td>24,932</td>
<td>-9.6%</td>
</tr>
<tr>
<td>Frankfurt Intl Airport</td>
<td>6,743</td>
<td>6,716</td>
<td>-0.1%</td>
<td>22,812</td>
<td>27.7%</td>
</tr>
<tr>
<td>All Other</td>
<td>5,744</td>
<td>1,542</td>
<td>-23.1%</td>
<td>2,957</td>
<td>13.9%</td>
</tr>
<tr>
<td>Total</td>
<td>88,440</td>
<td>122,812</td>
<td>6.8%</td>
<td>111,209</td>
<td>-2.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Departures</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles De Gaulle Airport</td>
<td>595</td>
<td>1,094</td>
<td>13.0%</td>
<td>1,073</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Stansted Airport</td>
<td>822</td>
<td>1,143</td>
<td>6.8%</td>
<td>1,050</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Frankfurt Intl Airport</td>
<td>67</td>
<td>115</td>
<td>11.4%</td>
<td>411</td>
<td>29.0%</td>
</tr>
<tr>
<td>All Other</td>
<td>356</td>
<td>122</td>
<td>-19.3%</td>
<td>92</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Total</td>
<td>1,840</td>
<td>2,474</td>
<td>6.1%</td>
<td>2,626</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, T-100 data for selected carriers

### Table 92: Airport Patterns for UPS Transatlantic Operations

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Enplaned Tonnes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cologne/Bonn Metro</td>
<td>41,485</td>
<td>43,245</td>
<td>0.8%</td>
<td>56,696</td>
<td>5.6%</td>
</tr>
<tr>
<td>East Midlands, UK</td>
<td>13,435</td>
<td>10,625</td>
<td>-4.6%</td>
<td>21,239</td>
<td>14.9%</td>
</tr>
<tr>
<td>Charles De Gaulle</td>
<td>0</td>
<td>18,634</td>
<td>0.0%</td>
<td>19,380</td>
<td>0.8%</td>
</tr>
<tr>
<td>Stansted Airport</td>
<td>0</td>
<td>8,303</td>
<td>0.0%</td>
<td>14,874</td>
<td>12.4%</td>
</tr>
<tr>
<td>All Other</td>
<td>515</td>
<td>201</td>
<td>-17.1%</td>
<td>5,578</td>
<td>94.3%</td>
</tr>
<tr>
<td>Total</td>
<td>55,435</td>
<td>81,008</td>
<td>7.9%</td>
<td>117,768</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Departures</th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cologne/Bonn Metro</td>
<td>818</td>
<td>876</td>
<td>1.4%</td>
<td>1,278</td>
<td>7.8%</td>
</tr>
<tr>
<td>East Midlands, UK</td>
<td>595</td>
<td>263</td>
<td>-15.1%</td>
<td>514</td>
<td>14.3%</td>
</tr>
<tr>
<td>Charles De Gaulle</td>
<td>0</td>
<td>498</td>
<td>0.0%</td>
<td>519</td>
<td>0.8%</td>
</tr>
<tr>
<td>Stansted Airport</td>
<td>0</td>
<td>201</td>
<td>0.0%</td>
<td>501</td>
<td>20.0%</td>
</tr>
<tr>
<td>All Other</td>
<td>8</td>
<td>4</td>
<td>-12.9%</td>
<td>65</td>
<td>74.7%</td>
</tr>
<tr>
<td>Total</td>
<td>1,421</td>
<td>1,842</td>
<td>5.3%</td>
<td>2,877</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, T-100 data for selected carriers
As with the US routings, DHL provides limited data showing its EU routings. In 2001, DHL Airways routed 58% of its traffic via the DHL Brussels hub with 42% via East Midlands.

\[\text{Figure 79: DHL US-EU Enplaned Airports}\]

**Intra-EU Networks**

Data available on FedEx development of its EuroOne network is a good example of how these networks are structured.

\[\text{Figure 80: FedEx Intra EU Operations from CDG}\]

The graph above shows the expansion of FedEx’s network breadth 1990-2000. In 1990, FedEx had no intra-Europe service that touched CDG. By 2001, FedEx operated regular non-stop service between CDG and 17 European points. It should be noted that this metric does not fully capture the range of FedEx’s service within Europe. With respect to air service, FedEx serves certain destinations with flights that tag-on to its non-stop flights to and from CDG (e.g. a flight routed Paris CDG-Copenhagen-Stockholm). Other destinations are served with limited frequency and are thus not captured in the destination counts.
provided in the graph below. FedEx also uses contract carriers in certain markets that operate on its behalf. These operations are not included in the available data.

![FedEx European Destinations Served Nonstop from CDG by Year](image)

Source: DoT T100 data

Figure 81: FedEx Number of Destinations Served from CDG

UPS followed a similar development pattern, although UPS’s intra-EU network has been active for a longer period and UPS also serves domestic markets such as Germany. In 2002, UPS had 26 nightly arrivals at its Cologne hub including a flight from its US gateway, Philadelphia, a flight from its intra-Asia hub in the Philippines (via India), and Middle East flight via Turkey.\(^{370}\) The intra-Europe points served included 4 U.K/Ireland flights, 3 France flights and 3 Germany flights with all of the points listed below:

<table>
<thead>
<tr>
<th>City</th>
<th>City</th>
<th>City</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geneva</td>
<td>Munich</td>
<td>Zurich</td>
<td>Leipzig</td>
</tr>
<tr>
<td>Toulouse/Lyon*</td>
<td>Berlin</td>
<td>Prague</td>
<td>Edinburgh</td>
</tr>
<tr>
<td>Helsinki/Malmo*</td>
<td>Dublin</td>
<td>Bordeaux/Rennes*</td>
<td>Basel</td>
</tr>
<tr>
<td>Venice/Rome*</td>
<td>Stockholm</td>
<td>Vienna</td>
<td>Paris</td>
</tr>
<tr>
<td>East Midlands</td>
<td>Milan/Athens*</td>
<td>Lisbon/Oporto*</td>
<td>Barcelona/Valencia*</td>
</tr>
<tr>
<td>London</td>
<td>Madrid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Multi-stop flights

Table 93: UPS Intra-Europe Cities served

All of these flights were scheduled to arrive between 9:50 p.m. and 12:55 a.m. and all departed between 1:40 a.m. and 6:00 a.m.

In June 2003, UPS began construction of a major expansion of its hub facilities at Cologne. The $135 million project was completed in February 2006 and represented UPS’ largest infrastructure investment outside of the United States. The expansion almost doubled the hub’s sorting capacity to 110,000 packages per hour and doubled the area of the sort facilities

to 813,000 square feet. UPS has stated that it could further expand the facility to handle up to 165,000 packages per hour. UPS expects that expansion of its European business will increase the number of people it employs in Cologne by several hundred over the 1,800 people it already employed in Cologne as of January 2006.

DHL and TNT have been active in the intra-EU market for longer than both FedEx and UPS and therefore have more highly developed networks and a larger share of the market. Both carriers are also subsidiaries of large transportation groups that have dominant positions in the European market.

The Europe market, the largest express market for DHL, accounted for $11.6 billion euros of revenues in 2004 (including both intra- and extra-Europe traffic). DHL operates its air network from a Brussels hub that will be moved to Leipzig in 2008. DHL utilizes a combination of in-house airlines and external flights to create its air network. This structure is mostly due to past requirements to have regionally-based airlines (e.g. UK, MidEast, Latin America), but it is also due to the high availability of non-dedicated lift out of Brussels to Europe and the world. The EU liberalization gives DHL the ability to operate a single EU airline for its intra-EU operations, although it continues to use contract services in certain markets. As with the integrated carriers throughout the world, DHL has sought to expand its market presence by expansion into other markets (e.g. logistics, larger shipment sizes), often through acquisition of major players in those markets.

Europe accounts for 81% of TNT’s total express revenues (in 2004), again including both intra- and extra-Europe traffic. Using a definition of the express market based on shipment size and delivery standard, TNT estimates it handles 22% of the Europe market compared to 24% for DHL and 14% for UPS and FedEx combined. TNT’s operation accounts for over 32,000 employees in Europe (72% of its worldwide total for express). As stated above, TNT has a highly developed ground network that is used for express services with 70% of its European express traffic moving via ground. TNT’s air network is based at Liege Airport, but its ground hub is located at Arnhem. TNT operates two airlines, TNT Airways registered in Belgium and Pan Air registered in Spain, on an estimated 4,000 scheduled flight segments per week.

Intra-US Networks

The US domestic express market developed with the expansion of FedEx’s air network in the 1970’s and UPS’ expansion from its reliance on ground parcels in the 1980s. The two carriers now provide similar domestic networks that utilize a primary air hub (Memphis for FedEx and Louisville for UPS), multiple regional hubs, independent ground networks competing for both air and truck traffic, and a blend of domestic and international traffic handled throughout the network.

Until recent years, the air express market was also served by four other carriers as well as the US Postal Service. Although each carrier offered other product lines, Emery and Bax Global concentrated on the business-to-business “heavy freight” air market, while ABX (Airborne) and DHL competed for small package air traffic. Each operated an air hub network that operated in a similar fashion to FedEx and UPS, albeit on a smaller scale and mostly limited to domestic service (other than DHL). Emery was first acquired by Menlo Logistics and then as part of that company’s acquisition, is being absorbed into UPS. Bax Global was recently acquired by a German conglomerate, Deutsche Bahn Group, which also purchased a major international freight forwarder, Schenkers. As described above, DHL has purchased the ground and hub elements of ABX and is integrating the two air and ground networks. While the USPS continues to provide express services, FedEx is responsible for the air transportation of its Priority Mail product.
The most recent trend in the US domestic networks has been the expanded use of ground trucking to provide express services. Many “air express” shipments never see an airplane, particularly traffic moving within a concentrated market region (e.g. US Northeast corridor) or that originating and terminating within 2 to 3 hours of a sort hub. Air express carriers now compete with “express trucking” companies, but each is similarly competing for ground business.

As with international services, the US express carriers offer a broad range of delivery options ranging from “first flight out” same-day delivery to deferred ground delivery. Each carrier offers a “traditional” overnight service as well as higher cost “early morning” delivery to major markets. Similarly, they offer numerous value-added services including logistics and warehouse management. The diversity of services is shown by the wide range of delivery vehicles that range from small vans to multi-unit over-the-road trucks.

The strong growth in the air express market over recent decades, along with the shift to ground transport, and the expansion of service levels has affected the domestic network design. The original model had a single airport sort hub located mid-continent and nightly flights connecting with service airports for individual market areas. Rising traffic levels and increased congestion at the primary hub combined with an increasing desire for earlier delivery times, led to the development of “regional hubs” serving a sub-region of the US market (e.g. West Coast, US Northeast). Large markets are now served by flights to the primary hub and a regional hub, and may have direct flights to other major markets that bypass the hubs altogether (e.g. New York-Los Angeles). Local traffic (e.g. intra-city) may also be diverted from the hub using local sorts.

The expansion in the complexity of current US express networks can be shown using statistics for FedEx. The original system had most shipments unloaded from an origin market flight and sorted at the sort hub to a destination market flight. The sort hub accounted for half of the traffic (as measured using enplaned tons) with the remaining traffic distributed based on the size of market. The figure below shows that in 2004, Memphis accounts for just 35% of FedEx’s domestic 371 enplaned tons, while five other hubs or gateways account for an additional 25% including both sort and local/destination traffic.

---

371 Excluding flights to/from Anchorage
Express traffic moves under a wide variety of methods depending on the level of traffic flow and the available air and ground routing options. Where formerly a single sort hub would have one or two flights to individual service airports per day, a single market may have multiple flights to/from a primary hub, flights to one or more regional hubs plus one or more direct flights to high traffic markets. The pie chart below breaks down FedEx’s domestic onboard freight tons into three groups: HubSpoke (e.g. Memphis-Miami), HubtoHub (e.g. Memphis-Oakland), and HubBypass (i.e. segments where neither the origin nor destination touches a hub). While the vast majority of FedEx’s domestic traffic is routed via its hubs, a substantial portion (6%) bypasses any hub and 20% uses multiple hubs.
not include markets within regional networks that can be served with ground services due to shorter travel distances (relative to national network).

![FedEx Domestic Destinations served nonstop by Domestic Hubs, 2004 (minimum 60 departures)](image)

**Figure 84: FedEx Non Stop Domestic Destinations**

### A1.4 AIR CARGO FOR ALL-CARGO AND COMBINATION AIRLINES

Air cargo not controlled by the integrated carriers moves on passenger and freighter flights with freighter operations by both all-cargo and passenger airlines. The following sections provide background information on the “All-Cargo” markets consisting of freighter operations by all non-integrated carriers, as well as general air activity for passenger carriers.

**EU-US All-Cargo Market**

The non-integrated operators of freighter aircraft (“all-cargo”) handled over 806,000 tonnes of enplaned traffic between the EU and US in 2005 accounting for 31% of total traffic.\(^{372}\) The all-cargo carriers averaged 6.1% annual growth in traffic from 2000 to 2005 with their market share increasing from 23% as overall traffic declined slightly in the market. Growth in this period declined over the previous five year period that averaged 6.5% annual growth. The growth in traffic was slightly exceeded by an increase in capacity that averaged 6.2% annual growth from 2000 to 2005 as the overall load factor declined slightly from 72% in 2000 to 69% in 2005. The number of freighter operations grew slower than capacity over the same period as the average aircraft size increased from 83.9 tonnes of capacity to 95.3 tonnes.

Passenger airlines accounted for 46% of the all-cargo traffic in 2005. The cargo airlines’ freighter traffic grew significantly faster than that of passenger airlines from 2000 to 2005, increasing the market share from 37% to 54%. Part of this trend is attributable to less

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\(^{372}\) The T-100 data identifies the operating carrier and does not attributed ACMI operators to the controlling carrier. Some of the traffic shown here is integrated carrier traffic moving on dedicated flights operated by other airlines. Similarly, some of the traffic attributed to all-cargo airlines may be flights operated for combination carriers.
freighter operations by passenger airlines, as well as increased use of ACMI operators for remaining flights.

The top market for all-cargo traffic in 2005 was Germany with 216,900 tonnes or 26.9% of total traffic. The UK was the second largest market with 114,000 tonnes followed by the Netherlands (111,700 tonnes), Belgium (110,000 tonnes), and France (98,500 tonnes). The fastest growing markets were Belgium, Netherlands and UK that each grew more than 10% per year from 2000 to 2005. (Some of this growth may be attributable to integrated carrier’s ACMI flights, particularly for Belgium and the UK) Germany and France grew at less than the EU average. Both of these markets have integrated hubs which compete for some of the same freight as handled on these all-cargo flights.

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</thead>
<tbody>
<tr>
<td>Germany</td>
<td>158.1</td>
<td>173.1</td>
<td>216.9</td>
<td>26.9%</td>
<td>1.8%</td>
<td>5.0%</td>
</tr>
<tr>
<td>UK</td>
<td>10.7</td>
<td>51.2</td>
<td>114.0</td>
<td>14.1%</td>
<td>36.7%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>59.9</td>
<td>71.7</td>
<td>111.7</td>
<td>13.8%</td>
<td>3.7%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Belgium</td>
<td>8.8</td>
<td>43.4</td>
<td>110.0</td>
<td>13.6%</td>
<td>37.5%</td>
<td>22.5%</td>
</tr>
<tr>
<td>France</td>
<td>88.5</td>
<td>77.0</td>
<td>98.5</td>
<td>12.2%</td>
<td>-2.8%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>74.4</td>
<td>96.7</td>
<td>76.6</td>
<td>9.5%</td>
<td>5.4%</td>
<td>-5.0%</td>
</tr>
<tr>
<td>All Other</td>
<td>37.1</td>
<td>86.5</td>
<td>78.8</td>
<td>9.8%</td>
<td>18.5%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>437.5</td>
<td>599.5</td>
<td>806.5</td>
<td>100.0%</td>
<td>6.5%</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

Table 94: US-Europe Enplaned Freight Tonnes by Country, 2005

The importance of all-cargo operations differs significantly by EU market. Luxembourg, the hub of all-cargo airline, Cargolux, had 100% of its US traffic moving by freighter with other large markets such as Belgium (73%), the Netherlands (39%) and Germany (37%) also with
high market shares. France’s share via cargo airlines is slightly lower at 28%, again based on the high level of integrated capacity. It is interesting to note that four of the restricted markets, Ireland (9%), Hungary (8%), Spain (1%) and Greece (1%), have relatively low levels of freighter service (and no integrated service).

![ALL-CARGO SHARE OF TOTAL EU-US ENPLANED CARGO BY MARKET (2005) (Million Tonnes)](image)

Figure 86: Share of Total Air Cargo by All-Cargo Operations 2005

Table 26 provides tonne share data for the largest non-integrated all-cargo carriers in the US-Europe market.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Enplaned Tonnes</th>
<th>% of Total</th>
<th>CAGR 2000-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlas Air- Inc.</td>
<td>158,286</td>
<td>36.3%</td>
<td>34.6%</td>
</tr>
<tr>
<td>Polar Air Cargo Airways</td>
<td>76,650</td>
<td>17.6%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Gemini Air Cargo</td>
<td>62,088</td>
<td>14.3%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Cargolux Airlines Intl S.A</td>
<td>31,950</td>
<td>7.3%</td>
<td>-16.9%</td>
</tr>
<tr>
<td>Kalitta Air</td>
<td>31,716</td>
<td>7.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>All Others</td>
<td>74,815</td>
<td>17.2%</td>
<td>30.9%</td>
</tr>
<tr>
<td>Total</td>
<td>435,506</td>
<td>100.0%</td>
<td>14.5%</td>
</tr>
</tbody>
</table>

*Source: US DoT T100 Market data*

Table 95: US-Europe Onboard Freight Tonnes by Non-Integrated All-Cargo Carrier, 2005

*Atlas and Polar*, the two largest all-cargo carriers in the US-Europe market, are both US carriers operating under a single parent company, Atlas Air Worldwide Holdings. Atlas is primarily an ACMI operator. Polar operates scheduled service that caters to freight forwarders. Both airlines operate air freight charters including military charters. The carriers operate a combined fleet of 42 747s. Combined these carriers account for 54% of the total traffic by these carriers.
Gemini Air Cargo is a US all-cargo carrier that operates ACMI services on behalf of combination, integrated, and other all-cargo airlines with a fleet of DC-10-30Fs and MD-11Fs. The company also operates charters.

Luxembourg-based Cargolux is the largest European all-cargo airline. Cargolux operates scheduled and charter services across a network of 63 scheduled destinations worldwide including 10 in Europe and 53 overseas. As of December 31, 2004, Cargolux operated a fleet of 13 747-400 freighters with two on order. The company focuses on the airport-to-airport market and operates exclusively for freight forwarders. In 2004, Cargolux handled 619,000 tonnes of traffic worldwide and had 1,300 employees (based on AEA statistics).

Kalitta Air is a US carrier that operates scheduled and on-demand charters with a fleet of 14 747 freighters.

While the large European and Asian passenger airlines continue to operate freighters on major trade routes, there has been a decline in capacity particularly by the European carriers. Air France is the top passenger airline with freighter traffic handling 96,000 tonnes in 2005 (26% of the passenger airline market), averaging 4% annual growth since 2000 while the market was stagnant. Lufthansa, Martinair and Air Atlanta Icelandic (a passenger and cargo ACMI operator) are the other top European carriers. British Airways wet leases several 747 freighters from Global Supply System, a UK-based carrier that is a joint venture between a British entrepreneur and Atlas Air. GSS handled over 29,000 tonnes in 2005 (but this is included in the cargo airline totals). No US passenger airline operates freighters in any market except Northwest with limited US-Asia operations.

Other than Air France and Martinair, the European airlines experienced traffic declines over the 2000 to 2005 period reflecting a decline in freighter operations. Lufthansa averaged 64 weekly freighters in 2000, down to 38 in 2005. Air France dropped one-third of their weekly freighter departures while Alitalia’s declined by half. Martinair increased their flights by 50%, while KLM went from 21 weekly departures to none.

The top EU airports for handling all-cargo freighter traffic are major passenger hubs as well as cargo hubs. Frankfurt, Lufthansa’s primary hub, is the top airport with 20% of the total traffic, with 60% of that total coming from passenger airline freighters. Amsterdam is the second largest airport with 14% of the total traffic and 64% of that coming from passenger airlines. Brussels accounted for 12% of the market and split its traffic almost equally between cargo and passenger airlines. Brussels was the top growth airport averaging 22.5% growth over the last 5 years. Paris-CDG is the next largest airport, receiving all of its non-integrated freighter traffic from passenger airlines, while Luxembourg gets all of its traffic from cargo carriers.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Enplaned Tonnes</th>
<th>% of Total</th>
<th>CAGR 2000-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compagnie Nat l Air France</td>
<td>95,976</td>
<td>25.9%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Lufthansa German Airlines</td>
<td>66,241</td>
<td>17.9%</td>
<td>-17.6%</td>
</tr>
<tr>
<td>Martinair Holland N.V.</td>
<td>56,785</td>
<td>15.3%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Air Atlanta Icelandic</td>
<td>50,540</td>
<td>13.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Singapore Airlines Ltd.</td>
<td>39,399</td>
<td>10.6%</td>
<td>45.2%</td>
</tr>
<tr>
<td>All Others</td>
<td>62,030</td>
<td>16.7%</td>
<td>-6.4%</td>
</tr>
<tr>
<td>Total</td>
<td>370,971</td>
<td>100.0%</td>
<td>-0.4%</td>
</tr>
</tbody>
</table>

Source: US DoT T100 Market data

Table 96: US-Europe Enplaned Freight Tonnes by Passenger Carrier Freighters, 2005
Table 97: US-Europe All-Cargo Enplaned Freight Tonnes by EU Airport, 2005

The pattern of traffic for US airports is even more dominated by the top gateways for US-Europe passengers. New York-JFK dominates the market with 29% of the traffic with one-third by passenger airlines and two-thirds by cargo airlines. JFK is the primary European gateway airport for freight forwarders operating on the US East Coast who “consolidate” their shipments over a wide geographical market in order to negotiate high volume-based rates.

Chicago-O’Hare is the second largest US gateway for freighter traffic with 22% of the market followed by Atlanta and Los Angeles, both secondary gateways. Huntsville’s Madison County Airport is an all-cargo airport located in Alabama that is served by Cargolux. All of the airports had a relatively even mix of passenger and cargo airline traffic except Huntsville that was almost entirely cargo-based.

JFK grew at a lower rate than the overall market from 2000 to 2005, reflecting the expansion of passenger markets to secondary gateways such as Atlanta that increased 14.2% per year. O’Hare grew slightly below the national average, while both Los Angeles and Huntsville had traffic declines.

Table 98: US-Europe All-Cargo Onboard Freight Tonnes by US Airport, 2005

The non-integrated freighter operators handle a wide range of commodities, as determined by the customers of their primary customers, freight forwarders. Forwarders typically handle traffic that is lower-valued, of higher-volume and/or moving in larger shipment sizes than most traffic using the integrated carriers, although forwarders also directly compete with those carriers for distribution of high-value commodities particularly if they move in the large volumes. However, it is reasonable to say the all-cargo freighters depend heavily on the high-volume low-value commodity markets while the integrated carriers tailor their services to high value shipments that can support their significantly higher express rates.

373 Alaska airports that are technical stops for Europe-Asia routings were excluded from this list, but included in the totals.
374 While the distinction is clearer for infrequent shipments, the integrated carriers will negotiate rates that are competitive to freight forwarders for large shippers regardless of the commodity value.
The primary all-cargo market for this analysis is defined as air shipments of commodities with an average value of less than $100 per kilo in 2005. This “air freight” market between the EU and US is estimated at 1.4 million tonnes in 2005 with the westbound market exceeding the eastbound market by 152,000 tonnes. The total market value is $43.4 billion at an average value of $30 per kilogram. The westbound market is slightly higher valued at $33 per kilogram compared to $27 per kilogram eastbound.

The EU-US air freight market declined between 2000 and 2005 in terms of shipment weight at an annual average of 1.1% per year. Shipment value increased slightly at 1.1% per year, but, if measured in constant dollars, would have declined as well. In contrast to the express commodity market, westbound shipment volumes declined from 2000 to 2005 while eastbound shipment weight increased marginally. The 2000-2005 period contrasts sharply with the previous five year period when total traffic increased at an average of 6.2% per year with westbound traffic up 7.8% per year.

The top EU trade markets for air freight in 2005 were Germany, UK, Italy, and the Netherlands. All of the top markets declined in absolute tonnage from 2000 to 2005 with the greatest decline by Spain followed by the Netherlands and UK The markets with the least decline were Ireland, Germany and Italy.

The top freight commodities moving in EU-US trade include machinery and other parts, perishables, published materials, and apparel. The top westbound commodities in 2005 were plumbing parts (taps, cocks and valves), motor vehicle parts, machinery parts, transmission components, pumps, and vegetables. The top eastbound commodities were similar types of manufactured products such as motor vehicle parts and machinery parts as well as consumer goods such as printed matter live crustaceans, horse meat, beauty products, and lettuce.

The growth patterns varied significantly by commodity and origin/destination which is a reason why freighter services must be flexible and adjust to underlying industrial and consumer patterns that can shift quickly. The freighter operators must tailor their services to follow these various trends that combine to create their aggregate market.

Intra-Regional All-Cargo Markets

Non-integrated freighter operations in both the intra-US and intra-EU markets have declined in importance in recent years based on the continued improvement of ground trucking networks and the expansion of integrated carriers into the heavy freight market by both air and truck. While still serving the niche market between passenger-based and integrated lift, that niche is much narrower for the intra-regional markets. With carriers leaving these markets, the opportunities for expansion with the OAA are limited, other than to support international routes with fill-up traffic that might be available with US cabotage rights or expanded EU 5th freedoms.

Intra-US Market

US domestic freighter operations have traditionally been oriented to providing freight forwarders with alternative lift to passenger flights and the higher-cost integrated carrier services against which they competed for shipper accounts. Over the years, a number of airlines operated forwarder-dependent flight networks, often tailoring service to major customer bases (e.g. the auto industry). Some airlines carried USPS mail, and even, overnight bank checks. The dual expansion in the integrated carriers’ market coverage (e.g. LTL shipping) and the rise of “air truckers” (e.g. Forward Air) eliminated much of the
market for these airlines with most operating in specialty markets (e.g. US-Puerto Rico garment trade, military, charter).

Based on T-100 statistics, the non-integrated freighter operations handled 1.2 million tonnes between US airports in 2004, just 11% of total enplaned freight for domestic operations. Even this total overestimates the market as it includes international traffic that is transferred between US airports and some ACMI traffic for other airlines.

<table>
<thead>
<tr>
<th>Airline</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitty Hawk Airlines- Inc.</td>
<td>169,806</td>
</tr>
<tr>
<td>Polar Air Cargo Airways</td>
<td>148,978</td>
</tr>
<tr>
<td>Atlas Air- Inc.</td>
<td>145,393</td>
</tr>
<tr>
<td>Express.Net Airlines</td>
<td>132,929</td>
</tr>
<tr>
<td>Air Transport International</td>
<td>126,412</td>
</tr>
<tr>
<td>Capital Cargo International</td>
<td>98,480</td>
</tr>
<tr>
<td>Tradewinds</td>
<td>94,393</td>
</tr>
<tr>
<td>Ryan International Airlines</td>
<td>60,680</td>
</tr>
<tr>
<td>World Airways- Inc.</td>
<td>45,892</td>
</tr>
<tr>
<td>Kalitta Air</td>
<td>43,615</td>
</tr>
<tr>
<td>Northern Air Cargo- Inc.</td>
<td>28,173</td>
</tr>
<tr>
<td>Custom Air Transport</td>
<td>25,445</td>
</tr>
<tr>
<td>Omni Air Express</td>
<td>21,021</td>
</tr>
<tr>
<td>Empire Airlines- Inc.</td>
<td>19,422</td>
</tr>
<tr>
<td>Evergreen Intl - Inc.</td>
<td>12,643</td>
</tr>
<tr>
<td>Gemini Air Cargo</td>
<td>9,345</td>
</tr>
<tr>
<td>American Trans Air- Inc.</td>
<td>8,748</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,191,374</td>
</tr>
</tbody>
</table>

Source: US DoT T100 Market data

Table 99: Intra-US Enplaned Tons for All-Cargo Airlines, 2004

The top airline is Kitty Hawk which operates a nightly air network in support of forwarders, logistics companies and airlines that need extra lift. Kitty Hawk operates a hub in Fort Wayne, Indiana that is used to sort both air and ground traffic. (Kitty Hawk also operates a scheduled LTL ground network freight with regional hubs throughout the country.) Kitty Hawk’s air network serves 24 markets nightly using 727-200F aircraft. Kitty Hawk also operates flights for Bax Global, a heavy freight integrated carrier with a hub in Toledo, Ohio.

The second largest carrier, Polar Air Cargo, is most representative of the current status of “domestic” freighter operations by non-express airlines. Polar operates a number of domestic frequencies but all are segments of international flights or connect to international gateways. Polar connects the major cargo markets of New York, Chicago and Los Angeles with Miami and Honolulu, but utilize flights that continue on to Latin America or Australia. While available to carry domestic freight, most of that traffic is probably moving to a gateway for international transport (especially at Miami). Most of the other airlines operate similarly, either wet leasing aircraft to other airlines or connecting to offshore US points.

Intra-EU Market

The intra-EU market for non-integrated freighter airlines operating flights other than for integrated carriers has also been squeezed by the ground and integrated carriers. Boeing (in the World Air Cargo Forecast 2004/2005) estimated that non-express scheduled freighter service has declined 5.2% per year on average since 1998 as “truck is now the preferred mode of transport for most freight and mail” for intra-EU traffic. While no statistics exist for
these carriers, the share of total intra-EU traffic is probably minimal, other than that moved for the integrated carriers or on off-shore routes (e.g. Channel Islands).

**Air Cargo Activity on Passenger Flights**

Roughly half of worldwide air cargo travels in the belly of passenger aircraft. FedEx and UPS are the only all-cargo airlines among the top ten largest air cargo carriers worldwide (as ranked by IATA). While there are no U.S combination carriers among the top ten, there are two European combination carriers, Lufthansa and Air France. In the US, only one global network carrier (Northwest) has a dedicated freighter operation. In contrast, in Europe, most of the large global network carriers have dedicated freighters in their fleets (e.g. Lufthansa, Air France/KLM) and/or wet-lease freighters (e.g. British Airways). Cargo generally accounts for a larger percentage of total revenue for European combination carriers than for US combination carriers. The graph below contrasts the percentage of total company revenue accounted for by cargo at some of the largest US and European combination carriers.

![Cargo/Logistics as a Percentage of Total Revenue](image)

**Figure 87: Cargo/Logistics as % of Major Airline Total Revenues**

Certain combination carriers have expanded the concept behind their global branded alliances (i.e. Star, SkyTeam, and oneworld) specifically to the cargo market. All of the SkyTeam carriers (Delta, Air France, Korean, et al) participate in the SkyTeam Cargo alliance. The WOW alliance is made up of Lufthansa, SAS, Singapore Airlines and Japan Airlines. All of WOW’s members are also Star Alliance members, with the exception of Japan Airlines which has announced its intention to join oneworld. As with the passenger alliances, two of the major objectives of the combination carrier cargo alliances are to leverage the combined network of the partner carriers and to present a more unified face to the customer.

Non-branded partnerships between combination carriers or between combination carriers and non-combination carriers are common. For example, since British Airways does not have slots at London Heathrow for its (leased) freighter operations, these aircraft operate out of London Stansted. In order to augment the cargo capabilities of its passenger aircraft at its Heathrow base, BA shares space on certain carriers that operate freighters into Heathrow,
including Korean Air, EVA, and Japan Air Lines. As another example, in 2004, Lufthansa and DHL formed a joint venture whereby Lufthansa operates certain intercontinental flights for DHL. The companies split and separately market the capacity on these flights. Lufthansa had previously owned 25% of DHL but sold its stake to DPWN in the early 2000s.
APPENDIX 2 ANALYSIS OF REMOVAL OF OUTPUT RESTRICTIONS

Overview

Our analysis of the impact of Open Skies agreements on passenger levels can broadly be divided into three stages:

- initial descriptive analysis
- regression analysis
- estimation of the potential impact of creating similar agreements in countries which currently have output restrictions.

The first stage of this analysis, which is found in the body of this report, consisted of examining the high level picture of the growth in traffic using standard indices. This was essential to increase our understanding of the market and to inform our specification of the regression model.

To establish the significance of the effect of Open Skies agreements on the volume of transatlantic traffic, a regression model was built which quantified the relationship between traffic and a number of explanatory variables. A dummy variable of Open Skies was created which had a positive value for the five years following the signing of the agreements. Regressing the traffic growth on this explanatory variable allowed us to determine the magnitude of its impact as well as to test its statistical significance.

All the variables used were converted to year-on-year percentage change in order to minimize the impact of growth over the period. This also has the advantage of decreasing the potential for heteroscedasticity\(^{375}\), a common problem in analysing time series.

The model was deliberately kept as simple as possible. The priority was explaining as much of the variation of the traffic volume with the minimum number of explanatory variables.

In the final stage, the results obtained from the regression analysis were used to make predictions about the impact of establishing similar arrangements in countries which currently have output restrictions and thus estimate the potential benefits of establishing Open Skies agreements in those countries.

Data

We grouped together the countries according to when they signed up to an Open Skies agreement:

1. The 1995 Group consisted of countries which entered into Open Skies agreements in 1995 - Austria, Belgium, Czech Republic, Denmark, Finland, Netherlands, Sweden, Iceland, Norway and Switzerland.

2. The New Entrants Group consisted of countries which signed up post-95 - France, Germany, Italy, Poland and Portugal.

3. The third group consisted of countries which do not currently have Open Skies agreements: Greece, Hungary, Ireland, Spain and the UK.

\(^{375}\) This arises when the variables have different variances which can produce a bias when applying regression analysis.
Cyprus, Estonia, Luxembourg, Latvia, Lithuania, Malta, Slovakia and Slovenia were excluded from the analysis as their provision of scheduled transatlantic traffic over the period under investigation was relatively low and intermittent.

For each group we based our dependent variable on T100 traffic data. We took the absolute volume of passengers for the relevant country for each year, subtracted number of passengers from the previous year and divided the result by the passengers for the previous year. This gave us the percentage change (growth rate) for passenger traffic.

In terms of dependent variables, official GDP figures were obtained from the OECD. As with traffic data, it was the growth rate of GDP rather than the absolute value which was used.

**Methodology**

A linear-regression model was built of the form:

\[ \Delta \text{Traffic} = \alpha + \beta_1 \Delta \text{US_GDP} + \beta_2 \Delta \text{Home_GDP} + \beta_3 \text{Open_Skies} + u \]

Where:

- \( \Delta \text{Traffic} \) is the percentage change in transatlantic traffic
- \( \Delta \text{US_GDP} \) is the percentage change in US GDP
- \( \Delta \text{Home_GDP} \) is percentage change in the combined GDPs of the countries in the relevant group\(^{376}\)
- \( \text{Open_Skies} \) is a dummy variable
- \( u \) is the error term

As detailed above, we were exclusively interested in the effect of Open Skies on the growth rate, rather than the absolute value, of transatlantic traffic.

A dummy variable of Open Skies was created for each group of countries. It took the value 1 for the year that the Open Skies agreement was signed and for the four years following. At all other times it took the value 0. Thus for the 1995 Group it took the value 1 from 1995-1999, while for the New Entrants it took the value 1 from 1999-2003 (1999 being the median year that those countries signed the agreement).

As an extra test, the number of years for the Open Skies dummy variable was varied between 3 and 6 years.

Our interest is primarily on the macro-level influence of Open Skies rather than the effect it has on individual routes therefore we decided to study the data only at the level of aggregate country groupings. This meant, however, that we had fewer data points to study and thus fewer degrees of freedom which limited the number of explanatory variables we could reasonably use in our model. We mitigated this in part by using only three explanatory variables: the relevant GDP figures which provided a good fit to our data, alongside our Open Skies dummy. Other variables were considered, such as price levels, but since these may correlate with traffic growth, the impact of Open Skies, as well as with GDP, it was decided to exclude them to avoid cross correlation.

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\(^{376}\) GDP of countries in the Eurozone only were used, although other measures were considered. This was to minimise spurious outcomes as a result of exchange rate fluctuation.
It should not be inferred from this that GDP alone has a large direct impact on air travel. Studies have typically shown passengers to be as sensitive to changes in price as income. However, GDP growth serves as an indicator of the overall health of the economy. It is responsive to shocks in a similar way that air travel is. It is likely, therefore, that the strong correlation observed between GDP and air traffic growth is only in part causal, the remainder resulting from both indices responding in similar ways to exogenous events.

In the final stage of our analysis, the value calculated for the effect on growth of removing output restrictions was applied to the growth rates of the non-Open Skies countries, yielding an estimate of the increased traffic over the course of five years following implementation of such an agreement. As with all predictive statistics, there is a high level of uncertainty associated with the results. As noted throughout this report, the airline industry is highly sensitive to politico-economic shocks, and these are by their nature difficult to predict.

Regression Results

The results of the regression analyses gives a high level of confidence to the positive impact of Open Skies on the growth rates of the 1995 Group, and supports the hypothesis that it has a positive impact on the group of New Entrants.

The 1995 Group

As illustrated in the tables below, the simple model provides a good fit to the data, with an R-square of 0.84 and a highly significant F-value. US GDP has a predictably large impact on the growth of transatlantic traffic, while the combined value for GDPs of the countries in this group has an ambiguous influence. This likely to be due to the somewhat overwhelming influence of US GDP on traffic and its greater responsiveness to shocks affecting transatlantic travel (see also footnote 261 above). This could explain the otherwise counter-intuitive result of the Home GDP being negatively correlated with traffic growth.

Open Skies has a positive effect on traffic growth rates, statistically significant at a 95% confidence level. It has a coefficient of 6.4% (with an upper limit of 12%).

<table>
<thead>
<tr>
<th>Regression Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.92</td>
</tr>
<tr>
<td>R Square</td>
<td>0.84</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.04</td>
</tr>
<tr>
<td>F Value</td>
<td>17.16</td>
</tr>
<tr>
<td>Significance F</td>
<td>0.00029</td>
</tr>
</tbody>
</table>

Table 100: Regression Statistics for the 1995 Group

Tests were also run varying the length of time for which the Open Skies variable was positive. It was varied between 3 - 6 years which gave Open Skies a coefficient of between 3.5% and 6.7% (with upper bounds of between 12% and 13%). However, the statistical significance of the results decreased, with indicators such as the R-square and the F-value both being depressed, which implies that our initial hypothesis of five years was the best fit for the data.
It should be stressed, once again, that these results cannot demonstrate causality. Growth of air traffic is affected by myriad variables and we cannot rule out the possibility that an exogenous factor, not considered here, is the true cause of the increased growth observed.

**The New Entrants**

The results for this group are less pronounced, which is not surprising given the catastrophic events which occurred shortly after the Open Skies agreement were put in place.

Once again, there is a reasonably high R-square of 0.79 and a highly significant F value for the overall model. US GDP has a similar impact on growth as before, confirming the hyper-cyclical nature of the airline industry. In this output, however, Home GDP also has a significant effect on traffic growth. This is may be due to the GDPs of the countries in this group, which includes France and Germany, being more influential in world economic terms than the GDPs of the countries in the 1995 Group.

Open Skies has a positive coefficient, albeit lower than before, of 3.3% (with an upper limit of 10%). This result has a t-statistic that is greater than 1, and is significant at the 70% confidence level. While this is not sufficiently significant to definitely assert an effect, it gives an indication that even under extreme economic conditions Open Skies is likely to have a positive impact on traffic growth.

### Regression Statistic

<table>
<thead>
<tr>
<th>Regression Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.89</td>
</tr>
<tr>
<td>R Square</td>
<td>0.79</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.04</td>
</tr>
<tr>
<td>F Value</td>
<td>12.78</td>
</tr>
<tr>
<td>Significance F</td>
<td>0.00093</td>
</tr>
</tbody>
</table>

Table 102: Regression statistics for the New Entrants

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>(0.39)</td>
<td>0.09</td>
<td>(4.57)</td>
<td>0.0010</td>
<td>(0.59)</td>
</tr>
<tr>
<td>US GDP</td>
<td>6.60</td>
<td>1.12</td>
<td>5.86</td>
<td>0.00016</td>
<td>4.09</td>
</tr>
<tr>
<td>Open Skies</td>
<td>0.033</td>
<td>0.029</td>
<td>1.13</td>
<td>0.29</td>
<td>(0.032)</td>
</tr>
<tr>
<td>Home GDP</td>
<td>2.18</td>
<td>0.96</td>
<td>2.27</td>
<td>0.046</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Table 103: Beta-values and their Properties for the New Entrants

When the length of the Open Skies effect was varied from 3 - 6 years, the coefficient ranged from 1.7% to 2.9% (with upper limits of 8.4% to 9.3%). As before, measures of significance were lessened which suggests that a duration of five years is the best fit for the data.

### Quantification of Potential Impact

In the final stage of analysis, the potential impact of removing restrictions was estimated using the results of the regression analysis.

### Traffic Forecast

First, the volume of transatlantic traffic in the relevant countries was estimated without any regulation change. This was calculated using the forecasted long-term growth rate of 4.9%\(^{377}\). Since there is such a high level of uncertainty in this type of analysis, it was agreed that simplicity was the best policy. Naturally, the rate of growth may be substantially

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\(^{377}\) This is the value provided by both Airbus and Boeing in their passenger traffic forecasts for 2004-2023
different due to shocks in the future, but these changes cannot be predicted in any meaningful way.

The graph below illustrates the historical and forecasted levels of traffic for the countries currently without Open Skies.

![Traffic Volume for the Non-Open Skies Countries](image)

**Figure 88: Traffic Volume for the Non-Open Skies Countries**

Traffic volume is expected to surpass 2000 levels only in 2006. The forecast rate of growth is noticeably lower than that experienced in the 1990s suggesting a tighter market than before.

**Results**

To predict the traffic created by an OAA, an additional 6.4% is added to the growth rate representing the enhanced growth due to liberalisation. This is the result gained from 1995 Group and it is the more reliable figure since it was taken in a comparatively stable time, as compared with the result gained from the group of New Entrants.

The graph below illustrates the estimated effect of liberalisation on traffic volumes.
In the first year following liberalisation, an estimated additional 1.4 million passengers are generated, in the second year this increases to 3 million. Altogether, over the course of the five years following the institution of an OAA it is predicted that there will be 26 million more passengers due purely to the liberalisation of output restrictions, ceteris paribus.

After this five year period, the rate of growth will not continue to improve, but the level of traffic will have been shifted upwards. In absence of negative shocks to the market, the level of passenger traffic should be permanently increased by approximately ten million extra passengers per annum. However, due to the uncertainty associated with predictions, these results are not included in our summary tables.

As a lower bound check, the New Entrants growth rate of 3.3% was applied. This results in 13 million additional passengers over the course of five years. This value could be seen as the lower bound in the event of severe negative shocks to demand.

An upper bound was also calculated, applying an additional 10% to the growth rate. This yields 43 million passengers over the same period and could be viewed as an upper bound in the event of favourable market conditions. These scenarios are summarised in the table below:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Growth Rate</th>
<th>Additional Passengers over 5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Bound Scenario</td>
<td>3.3%</td>
<td>13 m</td>
</tr>
<tr>
<td>Expected Scenario</td>
<td>6.4%</td>
<td>26 m</td>
</tr>
<tr>
<td>Upper Bound Scenario</td>
<td>10%</td>
<td>43 m</td>
</tr>
</tbody>
</table>

Table 104: Growth Rates and Additional Passengers from Different Test Scenarios

Conclusions

The analysis suggests that the removal of bilateral restraints has a positive effect on the growth rate of transatlantic traffic for the five years following inception. This can be stated with a high degree of statistical significance for the original countries who signed up in 1995. A positive effect is also observed for countries signing later, but it is not as large nor as statistically significant. This is likely to be due to the unique politico-economic situation in
the first years of the millennium and its negative effect on traffic, and therefore we can reasonably expect the result to have been greater had such shocks not been present.

An improved growth rate in the five years following liberalisation is estimated to result in a predicted 26 million additional passengers, plus 10 million extra passengers per annum thereafter.
APPENDIX 3  CALCULATING ADDITIONAL DEMAND AND CONSUMER SURPLUS

Price reductions caused by increased levels of competition, or enabled by increased cost efficiencies and improved operational efficiencies are likely to stimulate additional demand. Estimating the volume of demand growth expected for any given price reduction is dependent on two key factors:

- the relative maturity and level of competition of the specific market
- the passenger’s purpose of travel, whether for business or leisure.

As prices fall existing consumers benefit from saving money in the difference in the original prices they paid and the new lower fares. This saving can then be spent on additional goods and services further fuelling the economy. New consumers also benefit if the price they pay falls below the price at which they would have travelled. This increase in the consumer’s utility is known as consumer surplus.

The Shifting Supply Curve

The basic microeconomic framework is illustrated below, with a downward sloping demand curve and an upward sloping supply curve. Initially the price is $P_0$ and quantity $Q_0$ is consumed. A reduction in costs means that the same quantity can be supplied at a smaller price. In this case, that an airline can run an aircraft at reduced costs and therefore decrease the price of its tickets.

This reduction in costs causes the supply curve to shift to the right. A new equilibrium is then established with price set at $P_1$ and quantity supplied at $Q_1$. The graph below illustrates this simple case.

This corresponds to a reduction in the price of a ticket and an increase in the number of passengers travelling.
In the following analysis, this shift in the supply curve is assumed and only the demand curve is modelled.

**The Demand Curve and Consumer Surplus**

The demand curve is illustrated below. As the price decreases from $P_0$ to $P_1$, the quantity demanded increases.

![Demand Curve Diagram](Image)

**Figure 91: Demand Curve**

The demand curve is modelled as:

$$Q(P) = kP^{-\varepsilon}$$

*Where:*

- $Q$ is the quantity, modelled as a function of $P$
- $P$ is the price
- $k$ is a constant
- $\varepsilon$ is the elasticity

Quantity corresponds to the volume of traffic and price to the cost of a ticket. $k$ is a constant which is derived from the data available and $\varepsilon$ is the price elasticity of demand (see section below).

The economic benefit that is derived from a cost reduction is the consumer surplus. This is graphically represented as the area delineated by the letters $a,b,c,e$ in the figure above.

The area $a,b,d,e$ is the benefit to existing passengers who will save the full value of any cost reduction. The area $b,c,d$ is the benefit to new passengers, i.e. those who are only travelling due to the price reduction.

Total increase in consumer surplus, the area $a,b,e,c$, is calculated by taking the integral of the demand curve between $P_0$ and $P_1$. The two areas are then separated in order to quantify how the benefit is distributed between the new and existing passengers.
The benefit to existing passengers due to price reductions is arguably not a true benefit to society, rather it is a transfer from the firms (in this case airlines) to the consumers. In contrast, the consumer surplus of the new passengers is a net gain in welfare, with no corresponding loss to the producers.

This model is calibrated using T-100 data to provide quantity figures (i.e., traffic volume) and Form 41 to estimate price information.

This methodological framework is also used to calculate consumer surplus arising from increased output. Increased output implies price decreases, assuming that the firms have been efficient in setting their prices in the past. This in turn gives rise to a consumer surplus.

**Price Elasticity of Demand**

Elasticity is an expression of the relationship between market price and quantity of demand. The nature of demand is such that a reduction in market price will usually lead to an increase in quantity demanded. An elasticity is expressed as the proportionate change in demand for any given proportionate change in price such that:

\[
\varepsilon = \frac{\Delta Q/Q_0}{\Delta P/P_0}
\]

*Where:*

- \(\varepsilon\) is the elasticity of demand with respect to price
- \(\Delta Q\) is the change in demand \((Q_t - Q_0)\)
- \(Q_0\) is the base level of demand
- \(\Delta P\) is the change in price \((P_t - P_0)\)
- \(P_0\) is the base price

Markets, and specifically passengers, tend to fall into two broad categories, dependent on the value of the elasticity, they are generally considered as either elastic or inelastic. An elastic market is one where small changes in cost cause large changes in demand, inelastic markets are the opposite, where large changes in cost cause only small changes in demand. Studies have typically shown leisure passengers to have a demand curve that price elastic (i.e., they are sensitive to changes in fares) and business passengers to be price inelastic (i.e., a reduction in the cost of fares has little effect on their propensity to travel).

For our analysis, two scenarios have been modelled: one with a constant price elasticity of 1 representing a comparatively inelastic demand, and another with an elasticity of 2.5 representing an elastic demand for travel. This follows on from the Brattle Group and is based on wide-ranging industry research.

**Example: Benefits of Interlining**

One of the theoretical benefits anticipated from the development of an OAA is the ability of airlines to cooperate in ways that they cannot currently pursue. Economic benefits will accrue from an improved ability of airlines to coordinate prices and schedules on interline routes (where passengers travel on more than one airline to get to their destination). This is said to lead to more efficient operations which involve lower costs and coordinated prices. These two elements combine to enable airlines to pass on the benefits to their passengers in the form of lower fares.
The table below gives an example of the calculation of increased traffic and consumer surplus for the first year of liberalisation which would allow airlines to coordinate prices on interlining routes.

For the passengers benefiting from improved price co-ordination, two scenarios have been modelled:

- A lower bound scenario with a price decrease of 18% and a demand elasticity of 1
- An upper bound scenario with a price decrease of 28% and a demand elasticity of 2.5.

The scale of the price reductions have been taken from previous analyses. The additional traffic is calculated by applying the demand curve equation (given above), with $P_0$ and $Q_0$ used to derive $k$, $P_1$ is calculated using the predicted percentage price reduction, and these figures are in turn is used in the calculation of $Q_1$.

<table>
<thead>
<tr>
<th></th>
<th>Lower bound scenario</th>
<th>Upper bound scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elasticity ($\varepsilon$) = 1</td>
<td>Elasticity ($\varepsilon$) = 2.5</td>
</tr>
<tr>
<td>Average fare ($P_0$)</td>
<td>€735</td>
<td>€735</td>
</tr>
<tr>
<td>Current volume ($Q_0$)</td>
<td>1,074,128</td>
<td>1,074,128</td>
</tr>
<tr>
<td>Post liberalisation fare ($P_1$)</td>
<td>€603</td>
<td>€529</td>
</tr>
<tr>
<td>Calculated constant ($k$)</td>
<td>789,484,337</td>
<td>15,731,659,106,392</td>
</tr>
<tr>
<td>Post liberalisation volume ($Q_1$)</td>
<td>1,309,913</td>
<td>2,441,883</td>
</tr>
<tr>
<td>Increase in traffic volume ($Q_1-Q_0$)</td>
<td>235,784</td>
<td>1,367,755</td>
</tr>
<tr>
<td>Increase in consumer surplus</td>
<td>156,673,908</td>
<td>335,173,603</td>
</tr>
<tr>
<td>Existing passenger $\Delta$CS</td>
<td>142,107,181</td>
<td>221,055,614</td>
</tr>
<tr>
<td>New passenger $\Delta$CS</td>
<td>14,566,727</td>
<td>114,117,989</td>
</tr>
</tbody>
</table>

Table 105: Example Calculation of Change in Traffic Volume and Consumer Surplus for the First Year Post-Liberalisation

There is quite a large difference in the amount of traffic generated depending on the scale of the price reduction and the elasticity of the demand.

As the table illustrates, the majority of the consumer surplus is derived from existing passengers.

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378 These are the same values as employed by the Brattle Group in their original report.
APPENDIX 4  LONDON CASE STUDY HUB ACTIVITY

A4.1 INTRODUCTION

The removal of restrictions on route and designation in an OAA is likely to be of greatest benefit to operators carrying traffic to the US via London’s Heathrow and Gatwick airport, either originating at Heathrow and Gatwick or being carried through the airports from points behind London (including within the EU) and vice versa (i.e. Eastbound traffic from the US terminating at London or transferring beyond) since this is the only really significant market currently restricted of the EU Member States and bilateral restrictions are tightest at Heathrow.

The benefits that might accrue from traffic through London due to route and designation liberalisation will represent the largest if not the majority of such benefits across Europe as these are the largest restricted markets – other major markets such as France, Germany and the Netherlands being already liberalised through open skies agreements and the remaining restricted markets (Greece, Hungary and Spain) only collectively comprising approximately 4% of the total traffic; the UK was 39.5% of the total EU-US traffic in 2004\(^3\).

As it is the largest market and the focus of opportunity under an OAA, further examination of the behaviour of current traffic in the restricted Heathrow and Gatwick markets can be used as an indicator of future market evolution after the restrictions in the current bilateral system are removed. There are a number of areas where this could be a useful indicator where:

- the removal of restrictions on services to US cities either in respect of capacity or destination allows US cities with a high proportion of one-stop connections (in the US) connecting traffic from Europe to
  - either be served by (additional) direct services either operated by the incumbents or new entrants, if designation restrictions currently apply
  - or be candidates for route cabotage services in the US via the existing gateways
- cities with thick connecting traffic from existing gateways in either EU or US might be candidates for fifth freedom routes in either direction, i.e. US-beyond or EU-beyond, including intra-EU international connections
- thick connecting routes between or within EU Member States might be candidates for route cabotage services by US carriers.

In order to assess these impacts, the current traffic profile must be assessed:

a) the absolute volume of non-stop services to gateways must be determined. If this is particularly large, it might be expected that new entrants will attempt to provide services on these routes where they are currently restricted from doing so. The benefits associated with new entrants, e.g. through enhanced competition and associated price stimulation, are dealt with elsewhere in this report

b) the volume of connecting traffic serving a particular destination one-stop from a particular origin through all hubs. If this is large, the destination might merit direct

\(^3\) US DoT T-100 data
services in place of on-stops services (or additional direct services if it is already a non-stop gateway)

c) the thickness of the second sectors of the connecting routes behind or beyond the hubs. If any of these individual sectors are thick (and the point-to-point domestic market is also relatively large), it suggests that these routes might be candidates for route cabotage, or fifth freedom services if international.

d) the proportion of online connections at hubs. Where this proportion is high it suggests that carriers and alliances have well-developed network strategies and reduces the likelihood of the introduction of new services, fifth or eight freedom services as introduced in points 1) and 2) above.

The remainder of this section describes the current US-Heathrow and US-Gatwick markets to assess the likelihood of take-up and potential impact of additional direct services, route cabotage and fifth freedom services that will be enabled by the OAA.

A4.2 Non-stop US destinations

Taking up the analysis outlined in points a) – c) above, Figure 92 shows the non-stop, two-way traffic from Heathrow and Gatwick and their US gateways in 2004\(^{380}\). The figure also shows the proportion of the traffic that terminates at the gateway and traffic that connects onwards. To identify existing relationship and scope for potential new services, this connecting traffic is broken down into two categories:

1. online, which in this context is defined as passenger traffic that connects onward either on the same airline or on an airline that is part of the same alliance or has a code share agreement with the arrival airline.

2. interline, which is defined as passenger traffic that connects onward on an airline that has no relationship with its arrival airline.

![Figure 92: Non-stop Traffic from LHR and LGW to US Gateways](image)

\(^{380}\) The data used in this analysis is collected by the UK CAA and depends on information gathered from passenger surveys. While the analysis is therefore dependent on the accuracy of the survey data it nevertheless provides a comprehensive picture of connections at two of Europe’s largest airports (as well as the rest of the UK) and provides sufficient clarity of the key points and trends – it is not used here to identify marginal differences in routes suitable for cabotage operations for example, but rather to indicate whether there are any clear opportunities for operations and which would need to stand out clearly from the data to be viable.
Analysis of the data figure shows that:

- the traffic volumes at Heathrow are of the order three times the volumes at Gatwick
- much of the traffic from Heathrow terminates at its gateway airport in the US with the exceptions of Chicago O-Hare (ORD) and, perhaps more surprisingly, Washington Dulles (IAD). Most connections are made online
- with the exception of primarily leisure destinations of Orlando (MCO), Las Vegas (LAS) and Tampa (TPA), there is a higher proportion of connecting traffic at Gatwick’s US gateways, typically between 25% and 50% of the total traffic to the gateway. Again, the majority of connections are made online.

New York is clearly the largest market from London by some distance with a relatively low proportion of onward connecting traffic, essentially centred on Newark (EWR) and originating in Gatwick (reflecting Continental Airlines’ operation). There are fewer onward connections for traffic originating at Heathrow. Based on the size of the market, it is clear that new entrants and additional competition is likely in the London-New York market, subject to airport slot pairs being available, as soon as the Bermuda II restrictions are relaxed.

**A4.3 One-Stop Intra-US Connections**

**A4.3.1 Final Destinations**

The pattern of traffic originating at Heathrow or Gatwick and travelling beyond US gateways has been examined. The top-ten US destinations reached one stop – i.e. beyond a US gateway hub – for traffic originating at Heathrow and Gatwick airports are shown in Figure 93 below.

![Figure 93: Top 10 US destinations on one-stop services from LHR and LGW via US gateways](image)

Thus in the case of Heathrow (shown on the left), the top destination for passengers travelling one-stop into the US is Las Vegas (LAS) with 93,000 passengers; from Gatwick (shown on the right) 101,000 passengers travelled to Orlando (MCO) via another US point, making it the top one-stop destination.
While these charts show the top ten one-stop destinations in the US, only eight points have more than 50,000 passengers transferring from the UK out of nearly 200 destinations to which passenger have transferred, suggesting that hub and spoke operations connect very many thin routes and that networks are widely distributed.

The figure also shows the proportion of traffic that transfers at the hub though online or interline connections (as defined above).

For both origin airports, there are a number of destinations common to both top ten non-stop and top-ten one-stop destinations:

- for Heathrow, common non- and one-stop destinations include Los Angeles (LAX), San Francisco (SFO), Seattle (SEA), Phoenix (PHX) and Denver (DEN). This implies that the penalty of changing aircraft to West Coast destinations is not too large to prevent a proportion of around 10% of passengers taking these route – the non-stop routes have a volume of an order of magnitude greater than the one-stop routes.

- for Gatwick, common non- and one-stop destinations include Orlando (number one destination in both cases), Las Vegas, Tampa (TPA) and Minneapolis (MSP).

- Heathrow has a number of top-ten one-stop destinations that are served direct from Gatwick, including Las Vegas, Orlando, Dallas (DFW) and Raleigh-Durham (RDU).

- Gatwick also has a number of one-stop destinations that are served direct from Heathrow including Denver, Phoenix, San Francisco and Boston (BOS).

The vast majority of connections are made online – i.e. within existing alliance or code share arrangements under the definition used for this study.

The drivers for passengers to select non- or one-stop flights to their destinations are complex and are likely to include:

- a trade-off between the additional time taken and the advantageous prices that might be offered for a one-stop rather than a non-stop journey.

- the capacity available for non-stop flights, which, of course, will also be reflected in the price of this type of service.

### A4.3.1 US Hub Gateways

the UK-originating Further analysis of traffic originating in the UK or in the EU and connecting at US hubs onward to destinations within the US has been undertaken. Figure 94 shows the breakdown of connections (interline and off line) at US hubs beyond which traffic is travelling (i.e. to the destinations set out in Figure 93 above).

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381 Las Vegas, Orlando, Denver, San Francisco, San Diego, Los Angeles, Seattle and Tampa.
Several points can be seen in Figure 94 including:

- UK connecting traffic hubs predominantly through Chicago, reflecting the predominance of the oneworld and Star alliances in the UK market (note this traffic account for around 60% of the total traffic from the UK to Chicago)
- the vast majority of traffic connects online (only 16% is not already connecting through alliances or code share relationships)
- although it is dominated by the home bases of the major carriers, hubbing occurs at a large number of airports.

The analysis has been further narrowed to concentrate on the top six US hubs and to indicate the significant US destinations beyond these hubs. As can be seen below in Figure 95, there is no single dominant onward destination from the hubs and that the connecting traffic is distributed across a large number of destinations.
However, within geographical constraints (that is, assuming passengers will not choose to fly a very far beyond their final destination to connect and fly back in the direction they have already travelled), the largest final destinations are shared between the hubs. For example Orlando (MCO) is the largest destination from each of the hubs in Atlanta (ATL), Newark (EWR), Washington Dulles (IAD) and Philadelphia (PHL) airports. Las Vegas also features high in the list of final destinations served from all of the hubs.

Analysis of the statistical distributions of one-stop traffic connecting through US hubs are shown in Figure 96 and Figure 97 for passengers originating at Heathrow and Gatwick.

The figures show the cumulative proportion of the total connecting traffic as a function of the number of onward destinations (sorted in descending order of passenger per destination) – this is the so-called Pareto curve. The figures also show the proportion of traffic connecting online using the previous definition.

![Figure 96: Pareto Curve for Intra-US Hubbing Traffic Originating at Heathrow](image)

The figure shows that the top ten destinations account for nearly 40% of connecting traffic and that, say, the 160th destination receives less than 1% of the connections. The dotted line indicates the proportions of online connections, which at Heathrow is around 70% of the total.

At Gatwick the gradient of the curve is similarly steep – reflecting the fact that the top ten destinations account for around 35% of the total connections.
The curves in Figure 96 and Figure 97 emphasise the distributed nature of hubbing. It is necessary to measure traffic from the largest 50 or 60 onward destinations in order to capture 80% of the connecting traffic. The figures also show the high level of online connections – around 75% of hubbing traffic originating at Heathrow connects online whereas approximately 90% of hubbing traffic originating at Gatwick connects online.

### A2.3.1 Conclusions

Investigation of traffic connecting in the US originating from the UK airports most restricted by the Bermuda II agreement allows the following tentative conclusions to be drawn:

- no single origin and destination pair is constrained by the restrictive bilateral because there are so many different (one-stop) routes from A to B. However, the relatively high proportion of connecting traffic compared with direct traffic on a few city-pairs, e.g. London-Orlando, London-Las Vegas, might suggest that the non-stop capacity on these city-pairs is constrained. Alternatively, carriers might be offering highly preferential one-stop fares on these routes

- the highly dispersed nature of the hubbing traffic indicates that operating eighth freedom, or route cabotage services, with a wide-body aircraft through a US gateway is not likely to be commercially attractive for EU airlines unless a very high proportion of local traffic could be captured to support such add-on services

- the very high proportion of online connecting traffic also suggests that operation of route cabotage services would not be attractive to European carriers as this traffic is already being captured to a large degree by their alliance and code share partners.

On the basis of this case study, the impacts of the OAA might, therefore be expected to be:

- few – if any – new point-to-point services on top of those currently served

- extreme unlikelihood of take-up of the opportunity for European carriers to operate route cabotage services with the US.
### A4.4 International Connections beyond the US

With a view to identifying the potential for fifth freedom demand, the traffic originating in the UK and connecting over the US to international destinations has been analysed. Figure 98 shows the top beyond-US country destinations.

![Figure 98: Top Beyond-US Country Destinations for Traffic Hubbing in the US and Originating in the UK](image-url)

Figure 99 shows the cumulative statistics for traffic originating in the UK and hubbing in the US onwards to other international destinations.

![Figure 99: Pareto Curve for Beyond Traffic Hubbing in the US and Originating at Heathrow](image-url)

Together, Figure 98 and Figure 99 illustrate the dominance of online connections compared with other interline services. However, in contrast with the intra-US connections discussed above, US international connections are more concentrated on a few key destinations. Over half of the onward connecting traffic is converges on the four top final destinations:

- Canada
- Mexico
• New Zealand (that has no direct service from Europe)

• the Bahamas.

The remaining 50% of the connecting traffic spread over a further 45 destinations. This traffic uses far fewer US hubs that the intra-US connecting traffic with traffic being concentrated on hubs principally by geographic location, e.g. most traffic to Canada hubs through Chicago and Minneapolis whereas almost all of the one-stop UK traffic to the Bahamas hubs through Miami.

On the basis of the analysis of this data, the fact that the vast majority of connections occur online, with the exception of traffic to the Bahamas, indicates again that there is likely to be little desirability in EU airlines operating their own fifth freedom passenger services beyond the US as these are already dealt with through alliance and code-share partnerships. What can be concluded from examination of the data may however be altered on consideration of the strategies of individual airlines.

It may be that an individual operator may wish to operate a round-the-world service such as was pioneered by PanAm in the middle of the 20th Century. Round the world flights for example originating in Europe, crossing the US and routing through Asia or South Pacific and back to Europe may offer an airline some opportunity to improve utilisation of its aircraft if passengers change aircraft at various points on the route. However, such routings depend on the acquiescence of third party governments to grant the necessary operating rights – fifth or seventh freedoms for example on the part of Asian states in the example above.

A4.5 Traffic Originating behind London

In addition to onward traffic in the US (assuming an East-West traffic flow), liberalization will also affect traffic originating from behind London and hubbing through Heathrow and Gatwick airports. Figure 100 shows the mix for passengers travelling from Heathrow and Gatwick as interline connections, online connections and passengers beginning their journeys at the two main London airports.

Source: UK CAA

Figure 100: Nature of the Traffic from Heathrow and Gatwick Airports to the US

For over 30 years from 1950, Pan Am Flight 001 provided a service originating in San Francisco and stopping at points such as Honolulu, Tokyo, Hong Kong, Bangkok, Delhi, Beirut, Istanbul, Frankfurt, London and finally New York.
As can be seen from the figures above, the majority of traffic originates at the two airports but there is a significant amount of connecting traffic from behind-origins, at 33%. The origins of this connecting traffic are shown in the following figure.

![Figure 101: Origins and Volume of Traffic Connecting Onwards to the US at Heathrow and Gatwick](image)

The top origin for Heathrow connecting traffic is Paris Charles de Gaulle (CDG) followed by Dublin (DUB) and three UK points in the top 12. Gatwick has a more exaggerated mix since although five of the top 12 are UK origins the point providing the largest element of traffic is Dubai (DXB) with a relatively large 136,000 passengers (greater than entire Hungary-US or Norway-US markets for example). In part this reflects the strategy and success of individual airlines: Dubai’s Emirates has a code share arrangement with American Airlines feeding traffic beyond Gatwick to the US.

Figure 102 and Figure 103 shows the Pareto curves for this traffic at each airport.

![Figure 102: Pareto Curves for Behind Traffic Hubbing at Heathrow Onwards to the US](image)
Statistics for LGW-US behind connections

Figure 103: Pareto Curve for Behind Traffic Hubbing at Heathrow Onwards to the US

The figures above show:

- around 15% of the traffic connecting at Heathrow and Gatwick originates in the UK, despite there being no restrictions on third and fourth freedom services between any point in the US and any point in the UK other than Heathrow and Gatwick. All of this traffic connects online. Again, the performance of individual airlines must be considered. British Airways manages a successful business, precisely through providing these types of connecting services from regional UK points over its London hub at Heathrow; similarly the UK’s second/third largest airline, BMI International is feeding its Star Alliance partners at Heathrow for long haul services to the US in addition to operating its own direct services from Manchester.

- including the UK domestic feed, around 60% of the connecting traffic has European origins with around 80% of this hubbing traffic connecting online

- the remaining connecting traffic arises from non-European destinations and around 70% of the total connects online at Heathrow and 50% of the total connects online at Gatwick

- there are some very large origins for the connecting traffic including Paris, Dublin and Amsterdam, all of which have extensive direct connections to the US, the first and last operating under open skies arrangements

- the airlines operating the routes have strong alliance and code share arrangements in place evidenced by the very high proportion of online connections from the largest origin airports. Of particular note, for example, is the code share between Continental Airlines and Emirates at Gatwick and between Virgin Atlantic and Emirates at Heathrow which captures over 55% of the Dubai-US market without the benefit of a formal alliance providing end-to-end services.

The data suggests that:

- despite there being large markets with established direct, non-stop services or the scope for providing such non-stop services between the EU and the US, passengers still choose the travel one-stop through congested hubs. This behaviour can be
attributed to: a) the preferential prices that carriers might choose to offer through the hubs (in contradiction to the higher prices that might be expected if the hubs were capacity constrained); b) the additional frequency of service, e.g. multiple daily flights rather than once daily flights, that are available through the hubs as long as sufficient capacity is available for the passenger to get a convenient flight from the origin to the hub

- most connections are made online through well-organised alliance or code share arrangements even at Gatwick which does not operate as the main hub for any carrier.

The size of some of these markets indicates that some fifth freedom services might be attractive to US carriers on some city pairs particularly between major hubs, e.g. to Paris and Amsterdam. However, the high level of online connectivity and the likely attractiveness of frequency of services indicate that feed to the major hubs by alliance or code share partners from secondary cities will likely remain as at present, since to be competitive, sufficient frequency and appropriate pricing must be offered to allow US airlines to challenge incumbent European operators.

However, one change may occur if capacity at the hubs become even more constrained and carriers are forced to trade-off long-haul services against short-haul feeder services. In this case, feeder services on thinner routes might be sacrificed to use their slots for transatlantic services.

### A4.6 Overall Conclusions

The analysis and traffic profiles described above suggest the following conclusions:

- removal of restrictions is unlikely to result in more than a very few new transatlantic origin-destination pairs without some radical change of airline operating model not foreseen at present

- European airlines are unlikely to take up the opportunity of US route cabotage or fifth freedom beyond rights enabled through the OAA. An exception may be where a carrier can conduct round the world service which offers fleet utilisation benefits but that also depend on appropriate air services agreements with third parties that allow for the necessary traffic rights. This may be of particular interest to cargo operators if it enables them to serve freight flows which tend to be monodirectional in contrast to passenger services. Instead, these services will probably continue to be operated on alliance or code sharing arrangements (including deepened alliances and mergers) or through European ownership of US airlines

- both European and US carriers may take up the opportunity to provide fifth freedom services particularly to/from the US and between major cities within Europe. However most of these services and those feeding into hubs from secondary cities will likely continue to be operated through alliances, code shares or new ownership arrangements, as above

- where capacity is restricted for example as at Heathrow and Frankfurt, airlines are very likely to utilise slots on more lucrative transatlantic and other long-haul markets than on short-haul services to secondary cities. The connectivity of these feeder

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383 This outcome is shown clearly in a Booz Allen Hamilton study New South East England Airport – Airline Development Strategy of September 2001 for the UK Department for Transport. The analysis for this study
cities might then decrease - their markets not being large enough to sustain reasonably frequent transatlantic services but also not having adequate access to the major capacity constrained hubs.

* demonstrates that at constrained airports aircraft gauge size and stage lengths increase and short haul routes are replaced by more frequencies to long haul points
APPENDIX 5  CALCULATION OF EMPLOYMENT IMPACTS

Employment impacts arising from the OAA have been estimated for the resulting increases in traffic. Such impacts can be classified in several ways; one of the most common of these being:

a) **direct** relating to the increase in jobs directly related to the provision of aviation services such as airlines, ground handling companies etc. Stimulated passenger traffic will create jobs in the air transport sector, but this may be offset by a shift in the level of labour input based on the assumed shift to "more efficient” carriers. Demand stimulation will further stimulate supporting services (e.g. airport operations, ground transportation, concessions, freight forwarders, air logistics).

b) **indirect** relating to expenditure on goods and services not directly in the aviation field including spend on travel agents, hotels and retail at airports etc, as well as purchases from companies within the supply chain.

c) **induced** relating to expenditure of direct and indirect employment incomes (e.g. purchases made by airport employees)

d) **catalytic** deriving from new non-transport and non-travel economic activity stimulated by the increased efficiency of and improved access to air transportation (e.g. the attraction of corporate headquarters to the OAA or the increased intra- and extra-OAA trade because of its good transport links). Existing analyses indicate that the catalytic impact of airports on the wider economy is significant\(^{384}\).

This study calculates potential direct and indirect/induced employment impacts related to the increase in air transportation activity. These represent the jobs related to the expansion of the aviation industry. The catalytic jobs, such as those due to increased tourism and those enabled by the greater connectivity, are significant but lie beyond the scope of this study.

**Employment Impact – Source of Jobs**

Additional air traffic not only brings a consumer surplus but also requires additional resources to handle the increases. This includes staff at airports and also, due to the multiplier effect of aviation, in supporting industries.

Commercial air transportation generates significant economic impacts for national and regional economies. Air transportation is essential for leisure and business travellers, as well as for shippers of high-value, time-sensitive cargo. Air service providers including airlines, airport operators and related service firms directly create a high level of jobs from both air and ground activities. The direct transportation-related impacts generate additional “induced” employment impacts as industry revenues and employee earnings are used to purchase goods and services from other industries.

The direct impact of air transportation activities in the US and EU derives from the following industrial sectors:

- **Commercial Air Transport** (Airlines excluding Integrated Carriers) – Passenger and cargo airlines providing scheduled and non-scheduled services generate revenues from airfares, freight rates and associated charges and employ pilot, flight attendants, ground handlers, gate personnel and others.

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\(^{384}\) One study indicates that the impact of aviation growth equated to approximately 3% of the trend increase in GDP – “The contribution of the aviation industry to the UK economy”, Oxford Economic Forecasting, 1999
• **Air Couriers (Express Airlines or Integrated Carriers)** - These multi-modal transportation carriers combine air and ground services and are separately identified in US industrial statistics. The carriers employ similar personnel to other airlines, but also have significant ground handling networks and information systems that result in a unique employment profile.

• **Air Transport Support Services** - This industry sector directly supports airlines with airport services including aircraft, passenger and cargo handling services, maintenance, aircraft supplies, airport operation and management, and air traffic control services. This sector includes both private and public entities and varies significantly in terms of labour and capital intensity.

### Current Employment in Aviation

Worldwide, the aviation sector supports around 5 million employees, working directly for airlines, airports or in civil aerospace.

The aviation sector stimulates a further 8.5 million people who are employed in supporting industries, from those working in commercial operations at the airport, those working for companies supplying the aviation sector, and the spend generated from those employed directly and indirectly.

In addition, aviation is key driver of other industries. Tourism is the most obvious example of this – a growing sector which provides significant employment across the globe. It is estimated that over 15 million jobs have been created as a result of air tourism\(^\text{385}\). This order of magnitude (more than three times the direct jobs in aviation) reflects the fact that tourism is a labour-intensive sector, whereas aviation is capital-intensive with a high level of productivity per worker.

In the US, commercial air transportation (including scheduled and non-scheduled passenger and cargo airlines) accounted for 691,000 jobs in 2004 made up of 156,000 in integrated carriers and 535,000 for other air service providers.\(^\text{386}\) Air transportation support services provided at US airports, commercial entities at those airports (e.g. fixed base operators or aircraft maintenance) and government agencies (e.g. FAA air traffic controllers) accounted for an additional 121,000 jobs.

The direct impacts generated by air transportation stimulates a substantial level of indirect or induced impacts. The US government estimates that every direct job in the commercial air transportation sector (including passenger and cargo scheduled/non-scheduled airlines but excluding express carriers) generates an additional 3.27 jobs in other sectors including the 0.17 jobs in non-airline aviation sectors.\(^\text{387}\)

In Europe, total on-site employment at airports is estimated at 1.2 million with an additional 0.2 million supporting jobs at off-site locations.\(^\text{388}\) Airlines, handling agents and aircraft maintenance accounts for 64% of the on-site employment or 768,000 jobs.

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\(^{385}\) *The economic and social benefits of air transport, Air Transport Action Group*

\(^{386}\) *Commercial Aviation And The American Economy, The Campbell-Hill Aviation Group (March 2006)*

\(^{387}\) US Department of Commerce RIMS-II national 2003 “direct effect” employment multiplier for the “Air transportation” sector

\(^{388}\) *The Social and Economic Impact of Airports in Europe, Airports Council International-Europe (January 2004)*
In terms of indirect and induced employment, a government multiplier is not available for the EU, but the ACI-Europe impact study estimated that every job in the airline and airport sector generated an additional 2.1 jobs throughout the European economy.

**OAA Employment Impacts for Passenger Market**

The impact of current and projected levels of passenger traffic associated with the OAA depends on the mix of airlines that handle any stimulated traffic, the passenger-to-employee ratio representing airline efficiency, and the geographic distribution of impacts between the US and EU. Total employment impacts from the elimination of bilateral restrictions and the improved efficiency for interline operations was based on the following assumptions:

- **Traffic Stimulation** – as described in the main report, passenger traffic stimulation on Transatlantic routes has been calculated for the impact of the removal of existing output constraints (1.4 million in Year 1 increasing to 9.5 million in Year 5) and from increased interline efficiency (ranging from a 236,000 to 1,368,000 per year). It was assumed that the stimulated traffic would be equally split between US and EU airlines (Figure 15 shows that the share is roughly equal).

- **Passenger-to-employment ratio for US** – the ratio for US airlines was developed using CY 2004 Form 41 data from the US Department of Transportation. The seven US airlines with data for “Atlantic” entity operations\(^{389}\) handled 21 million passenger enplanements with over 35,000 employees, yielding an average of 1.70 airline employees per 1,000 passengers. For every airline job it is estimated that an additional .25 direct jobs are created in the aviation sector\(^{390}\). Total employment impacts (including induced impacts) were derived by applying the US government multiplier of 4.27 to the direct airline ratio, which gave a total of 7.26 jobs for every 1,000 passengers.

- **Passenger-to-employment ratio for EU** – the EU ratio was developed using Association of European Airlines aggregate data (which excludes regional detail. The AEA estimated that their member airlines had a total employment of 339,000 in 2004 and handled 316 million passengers.\(^{391}\) Using the airline-specific data and eliminating all-cargo airlines and non-reporting airlines yields an average of 1.05 employees per 1,000 passengers for all operations combined. However, the data refer to a mixture of intra- and extra-EU (with a 3:1 split between them). The US data suggested that international flights are twice as labour intensive as domestic flights. Assuming a similar pattern in the EU, this yields an average of 1.68 airline employees per 1,000 passengers for international flights. Since a third of jobs in the aviation sector are working at the airport, the airline employment figure was multiplied by 1.5 to gain total direct jobs. ACI-Europe data was used to estimate that every direct job creates an additional 2.1 indirect / induced jobs, resulting in a total of 7.81 total jobs for every 1,000 passengers.

**OAA Employment Impacts for Cargo Market Sectors**

The employment impact of the OAA on the cargo sectors are based on the following:

1. **Integrated Carrier Market**

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\(^{389}\) An “Atlantic” entity designation includes all traffic that crosses the Atlantic Ocean including non-Europe traffic. Some carriers are not required to file world region detail and were not included in this calculation.

\(^{390}\) The US Government estimates that for every airline job, 0.17 jobs are created in the aviation sector as a whole. However, international flights are more labour intensive than domestic, so a compromise figure of 0.25 was agreed.

\(^{391}\) Yearbook 05, Association of European Airlines
The Air Transport Association of America estimates that air “couriers” account for 156,000 direct jobs and 637,800 total jobs including multiplier effects.\textsuperscript{392} This total includes US-based employees associated with both domestic and international activities and includes some ground transport personnel.\textsuperscript{393} There is no direct allocation of this employment between markets and it is difficult to distinguish between markets in many cases (e.g. US “domestic” employees handle the domestic leg of EU-US international traffic). USDoT Form 41 data for FDX, UPS and Astar (DHL’s contract carrier) has their Atlantic and US Domestic “entities” (an attempt at allocation within that data set) with about 80% of their total employment, although this includes overseas employees and excludes some domestic only express airlines (and non-airline employees for express couriers such as TNT). For this analysis, it is assumed that 70% of US employment in the “Air Courier” industry is associated with the OAA-affected markets (109,200 employees).

This direct \textit{airline} employment impact excludes airport and related personnel providing direct services to the integrated carriers. The ATA study estimated that every airline-related job created an additional 0.17 jobs in related direct sectors. Therefore, direct employment impacts for the US integrated carriers are based on the proportional increase in OAA-based traffic derived in the traffic analysis (0.6% to 1.1%) as applied to 127,800 direct employees in the US (including 17% increase for non-carrier employment), or 700 to 1,400 jobs per year. Total employment impacts are derived using the 4.1 multiplier developed by the ATA for air couriers applied to the direct carrier jobs only (2,500 to 4,900 US jobs).

The European Express Association estimates that express carriers (including both US and European) account for 250,000 employees in Europe (see Appendix 1), although it is not certain that this total is directly comparable to the US total, particularly in regard to the coverage of ground transport personnel.\textsuperscript{394} There is even less information on the allocation of the European employment for particular market sectors, much less the share associated with EU markets only. Based on company statistics, DHL derived about 23% of their CY04 revenues from the Americas and 62% from Europe with each of those totals also including non-OAA portions (e.g. some Asia traffic handled by both sets of regional offices plus some coverage of non-EU traffic in Europe and non-US traffic in the Americas). TNT reports that 75% of their worldwide employment is located in US and Europe, but those totals also include non-OAA elements. For this analysis, it is assumed that 150,000 of the 250,000 employees reported for Europe would be directly affected by OAA impacts in the EU. Based on the projected traffic stimulation, this results in an increase of 900 to 1,900 annual employees. Using the EEA multiplier, total employment impacts would be 2,000 to 4,000 jobs in the EU.

The resulting job stimulation when compared to traffic stimulation results in average traffic per employee of nearly 18,000 kilos per year or 73 kilos per employee-day (assuming 48 5-day weeks). This ratio may seem high based solely on direct air transport, but the integrated carriers devote a substantial share of their employment to ground transport and hub transfer (over 80% for FedEx). Employment that might be considered indirect or induced for other

\textsuperscript{392} \textit{Commercial Aviation and the American Economy}, The Campbell-Hill Aviation Group (December 2005)

\textsuperscript{393} The inclusion of ground transportation personnel in air express carrier employment totals differs by carrier, particularly as regards their ground transport subsidiaries or units. In 2004 Form 41 data, “transport-related” employees (the category for truck drivers, etc) account for 70% of FedEx’s nearly 119,000 employees compared to 9% for aircraft-related employees and 11% for ground handling (that includes hub operations). In contrast, UPS reports no employees in the “transport-related” or “cargo handling” categories. It is unknown how or whether these differences are accounted for in US industrial statistics.

\textsuperscript{394} The EEA estimated “total employment” multiplier of 2.12 when compared with the ATA value of 4.1 suggests coverage may be significantly different.
air transport activities (e.g. ground delivery), or minimal in the case of passenger transport (e.g. hub transfer) is a critical direct impact of the OAA and is included as such.

2. All-Cargo Airline Market

The employment impacts on the all-cargo airlines is more directly comparable with passenger airlines and is based on the following assumptions:

- The OAA could push the growth rate for the non-Open Skies markets up 2 percent points (based on direct routing and general efficiencies) and other markets by 1 percent yielding a weighted average stimulation of 1.3% (assuming a 30% share of traffic for non-Open Skies markets) or 7,000 tonnes per year.

- An estimated average air yield of 1.50 euros per kilogram\(^{395}\) yields a net revenue impact of 10.5 million euros.

- Based on the US Census’s Economic Census in 2002, the average revenue per employee for the “Scheduled Freight Air Transportation” sectors (that excludes the integrated carriers) was $172,000. Expanding to 2005 (at 3% per year) and converting to euros yields an average productivity of 151,000 euros per employee.

- On average, every airline job in the US is responsible for another 0.17 jobs in other aviation sectors, but this represents an average over all types of airlines and markets. All-cargo airlines are responsible for only a portion of the services required for handling and transporting an international shipment. Freight forwarders, ground truckers, customs brokers, warehouse operators, logistics providers, and package and crating firms all create direct jobs related to air cargo traffic. It is assumed that every air-related job is responsible for an additional direct job in freight forwarders and related transportation industries.\(^{396}\)

- Based on this method, the direct employment impact would be 140 jobs split equally between the US and EU.

- Total employment impact would be 411 jobs split equally between the US and EU (using the US multipliers of 4.28 for commercial airlines and 2.24 for other transportation and support activities).

The level of employment impact appears small, particularly for direct airline jobs, but the all-cargo sector is relatively small compared to other air transportation activities. The 2002 US Economic Census identified a total of 9,424 employees for the “scheduled freight transportation” sector spread over 373 separate establishments and generating a total of $1.6 billion in revenues and $354 million in payroll. International air freight accounted for 40% of total revenues with domestic freight and mail accounting for 55% and other services (charter and airport services) responsible for the remainder.

The top US airlines operating in the EU-US market (Polar, Atlas, World, Gemini and Evergreen) accounted for just 4,300 total employees in 2004, and that total includes ACM and other activities as well as US domestic. Form 41 data related to international operations is inconsistent and out-of-date for US all-cargo airlines operating in the EU-US market.

\(^{395}\) US Census statistics measures the import charges for inbound trade and the average for air freight traffic from the EU was $1.86 per KG (€1.50 per KG) in 2005. This assumed rate for the EU-US market is supported by the average yield of $1.65 per pound for FedEx’s international freight traffic in 2005 that includes Canadian and Mexican traffic.

\(^{396}\) This is a conservative estimate considering that the “Other Transportation and Support Activities” sector requires more than one-third more employees to generate the same level of revenues as the “Commercial Air Transportation” sector.
Atlas and Evergreen reported about 1,500 employees in international service at some time since 2001. Polar is the only one of the scheduled all-cargo carriers reporting Atlantic entity employment (379 in 2004) and that includes charter activity as well.

Based on these statistics, it is unlikely that all-cargo airline employment related to EU-US operations in the US exceeds 2,000 jobs. A 1 to 2 percent stimulation would generate just 20 to 40 jobs and the 35 airline job estimate is reasonably within this range.

On the EU side, the only data for all-cargo airline is for CargoLux that has 1,300 employees, of which it is unlikely that US-EU traffic accounts for more than 25% of that total. While no aggregate statistics are available, the total employment related to EU-US operations for this sector can not be more than 2,000 in total (excluding ACMI airlines considered elsewhere). The low level of EU-related employment impacts reflect this low level of baseline employment.

3. **Air Cargo on Passenger Flights**

The expansion of passenger flights will create a secondary increase in cargo capacity and traffic. In 2005, the transatlantic passenger airlines average 38 kilograms per enplaned passenger. Assuming this relationship holds, air cargo traffic on passenger flights would increase 67,000 to 105,000 tonnes in 2006 and 371,000 to 423,000 tonnes in 2010. As added belly capacity often eliminates the need for all-cargo capacity, it is likely that the net impact would be much less as traffic is shifted from cargo airlines. In terms of employment impacts, the passenger-based impacts include total airline employment and assumes that cargo-related employees (if separately identified) would increase proportional to other job categories for passenger airlines.
APPENDIX 6  LOAD FACTOR ANALYSIS

The extension of the EU to include 10 new Member States with the accompanying additional market but lower cost labour source, as well as the on-going commercial pressures outlined in this report, whether due to aggressive competition or external factors such as fuel price increases, means that many airline operators on transatlantic routes are concerned to ensure that there is a level playing field. While some elements of regulation may be seen as creating imbalances in the competitive environment, stakeholders also perceive that there are unintended consequences of some regulatory structures. It is fair to say that these points may be viewed differently by market players and observers on different sides of the Atlantic. In response to the concerns of stakeholders, the analysis below has been conducted.

The table below shows overall average transatlantic load factors comparing the period to 2001 and after for the major EU airlines (those with the highest level of transatlantic traffic) and the US transatlantic airlines.

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<thead>
<tr>
<th>Transatlantic Traffic: Average Load Factors (%)</th>
<th>1990-2000</th>
<th>2001-2005</th>
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</thead>
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<tr>
<td>Aer Lingus</td>
<td>80.7</td>
<td>82.5</td>
</tr>
<tr>
<td>Air France</td>
<td>70.8</td>
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<td>74.5</td>
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<tr>
<td>Average for major EU carriers</td>
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<td>Average for US carriers</td>
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<td>Average across all carriers</td>
<td>72.6</td>
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Source: DoT T-100 data

Table 106: Load Factor for Transatlantic Carriers

The average value (in bold) represents the average load factor across all scheduled carriers flying transatlantic routes, weighted by the number of flights. This increased by six percentage points for the recent period in comparison with the previous decade. US carriers individually increased their load factors from 3.3 to 6.9 percentage points over the same period.

This increased load factor may be thought to represent a gain in efficiency by the transatlantic carriers, as well as a sign of a more mature market.

Investigating load factor in more detail, the following table breaks down the same information on an annual basis.

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397 DoT data is the basis for the analysis through this subsection of the report
Transatlantic Traffic: Annual Average Load Factors (%)

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<td>All airlines</td>
<td>68</td>
<td>67</td>
<td>69</td>
<td>68</td>
<td>72</td>
<td>74</td>
<td>74</td>
<td>77</td>
<td>76</td>
<td>75</td>
<td>77</td>
<td>74</td>
<td>79</td>
<td>79</td>
<td>81</td>
<td></td>
</tr>
</tbody>
</table>

Table 107: Load Factors for Major EU and US Transatlantic Carriers

This table, which gives the load factors for the US and the major EU transatlantic airlines over a fifteen year period, reveals no clear pattern. Specifically, there is no evidence to suggest that US carriers have had a lower load factor than comparable EU carriers, nor that load factors have reduced since 2001.

To obtain greater granularity load factors were also studied at an airport level. Results for Charles de Gaulle Paris, Frankfurt International, Amsterdam and London Heathrow are consistent with the overall picture already obtained. The data in the following tables shows load factors for the top carriers by traffic volume on direct scheduled transatlantic flights.

While individual carrier behaviour can have a significant impact on specific route results, conclusions of analysis such as this can only be meaningful at an overall level. Thus although at Charles de Gaulle for example there are extremes so that Continental Airlines’ load factor reduced by 2.2% and Delta’s increased by over 15%, other US carriers such as United and US Airlines both improved their load factors by 6.6% close to the average for the airport of 6.5%.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>1990-2000</th>
<th>2001-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air France</td>
<td>74.1</td>
<td>80.8</td>
</tr>
<tr>
<td>American Airlines</td>
<td>51.5</td>
<td>79.0</td>
</tr>
<tr>
<td>Continental Air Lines</td>
<td>78.3</td>
<td>76.1</td>
</tr>
<tr>
<td>Delta Air Lines</td>
<td>65.0</td>
<td>80.2</td>
</tr>
<tr>
<td>Northwest Airlines</td>
<td>73.6</td>
<td>76.9</td>
</tr>
<tr>
<td>Trans World Airlines</td>
<td>73.2</td>
<td>77.0</td>
</tr>
<tr>
<td>United Air Lines</td>
<td>75.0</td>
<td>81.6</td>
</tr>
<tr>
<td>US Airways</td>
<td>75.6</td>
<td>82.2</td>
</tr>
<tr>
<td>Average across all airlines</td>
<td>73.0</td>
<td>79.5</td>
</tr>
</tbody>
</table>

Table 108: Load Factors for Charles de Gaulle Airport, Paris

The average change at Frankfurt airport is 6%.
Amsterdam saw an overall improvement in load factors of 8.3%.

At London Heathrow (not an Open Skies market), all carriers also increased their load factors, but at an average of 4%, being less than at the other hubs analysed.

An exception was found in the case of Dusseldorf Airport where load factors reduced by 4.4%. Capacity at Dusseldorf has likewise decreased dramatically over recent years. However, as total capacity from the US to Germany has not reduced and, as of 2005, was at its highest level to date, the reduction in load factor and capacity at Dusseldorf may suggest a consolidation in the market around major airports taking advantage of the efficiencies in the hub and spoke system.

Dusseldorf represents an exception for both Europe and Germany. While other major German cities saw increased load factors (see Frankfurt above but also Munich, up 8.6% and...
Hamburg up by 7.4%), Dusseldorf’s result may be due to individual destination factors. The largest reduction is in the Lufthansa’s load factor – clearly not a Chapter 11 airline and despite the decline in load factors Dusseldorf has retained its direct service whereas some other smaller cities no longer have direct flights in 2005 compared with 2001: services to Bremen, Hanover and Leipzig have all ceased. The example of Germany suggests that carriers have consolidated operations at the major airports, where securing traffic is less of a risk – so that load factors have increased at these, decreased at a marginally viable airport (Dusseldorf) and disappeared from those unable to support services in an overall smaller and less confident market.

This does not altogether exclude the possibility of “capacity dumping” since it tells nothing about profitability of the routes. It is possible that fares on certain routes were priced at an unprofitably low level in order to use up extra capacity and still attain a high load factor. Unfortunately, due to commercial sensitivities, the data needed to test this hypothesis are not available to the study team.