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THE DEVELOPMENT OF LONG-HAUL AIR SERVICES FROM REGIONAL AND SECONDARY AIRPORTS IN EUROPE

**Paper submitted to the 45th Congress of the European Regional Science Association,
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Abstract

This paper examines the recent development of long-haul scheduled air services from Europe and identifies the increasing dominance of the major hub airports. Airline failures and changes of strategy have led to many of the regional European airports seeing their networks reduce in the last decade, while it also appears more difficult to replicate Ryanair's use of secondary airports in the long-haul arena. The current pattern of regional service to intercontinental destinations is interpreted. Aircraft and product developments are discussed. More non-stop destinations and higher frequencies are expected from the major European hubs to other world regions, coupled with increased non-European carrier service to second-tier cities in Europe. The scope for a long-haul low-cost airline is analysed and traditional operations are shown to be in a relatively stronger position. It is concluded that the best scope for long-haul services from the regions is to major hub airports in other parts of the world, such as those developed by Emirates and Continental. Point-to-point leisure services will grow where there are ethnic links or holiday destinations involved. Otherwise, the regional airports are in the hands of the major airlines or alliance groups and their European feeder operations.

Keywords

Airline, airport, competition, hubs, networks, regions, aircraft type, product, low-cost, long-haul

1. Introduction and definitions

In recent years there has been tremendous interest in the growth of low-cost airlines in Europe operating from regional and secondary airports. These have been entirely in the short-haul sector, however. This paper aims to analyse the recent development of long-haul air services in Europe. Modest traffic densities on individual long-haul city pairs, coupled with the use of large aircraft has led to intercontinental routes being heavily concentrated on major airports, mostly in capital cities. The limited range of existing services from regional airports is identified and the extent to which regional and secondary airports may take a larger share of future traffic is discussed. Specific attention is given to the impact of commercial factors (e.g. alliances, hubs) and technological issues (in the form of new aircraft types and use of smaller aircraft on long-haul sectors). Forecasts of long-haul traffic are considered and the scope for low-cost airlines in the long-haul market is examined.

At the current time, long-haul scheduled air services carry about 1 million passengers per week out of Europe on approximately 5000 flights (the same numbers apply in the inbound direction). There remains a broadly equal split between European airlines and overseas carriers flying into Europe. In some cases this is necessitated by the bilateral air services agreements but even in the more competitive markets the market shares have not moved far out of balance. A wide variety of aircraft types are used, although the main range is from the Boeing 767 with around 200 seats up to the Boeing 747 with 400 seats.

For the purposes of the analysis of air services in this paper, the study area for flights from Europe is taken to comprise the European Union (as at July 2004) plus the Canary Islands, Madeira, Azores, Switzerland, Norway and Iceland. The only significant additions outside this area in Geographical Europe would be Turkey and Russia west of the Urals. These have been omitted, along with other non-EU members in Eastern Europe, because although they have few long-haul flights to the Atlantic or Africa, they do have a large number of short routes that cross into Asian Russia and the Caucasus.

Long-haul is taken to be the Association of European Airlines (AEA) definition which includes from Europe all Atlantic services, sub-Saharan Africa, Asia and Australasia. It does not include North Africa or the Middle East which are classified as medium-haul.

Services are those which were listed to operate during the first week of July 2004 (1-7 July) in the OAG guide. Only non-stop scheduled services from Europe are included. This means that each service is only listed once, so for example, a flight that operates Copenhagen-London-Sao Paulo-Rio de Janeiro will only appear under London-Sao Paulo. A few services are omitted altogether because they stop in the medium-haul area (North Africa or Middle East) en-route or make a technical stop only (e.g. Frankfurt-Halifax-Orlando). Code-share flights are only counted once – under the European hub airline if they are the operator, as a code-shared flight of the European hub airline where they have a code-share but are non-operating and under the operating airline elsewhere. Alliance partner's flights are only counted with the European hub airline if they are code-shared (e.g. Delta flying Paris-Cincinnati is included under Air France while American flying London-Chicago is not included under BA). Charter services are not included in this analysis but are very small in comparison (less than 5% of the scheduled traffic).

2. Distribution of operations between the major airlines and airports

Whereas most European countries can support a network of domestic and regional air services, long-haul traffic is much more concentrated. The 4 major hub airports (Paris CDG, London Heathrow, Frankfurt and Amsterdam) dominate the market.

Table 1 shows the overall picture in terms of all long-haul services by all airlines. 51 airports in Europe had some form of long-haul service in July 2004. This ranges from one flight per week from Cardiff (to Toronto) and Hamburg (to Accra) up to 1125 flights out of London Heathrow (160 per day – some 22% of the European total). Although Heathrow is well ahead in number of flights, Frankfurt and Amsterdam actually serve more destinations than Heathrow. This is primarily because there are more duplicated routes out of Heathrow – BA only has 40% of the services there and as well as foreign carriers, faces competition from Virgin in many cases. Heathrow also has some very dense routes such as New York JFK which accounts for 128 flights

per week or 18 per day. Certain US destinations (e.g. Atlanta, Houston) are still restricted under the bilateral agreement to operate only out of Gatwick and this accounts for another 11 destinations and 182 flights per week. When an ‘open skies’ or EU multilateral is eventually agreed, these will almost certainly decamp to Heathrow, propelling it into number 1 position in Europe for destinations and at the same time decimating Gatwick’s remaining long-haul services, already reduced from their heyday in 2000 by British Airways.

Table 1
Long-haul services (all carriers) by European airport – July 2004

Airport	Non-stop Destinations	Weekly frequencies	% hub airline or code-share
London Heathrow	71	1125	40
Paris CDG	78	806	62
Frankfurt	81	671	69
Amsterdam	60	480	67
Madrid	30	276	54
London Gatwick	32	244	21
Rome Fiumicino	34	165	44
Zurich	25	164	70
Milan Malpensa	35	153	75
Munich	33	136	76
Manchester	18	108	19
Paris Orly	11	107	41
Lisbon	15	98	77
Vienna	14	74	96
Brussels	15	67	48
Copenhagen	11	66	83
Shannon	8	49	51
Dublin	7	40	55
Helsinki	7	35	100
Athens	6	34	44
31 Others (see Table 4)		327	
TOTAL		5225	

Source: Compiled from OAG data

It can be seen that there is a very sharp taper as one moves down the table. Only three airports handle more than 500 long-haul flights per week and only six more than 200. Rome continues to be a significant second tier destination. The airports the overseas airlines wish to fly to are generally important as origin and destination points in their own right (e.g. London, Paris, Rome,

Manchester). Overseas airlines tend to avoid the medium-sized airports that are important as hubs (unless part of the same alliance group) e.g. Zurich, Milan, Munich, Vienna. Compared to 10 years ago some concentration is apparent. Thin, low frequency routes from regional airports have been dropped to boost the flows through the hubs. The largest markets have generally shown the most growth (Sweetman, 2004, p30). Whereas once cities such as Toulouse, Bordeaux, Lyon and Basel/Mulhouse had direct flights to New York, only a Nice link survives among the French regional airports, everything else being forced through Paris (or alternative hubs). Direct services such as Hamburg-Atlanta and Birmingham-Chicago have also disappeared.

Table 2 shows that three divisions can be identified from the league table of European long-haul hub airlines. The four big ones with more than 40 departures per day are Air France at CDG, Lufthansa at Frankfurt, BA at Heathrow and KLM at Amsterdam. The second group of mid-size players with 10-20 departures per day includes Iberia at Madrid, Alitalia at Malpensa and Rome, Swiss at Zurich, Lufthansa's second hub at Munich, TAP at Lisbon and Austrian at Vienna.

The major hubs have strengthened their position in recent years as previously significant competitors such as Swiss, SAS and Sabena have lost ground. BA has transferred Gatwick flights to Heathrow and Air France now has a minimal long-haul presence at Orly. Alderighi and Cento (2004) consider how different airlines have reacted to the down-turn in demand post 9/11.

The mid-size players look to be the most exposed. Lufthansa's Munich hub is needed in the short term as an overflow to Frankfurt. Lufthansa also has an incentive to keep anyone else from developing the lucrative Munich market. Alitalia is making severe losses and has got into a messy split hub arrangement between Rome and the new Milan Malpensa airport. Restructuring will be necessary and this is likely to see an axe taken to many of these uncompetitive long-haul operations. Swissair used to be a major long-haul carrier. The problem for Swiss is that it is losing the critical mass required to stay in the game. Somewhat against the trend, Iberia and Austrian have both grown rapidly in the long-haul arena. Iberia has taken advantage of the new facilities at Madrid Airport and Spain's historic and linguistic links with Latin America to aim for dominance of this market from Europe (Buyck, 2004a). A strategy that seems to have been

successful – Iberia has pulled out altogether from the Far East where it was not very competitive and maintains minimal services to Africa. The South Atlantic offers the potential of higher yields, especially to the dominant carrier and Iberia is now one of the most profitable European majors. Austrian’s strategy is more difficult to fathom. It would appear that the airline has identified long-haul travel as a potentially profitable growth market and aimed to capture a larger slice. It has the advantage of an efficient hub but with Austria being a small origin/destination market it will inevitably suffer on yields as frequencies are no better than from the main hubs.

Table 2
Long-haul service by European airlines from their hub airports – July 2004

European Airline	Non-stop destinations*	Weekly frequencies*	% non-operated codeshare
Air France (Paris CDG)	65	503	18
Lufthansa (Frankfurt)	43	462	31
BA (London Heathrow)	46	445	5
KLM (Amsterdam)	42	321	25
Iberia (Madrid)	20	150	14
Alitalia (Milan MXP)	17	115	20
Swiss (Zurich)	18	115	24
Lufthansa (Munich)	18	103	35
TAP (Lisbon)	14	75	8
Alitalia (Rome FCO)	13	72	42
Austrian (Vienna)	14	71	28
SAS (Copenhagen)	8	55	0
BA (London Gatwick)	8	51	0
Air France (Paris Orly)	4	44	0
Finnair (Helsinki)	7	35	0
SN Brussels (Brussels)	10	32	100
Icelandair (Reykjavik)	5	30	0
Aer Lingus (Shannon)	4	25	0
LOT (Warsaw)	4	24	0
Aer Lingus (Dublin)	4	22	0

* including code-shares

Source: Compiled from OAG data

The airlines with few or no long-haul services have the opportunity to be niche players – Aer Lingus and LOT are good examples, serving ethnic flows to North America, although others such as Olympic and Malev may be better off exiting the long-haul sector altogether. SN Brussels may have the winning formula – not operating any long-haul routes of their own they

wet-lease capacity from Birdy Airlines to maintain profitable links to Africa and retain a presence on the North Atlantic by code-sharing on flights of American. SN has returned to profitability as a drastically shrunken short-haul airline, in contrast to its erstwhile partner, Swiss, which is struggling in no-man's land.

Almost all the airlines offer close to daily frequencies on average across their long-haul network. Compare this to 20 years ago when SAS flew 27 destinations with just 46 weekly frequencies. The only exceptions to this rule are SN Brussels with its African routes at sub-daily frequencies and the medium sized airlines such as Swiss and Alitalia who have a number of routes at 4 or 5x per week, maintaining breadth of coverage ahead of density. Alitalia often has a combined daily service from Milan and Rome but uses different hubs on different days of the week.

Code-sharing has become a crucial tactic to maintain coverage at the network level while controlling capacity and competition at the route level. Table 2 shows that British Airways have very few long-haul code-shares operated by other airlines (a mere 5% of their total long-haul flights). This is partly down to regulatory constraints but also because BA's oneworld alliance is less closely integrated than its rivals. Lufthansa in contrast has a third of its long-haul services from Frankfurt and Munich operated by partner airlines. The smaller hubs (e.g. Copenhagen, Lisbon, Dublin) tend to be dominated by the local airline as operating carrier, although some of these flights are still code-shared with overseas carriers.

Table 3 examines the long-haul passenger traffic of the European airlines (the most recent available data at the time of writing is for 2002). Please note that these figures are for long-haul services only (not complete system traffic). The four largest carriers are once again immediately apparent. Virgin Atlantic is in fifth place, ahead of Iberia, Alitalia and Swiss. Overall, AEA airlines long-haul traffic fell by 5% from 2001 to 2002, several airlines recording major cutbacks (Alitalia, Swiss, Olympic, Icelandair and Spanair). The best growth figures were for SAS, Finnair and TAP. bmi British Midland had newly entered the long-haul market with only 2 transatlantic routes. Load factors are healthy: an average of 79%. The problem however is that only 13% of these passengers were in the premium cabins (First and Business class). Lufthansa stands out as having 20% premium traffic which should make a considerable difference to yields.

Table 3
European airlines' long-haul traffic 2002

Airline	Revenue Passenger Km (billion)	% change from 2001	Passenger load factor %	% of passengers in premium cabins
Brit Airways	76	-4	75	15
Air France	73	4	81	14
Lufthansa	66	3	83	20
KLM	45	-2	82	10
Virgin Atlantic	27	-3	81	7
Iberia	22	0	77	11
Alitalia	14	-27	78	9
Swiss	13	-39	80	16
SAS	10	22	86	13
Austrian	9	-5	78	7
TAP	6	13	75	9
Finnair	3	25	81	7
LOT	3	1	86	3
Olympic	3	-18	76	9
Icelandair	1	-22	75	8
Bmi	1	94	66	4
CSA	1	4	87	8
SN Brussels	1	Na	53	9
Malev	1	-8	72	6
Spanair	*	-89	55	6
AEA total+	382	-5	79	13

* less than 500 million

+ includes Tarom and Turkish

Aer Lingus data not available

Na Not available

Source: AEA

There is some correlation between size of long-haul operation and proportion of premium traffic, suggesting that critical mass is necessary to attract the business passengers. The marginal players are mostly struggling to find 6 or 7% premium traffic. LOT Polish carry 97% of their passengers in economy class and bmi 96% - it is hardly worth the expense of offering business class at this level of take-up! Virgin Atlantic are much weaker on premium traffic than BA, suggesting scale of network is important. Some of the smaller airlines partially compensate with higher load

factors: 87% on CSA, 86% on SAS and LOT. British Airways' load factor is a relatively poor 75%. This may reflect higher yields and/or less use of hub feeder traffic to fill the aircraft.

Routes from regional airports and secondary centres tend to suffer from a lower proportion of business traffic. BA has axed first class on routes with a poor take-up e.g. London-Montreal, London-Tampa, Manchester-New York. American has introduced an all-economy cabin on its new Boston-Manchester route, flown with a 757 although this is not 'no-frills' (Noakes, 2004a). Looking ahead, it seems likely that first class will disappear from all but a handful of routes catering for the hyper-elite at a very high price, as the new improved business classes offer a very similar experience. On business oriented routes, a premium economy type product is needed to coax extra revenue from frequent business travellers whose company travel policy does not allow club class travel and also satisfying people who paid significantly more than the cheapest excursion fare with something better than a random seat in economy class on long journeys. If every airline starts offering this product however, it neutralises any competitive advantage and may be seen as simply an extra cost burden. Economy class is unlikely to move to 'no-frills' in the way it is going in the short-haul markets but airlines have little incentive to upgrade this cabin – most passengers here buy solely on price and don't stop to think what they are getting for it !

3. Long-haul services from secondary and regional airports in Europe

Table 4 shows the long-haul services from the remaining 31 airports not included amongst the major airports of Table 1. These split into four main categories: firstly the smaller capital cities (e.g. Reykjavik, Warsaw, Stockholm, Prague) where a few long-haul routes are maintained. These are largely serviced by the national carrier and one can speculate that many of these continue more for national prestige than due to strong demand or profitability. Stockholm, however, is the major city in Scandinavia and hence perhaps justifies a higher level of intercontinental service equal to Zurich or Vienna but with the tri-national carrier, SAS, services have been artificially concentrated on the hub at Copenhagen.

Table 4
Long-haul services (all carriers) by European airport – July 2004
Smaller airports

Airport	Non-stop Destinations	Weekly Frequencies	% national flag carrier or code-share
Glasgow International	6	33	21
Reykjavik	5	30	100
Dusseldorf	16	29	41
Birmingham	4	24	-
Warsaw	4	24	100
Hanover	9	22	-
Stockholm Arlanda	4	22	64
Prague	5	19	100
Budapest	3	15	100
Geneva	3	15	47
Barcelona	2	14	-
Nice	2	9	78
Edinburgh	2	8	-
Las Palmas	4	8	25
Oslo	2	8	-
Stuttgart	1	7	-
Venice Marco Polo	1	7	100
Krakow	3	6	100
Marseille	4	5	-
Lyon	3	4	-
Ponta Delgada	2	3	-
Porto	2	3	33
Belfast International	1	2	-
Funchal	1	2	100
Leipzig	2	2	-
Berlin Schoenefeld	1	1	-
Cardiff	1	1	-
Cologne/Bonn	1	1	-
Hamburg	1	1	-
Malaga	1	1	-
Newcastle	1	1	-
TOTAL		327	

Source: Compiled from OAG data

Most of the other services in Table 4 are not operated by the national flag carrier but by overseas airlines flying in (e.g. Continental from New York, Air Transat from Toronto).

The second group comprises links to New York from smaller regional centres. New York is by a long way the prime long-haul destination and it is possible to support services to here from quite small airports such as Edinburgh, Nice and Venice.

The third group is niche services catering for an ethnic demand based on past migratory patterns (Visiting Friends and Relatives traffic). Examples include Birmingham to Islamabad, Nice to Montreal, Belfast to Toronto, Hamburg to Accra (ethnic). These are generally at low frequency as there is negligible business traffic on these routes; passengers will fit around a once or twice weekly direct service from their local airport.

The final group is largely unique to Germany and comprises long-haul holiday routes from regional airports (e.g. to points in Florida and the Caribbean such as Leipzig to Puerto Plata, and Dusseldorf to Orlando). These are typically operated by Condor or LTU, the German airlines that used to specialise in the Inclusive Tour charter market. Low frequencies characterise these services (once or twice per week is again typical) and much of the capacity is sold en-bloc to tour operators. In other countries such as the UK, similar flights exist but continue to be operated as charters, hence do not feature in these statistics.

4. Distribution of services around world destinations

5225 long-haul flights were identified departing from Europe during the first week of July 2004. This amounts to some 750 services per day, a formidable level of activity! Table 5 shows that 60% of these flights are accounted for by the top 20 destinations with the other 40% being spread over 158 points. The continued dominance of the North Atlantic is reflected in that 13 of the top 20 are in the USA or Canada. Bangkok and Tokyo are the most important otherwise. In the US market, there is a large fluid demand that can shift around between hubs depending on the supply of air services. The rest of the world tends to show more stable long-term trends.

Table 5
Top 20 long-haul destinations from Europe by number of flights (all services)

Destination	Flights in first week of July 2004
New York JFK	463
New York Newark	277
Chicago O'Hare	262
Toronto	207
Atlanta	168
Washington Dulles	168
Bangkok	161
Tokyo Narita	160
Boston	138
Singapore	136
Los Angeles	125
Philadelphia	112
Montreal Dorval	104
Sao Paulo	104
Hong Kong	100
Miami	95
Johannesburg	90
Beijing	89
San Francisco	77
Detroit	70
158 Others	2119
TOTAL	5225

Source: Compiled from OAG data

Comparing with a study of the North Atlantic ten years ago (Dennis, 1994), it can be seen that the traditional gateways (major cities on the east and west coast such as Boston, Los Angeles and Miami) have lost ground while the beneficiaries have been hub airports near the east coast (Newark, Atlanta, Washington Dulles and Philadelphia) –Table 6. Newark's expansion has come largely at the expense of JFK as both can serve the large local market in New York but Newark offers the better onward connections. This has not been enough to displace JFK from first position however, although the gap has narrowed considerably. Twenty years ago, more than half the total Europe-US traffic passed through New York JFK although this airport mirrored the decline of Pan Am and TWA before the latest round of re-organisation. The larger European airlines serve both Newark and JFK at least daily. The US carriers have polarised: American and Delta from JFK (United having now more or less given up on this market); Continental from

Newark. The smaller European airlines have several strategies: moved entirely to Newark (e.g. SAS, TAP), remaining at JFK (e.g. Aer Lingus, Austrian) and a muddled operation (e.g. LOT whose flight goes to different New York airports depending on the day of the week!). Domestic connections are more limited at JFK with non-aligned low-cost start-up Jet Blue being the major operator.

Table 6
US transatlantic gateways

US Gateway from Europe	Rank in 2004	Rank in 1994
New York JFK	1	1
New York Newark	2	5
Chicago O'Hare	3	2
Atlanta	4	7
Washington Dulles	5	8
Boston	6	4
Los Angeles	7	3
Philadelphia	8	*
Miami	9	6
San Francisco	10	10

* not in top 10 in 1994

Source: Compiled from OAG and US Department of Transportation data

The four major European long-haul operators (BA, Air France, Lufthansa and KLM) serve all 10 destinations in the above list, with the exception only of Philadelphia (no KLM) and Detroit (no Air France). A medium sized European airline such as Swiss or Alitalia will serve most of the top 10 destinations. The smaller European flag carriers typically serve New York and one or two others chosen for their geography, ethnic links, alliance partnership or competitive position. In Canada, Toronto is in the networks of all the major airlines and Montreal is a favourite of the smaller ones (e.g. Olympic, Austrian, CSA) perhaps due to its importance as an international centre.

The regional airports in Europe show a relatively greater bias to New York and the major US hubs of Chicago and Atlanta (Table 7). Toronto is the other popular one with links to 12 minor European airports. Apart from this there are a large number of 'one-off' destinations with only

124 frequencies spread over 48 other points, many of which are a single route operating once or twice a week only.

Table 7
Long-haul destinations from Europe by number of flights (services from regional airports of Table 4 only)

Destination	Flights in first week of July 2004
New York Newark	63
New York JFK	58
Toronto	37
Chicago O'Hare	31
Atlanta	14
48 Others	124
TOTAL	327

Source: Compiled from OAG data

5. Changes in traffic and yields

Table 8 shows the development in total long-haul passenger traffic of the AEA airlines, load factors and passenger yields in real terms (after adjusting for exchange rate fluctuations and inflation). These are not perfectly comparable as AEA membership and reporting has varied over this time period. They do however enable some broad trends to be identified. Long-haul traffic has doubled in the last ten years, a very significant growth despite the current doldrums. Load factors have improved by 10 percentage points: we are all travelling in more crowded planes! Whereas in 1991, 1 out of 3 seats was empty it is now only 1 out of 5. This can possibly still creep a little higher but the realistic maximum for a year-round scheduled operation, with availability of seats on demand (albeit at a price!) is probably around 85%. The average cost of long-haul travel to the passenger has fallen by about 30% since 1991. This overall trend conceals an increase in yields in 2000 and 2001, which has collapsed in the last two years. The strategy seems to be 'pile it high and sell it cheap'! It is only in August 2004 that fare increases (other than fuel surcharges) are being mooted once again. KLM claimed that higher demand and strong forward bookings meant it could raise prices from Tuesday August 17th by between 1% and 3% (Milner, 2004) - the first substantive increase since September 11th 2001!

Table 8
European airlines' long-haul traffic and yields 1991-2002

Year	Revenue Passenger Km (billion)	Passenger load factor %	Passenger yield US c per RPK In real terms
1991	182	68	6.74
1992	207	70	5.88
1993	224	70	6.19
1994	244	73	5.92
1995	270	74	5.61
1996	293	75	5.40
1997	322	77	5.39
1998	345	76	5.11
1999	373	75	4.86
2000	399	78	5.03
2001	402	76	5.24
2002	382	79	4.86

RPK Revenue Passenger Km

Source: AEA

Where direct long-haul service is not available from a regional airport, connections via a European hub are necessary. Alliance development has rationalised long-haul networks in favour of more frequencies and capacity on sectors between key alliance hubs in different regions of the world while eliminating thin routes served at low frequency or with multiple stops. These are instead offered via a hub connection, which typically provides better journey times and frequencies while losing the convenience of a through plane service. The European major airlines have all adopted this pattern of service except where cargo traffic is important – this does not require the daily frequency sought by business passengers and airlines such as KLM maintain some low frequency operations with Boeing 747s to meet the need of this market (e.g. Amsterdam-Paramaribo in Suriname). Morrish and Hamilton (2002) found that alliances improve load factors and productivity but most of this is fed back to the consumer through fare reductions – as long as the market remains competitive.

After many years of failed attempts at international mergers (SAS-British Caledonian, Alcazar, BA-KLM-Sabena, Air France-Sabena, Swissair-Sabena, BA-KLM, KLM-Alitalia...) the first big move in Europe came with Air France and KLM merging under one holding company in 2004.

The repercussions of this will be felt widely. In one swoop, four potential global alliances have been reduced to three (Buyck, 2004b). Europe's two major hubs with spare capacity are now under the same control. The expectation in some quarters was that Air France would effectively close KLM down (despite short term commitments to maintain both hub networks). However, who would be the beneficiaries of this? At least part of the spoils would go to BA and Lufthansa. There is still a shortage of hub capacity in northern Europe. Analysis by Veldhuis (2004) suggests that Amsterdam may be the more defensible location than Paris, precisely because it is a smaller origin/destination market. It is quite likely that Air France and KLM will continue their separate lines of development – in which case why merge at all as the limited synergies could be realised through a much looser alliance agreement? Certainly, BA has looked at other airlines which offer some complementarity (including Swiss) and walked away.

Where the alliance impact has been more severely felt is at the junior partners' base airports. Whereas KLM is large enough to hold its own against Air France, SAS has fallen away as a long-haul operator in favour of feeding Lufthansa. Alitalia could see a similar relationship develop with Air France while Eastern European airlines are being rapidly signed up for alliance membership before they obtain any serious long-haul aspirations! This is likely to lead to a reduction in long-haul service at some of the smaller cities.

6. Growth forecasts

Table 9 shows that Europe-North America is by far the dominant long-haul market from Europe at the current time, accounting for almost half the total passenger kilometres in 2003. Europe-Africa is in second place overall although these other parts of the world show considerable variation by European market: Africa is very important from France, for example, Southwest Asia from the UK, Central and South America from Spain. Southeast Asia and Northeast Asia traffic is fairly evenly distributed.

Looking ahead to 2023, the growth rates are expected to be higher in some of the other markets than the North Atlantic but the differentials are not sufficient to change the ordering by much.

Most long-haul markets are forecast by Boeing to grow at 5-6% per annum with the highest growth in Europe-China (7.4%) and the lowest in Europe-Central America (4.6%).

Table 9
Boeing traffic forecasts 2003-2023

Regional Flow	2003 Thousand Billion RPK	2023 Thousand Billion RPK	Average annual % growth
Europe-North America	348	903	4.9
Europe-Africa	99	269	5.1
Europe-Southeast Asia	95	253	5.0
Europe-Central America	73	177	4.6
Europe-South America	49	171	6.4
Europe-Northeast Asia	48	175	6.7
Europe-China	34	143	7.4
Europe-Southwest Asia	29	95	6.0
Europe-Oceania	Na	Na	Na

RPK Revenue Passenger Kilometres

Na not available

Source: Boeing Current Market Outlook

This level of growth is unlikely to be accommodated at the major airports, all of which suffer capacity constraints and limits on development. Greater use of secondary hubs (e.g. Munich, Copenhagen) and/or secondary airports near the major cities (e.g. London Stansted and a new Paris region airport) is therefore going to be necessary. Whereas Lufthansa can continue developing Munich and other regional airports in Germany, British Airways has tended to withdraw long-haul services from UK airports other than Heathrow. Stansted may nevertheless be used by other long-haul airlines flying from abroad and/or new low-cost start ups, taking advantage of the wide range of European services to let passengers make up their own connections. In the absence of a third runway at Heathrow, BA may have to look at going back

into Gatwick or taking over SN Brussels Airlines as this is the only non-aligned carrier left with a potential hub in NW Europe.

7. Aircraft size and type developments

The Boeing 747 (with around 400 seats) dominated long-haul operations in the 1970s and 1980s. In 1985, 62% of North Atlantic Services were flown with the 747 and its market share was even higher in Europe-Asia (Dennis, 1994). The advent of the first long-range twin jets such as the Boeing 767 led to frequency being substituted for capacity on the more competitive passenger markets such as the North Atlantic. Where bilateral restrictions limited frequency, airport slots were in short supply or there was substantial cargo traffic, the Boeing 747 remained dominant however. Some airlines (e.g. KLM, Air France, Lufthansa) operate combi 747s which reduce passenger capacity to 250 seats with main deck cargo space. KLM reconfigures some of these aircraft for the summer season when passenger demand is stronger (freight demand is counter-seasonal, peaking in November-December).

In the last 5 years, the new generation of long-haul aircraft: Boeing 777, Airbus A330 and A340 have acquired an increasing role. They have almost eliminated the remaining tri-jets (L1011, DC10 and MD11) on a one-for-one basis as all fall within the 250-300 seat bracket. In a few cases they have been used to upgrade services developed with the 767 or A310 as demand grows. They have also perhaps more surprisingly been used as 747 replacements (e.g. by British Airways who has raided slots at Heathrow from short-haul services and by buying on the 'grey market'), enabling further frequency increases. Table 10 shows the long-haul fleets of the European major airlines and some contrasting carriers from other parts of the world.

US carriers have almost abandoned the 747 although Asian operators such as JAL, Singapore, Air India and Cathay Pacific are still wedded to the type. In Europe the large majors plus Virgin Atlantic continue with some 747s, while the smaller long-haul operators generally favour lower capacity aircraft.

Table 10
Principal long-haul fleets (excluding pure freighters) - 2004

	B747	MD11	A340	A330	A310	B777	B767
BA	57					43	20
AF	24		22	11		24	
LH	30		37	6	2		
KL	22	10				5	12
LX		4	7	9			
AZ						9	12
OS			4	4		3	5
IB	6		21				
TP			4		6		
SK			7	4			9
VS	15		15				
AA						45	73
DL						8	118
SQ	30		3			52	
JL	53	3				19	29

Source: Flight World Airline Directory 2004

The latest move is the use of significantly smaller aircraft than the 767 on very thin medium distance routes. The Boeing 757 can be adapted for transatlantic operations and is used on a handful of services, mainly by Continental (e.g. Newark-Birmingham, Newark-Edinburgh, Cleveland-Gatwick). American has recently started Boston-Manchester. It also appears on short routes from Europe to Africa such as Madrid-Lagos. The 757 offers the opportunity to return to an aircraft of 707 size (around 150 seats) but has the downside of only a single aisle with 3 seats either side. This creates a rather cramped impression and makes access to the toilets difficult, especially when meal service is in progress!

Currently, there is some interest in whether a niche can be found with a small narrow-body aircraft such as the A319 or Boeing Business Jet - a long-range derivative of the 737 (Aviation Strategy, 2003). Lufthansa converted non-hub services from Dusseldorf to Chicago and Newark and have since added Munich to Newark. Lufthansa/United used to operate larger aircraft on the Dusseldorf-US runs (A340 and Boeing 767) catering for the whole market. The rationale is to retain the high-yield business traffic which is willing to pay a premium (i.e. the full business class fare!) for a non-stop service. Although unit costs are high, so are unit revenues. Other passengers are forced through a hub (e.g. Dusseldorf-Frankfurt-Chicago, although there are

many other options – via Amsterdam, London etc). Lufthansa is not so worried about losing these passengers to its rivals however! Air France, in contrast, have used their A319-100ER's to start new thin routes from their Paris CDG hub to 'difficult to reach' destinations that are important to the energy and construction industries (e.g. Malabo, Pointe Noire, Tashkent, Kuwait). With minimal competition these can justify premium fares but depend on feed from the conventional Air France network.

bmi British Midland have expressed an interest in operating long-haul services from the British regions where an A330 is too big (Kingsley Jones, 2004). The bmi plan, using A319LR or Boeing 737-700X equipment envisages a conventional two-class cabin as there is insufficient premium traffic on routes from places such as Manchester. This provides an interesting option to serve destinations such as Montreal or Mumbai but is unlikely to work on the longer distance routes.

For the future, Airbus and Boeing have taken a rather different prognosis of the requirements of the market. Both can expect to capture a significant part of the mainstream demand with their A330/A340 series and 777 respectively. Airbus believes that factors such as growth in demand, downwards pressure on costs, slot shortages at key airports and an increased dependence on hubs and alliances will push airlines towards larger aircraft; hence the development of the A380 (Sweetman, 2004). Boeing, in contrast, believes passengers will want more non-stop flights on thinner and long-range markets with a cost effective smaller aircraft: hence the development of the Boeing 787 – originally 7E7 (Pilling, 2004).

8. Scope for low-cost long-haul airlines

The low-cost airline revolution has so far been entirely confined to the short-haul market. In the USA, Southwest and Jet Blue fly some transcontinental routes but these are only medium-haul by international standards (5 hours). There are a number of reasons why it is more difficult to translate the low-cost formula to the long-haul market – although it has been tried, most notably by Freddie Laker's Skytrain, on the North Atlantic, some twenty five years ago!

Traditional airlines in general already obtain low seat mile costs and hence offer competitive fares on long-haul services. From London to New York, a typical winter advance purchase economy class return is as little as £200 including taxes, rising to £500 in peak season. Whereas in Europe, low-cost airlines have been able to more than halve the average fare paid per passenger, the best they are likely to achieve in long-haul is about 20% off. In the long-haul markets there remains a significant demand willing to pay a premium price for sleeper seats etc. With passengers at the front of the cabin paying many thousands of pounds for their ticket, the marginal cost of the economy class seats at the back of a mixed configuration aircraft falls considerably. By filling the aircraft with economy class it would be difficult to do better than this, especially as seat pitch on long-haul cannot realistically be reduced below the 31" or 32" already provided by the major airlines. On some aircraft types it is possible to squeeze an extra seat across the cabin (e.g. 8 abreast instead of 7 on the Boeing 767, 10 instead of 9 on the MD11).

It is difficult for low-cost airlines to match the utilisation improvements that have been achieved on short-haul routes as long-haul aircraft are already flying 15-16 hours a day with carriers such as BA and Lufthansa, many sectors being overnight (Table 11). It is also difficult to eliminate 'frills' altogether. Some form of meal service is required on flights of 8 or 10 hours – even if paid for 'on demand' the costs of the galley space and the complications of loading catering remain. Non-allocated seats is a no-go: families are unwilling to be split up for that length of journey! In-flight entertainment is also more important on long-haul than short-haul and the number of toilets realistically cannot be reduced from the major carriers' provision (as has been done on short-haul routes). Large amounts of checked baggage must still be handled. Civair is a South African domestic airline planning to fly Cape Town-Stansted from the end of October 2004. Economy return fares start at £420 and do not include food, drink or headsets (Noakes, 2004b). This is about the same price as indirect flights on Lufthansa or KLM and £150 less than the direct operators from Heathrow.

Hubs are much more crucial for long-haul travel than for short-haul. The only dense long-haul point-to-point markets from Europe equate roughly to Virgin Atlantic's network from London plus a handful of Paris routes and a few New York services. Other services are heavily

dependent on connecting traffic at one or both ends of the route. For example, 85% of American Airlines' Manchester-Chicago traffic connects at Chicago and even on London-Chicago it is over 60% (Source: UK International Passenger Survey). The European airlines obviously have high transfer volumes at the European end and on some of the thin hub-hub routes e.g. Paris-Cincinnati or Amsterdam-Memphis, hardly anyone may be making a simple direct flight.

Table 11
Utilisation of short-haul and long-haul aircraft

Airline	Boeing 737-300 daily utilisation hours	Europe passenger load factor %	Boeing 747-400 daily utilisation hours	Long-haul passenger load factor %
Air France	7.6 (A320)	65	14.1	81
British Airways	7.6	62	12.0	75
British Midland	6.5	60		
KLM	7.1	71	15.0	82
Lufthansa	7.1	62	15.3	83
Virgin Atlantic			14.6	81
easyJet	11.0	81		
Go	9.4	75		
Ryanair	8.8 (737-800)	74		

Source: Compiled from IATA, AEA and CAA Statistics

Use of larger aircraft than the conventional airlines would be necessary to reduce unit costs. Thus if BA is using a 777 it would be possible to undercut them on seat mile costs with a new A380. This however flies in the face of low-cost airlines' strategy on short-haul routes where they have kept to the modest 737 size equipment in order to remain competitive on frequency. Without the hub feed of the majors, large aircraft are not really a viable proposition. Cargo is another concern. Low-cost airlines steer clear of cargo on short-haul routes as it complicates the operation and slows down turnaround times. On long-haul, cargo is too significant a source of revenue to ignore, particularly if flying aircraft with large belly-hold capacity.

If these commercial obstacles were not sufficient, the regulatory barriers in the form of bilateral agreements limit the markets in which a new-entrant low-cost airline could start service. UK airports (except Heathrow and Gatwick) have relatively liberal access to transatlantic routes and some Far East markets and the UK government would probably be supportive. In France however there is likely to be more protectionism of Air France! Several schemes have been mooted for linking Stansted with a US low-cost base such as Baltimore, enabling passengers to create their own 'low-cost' connections. It is difficult to see this being a very efficient process however with three - presumably independent - airlines involved! The new airport at Doncaster Finningley Robin Hood also has aspirations to host transatlantic services but these would appear to be some way into the future.

The only substantial area with scope for cutting costs comes from labour. A new entrant could undoubtedly find staff willing to work for less, although again the differential is muted compared to short-haul routes. Traditional airlines often pay staff the same across the network which makes them particularly uncompetitive on short-haul. On long-haul, low-cost airlines would still have to incur some overseas accommodation and allowances as it is physically impossible for staff to return to base each trip.

For these reasons, there are few long-haul charter flights which provides some evidence of the constraints in the market. The only places where charters have been successful in the long-haul arena are on leisure dominated routes in peak season (e.g. London-Orlando or London-Goa). These are reflected in the low frequency scheduled services operated by leisure airlines such as LTU and Martinair from Europe to Florida and the Caribbean, also by Air Transat from Canada to European regional airports.

Although the circumstances are clearly loaded against a successful invasion of long-haul routes by new-entrant or 'low-cost' airlines, it cannot be ignored. If long-haul services (badly depressed since September 11th) become strongly profitable again for the major carriers then it is likely that other airlines will wish to get a slice of this market. If European traffic for the low-cost airlines falters, then it is possible that carriers such as easyJet may have to look at interline traffic to supplement their own local demand or even operating long-haul in their own right.

9. Conclusions

Whereas a large number of airlines are likely to maintain short-haul networks in Europe, long-haul travel will be concentrated in the hands of a few key players. There are significant barriers to entry in the long-haul market, resulting from the dispersed distribution of demand, alliances and frequent flier programmes, slot constraints at major airports and the sheer cost and risk involved in building up critical mass. Virgin Atlantic and Emirates have been the only two significant long-haul new entrants in the last 20 years. Several European airlines have already abandoned the effort to be major long-haul players (e.g. SN Brussels, SAS, Olympic) and settled for a niche or feeder role. This has inevitably downgraded the status of their base airports in the intercontinental networks. Others such as Swiss and Alitalia may have to do likewise if they are to survive at all. The dilemma is that if long-haul services can be returned to profitability, they offer the traditional airlines the opportunity to participate in a more stable and less competitive sector of the market - hence the current growth strategy of Austrian at Vienna, for example.

The best scope for long-haul services from the regions is to major hub airports in other parts of the world, such as those developed by Emirates (Dubai) and Continental (New York Newark). Opportunities for point-to-point leisure services fall into two main categories: ethnic links and holiday destinations (some of which may already exist as charters). A long-haul low-cost 'no-frills' air service is likely to be a risky venture but carriers such as easyJet may be tempted to try this from their main bases in secondary airports such as London Stansted or Berlin Schonefeld if profits falter on their European network, using their short-haul services to provide feed. Otherwise, the regional airports are in the hands of the major airlines or alliance groups and their European feeder operations. Important links are currently under threat from lack of capacity for small aircraft at the major hubs, run-down of secondary hubs and competition from low-cost airlines for short-haul traffic.

Change is not therefore complete and there are other variables that could impact on the final picture. If Heathrow and Frankfurt are successful in obtaining new runways, that will make the

going harder for everyone else. If no new runways are built, there will be an overflow that will trickle down to the next tier of hubs and out to the regional and secondary airports.

References

Alderighi, M. and Cento, A. (2004) European airlines conduct after September 11, **Journal of Air Transport Management**, **10**, 97-107.

Aviation Strategy (2003) The new wave of long-haul all business airlines, **Aviation Strategy**, September, 5-6.

Buyck, C. (2004a) Iberia Reborn, **Air Transport World**, June, 22-26.

Buyck, C. (2004b) Mariage de Raison, **Air Transport World**, January, 24-26.

Dennis, N. (1994) The North Atlantic Air Travel Market, **Travel & Tourism Analyst**, **2**, 4-23

Flanagan, B. (2004) Airbus puts a stop to stopovers, **Observer**, 25 July, Business 9.

Kingsley Jones, M. (2004) BMI outlines plan for long-haul services, **Flight International**, 16-22 March, 9.

Milner, M. (2004) BAA says recovery is in the air, **The Guardian**, 12 August, 20.

Morrish, S.C. and Hamilton, R.T. (2002) Airline alliances – who benefits?, **Journal of Air Transport Management**, **8**, 401-407.

Murray, S. (2000) Airbus - Aircraft Forecasts and Market Evaluation, *Marketing and Market Research Seminar*, University of Westminster, December.

Noakes, G. (2004a) Boston service for Manchester, **Travel Trade Gazette**, 19 January, 15.

Noakes, G. (2004b) Civair links Stansted to Cape Town, **Travel Trade Gazette**, 6 August, 7.

Pilling, M. (2004) Dream date, **Airline Business**, April, 36-41.

Pinkham, R. (2003) Riding the Dubai wave, **Airline Business**, December, 30-35.

Sweetman, B. (2004) Bigger & Smarter, **Air Transport World**, May, 24-30.

Veldhuis, J. (2004) Analysing Competition between Airports, *Airport Policy and Planning Seminar*, University of Westminster, May.