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Historical trends in international-to-international interliners

International Competition

Final Report

16 December 2013

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Scope

As part of PwC's support on analysis and strategy to the Airports Commission, we were asked to provide a short note examining historical trends in international-to-international interliners travelling through the UK, Paris Charles de Gaulle (CDG), Frankfurt Airport (FRA), Amsterdam Airport Schiphol (AMS) and Dubai Airport (DXB) including any distinction between growth routes and relatively mature routes. This stage of the project involved working with the DfT to determine an appropriate way to identify relevant, internationally mobile transfer passengers from the data. The aim of the project on International Competition (of which this paper forms part) was to provide input to support the development of the existing DfT aviation model to incorporate full passenger choice models for international-to-international interliners.

This report provides a summary of these trends[1].

[1] The report was prepared in July and all sources were referenced and up-to-date at that time.

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Introduction

Context

Discussion Paper 01: Aviation Demand Forecasting published by the Airports Commission in February 2013 highlighted that a potential limitation of the existing DfT model relates to its ability to capture international competition for international-to-international interliners hubbing at major European airports. This report has been produced to examine historical trends in international-to-international (I-to-I) interliners travelling through five major airport hubs, to help better incorporate international competition within the DfT model. The five airports analysed are:

- London Heathrow Airport (LHR)
- Amsterdam Airport Schiphol (AMS)
- Paris Charles de Gaulle Airport (CDG)
- Dubai International Airport (DXB)
- Frankfurt Airport (FRA).

Discussion of data sources

This report has been prepared using data sourced from two main sources:

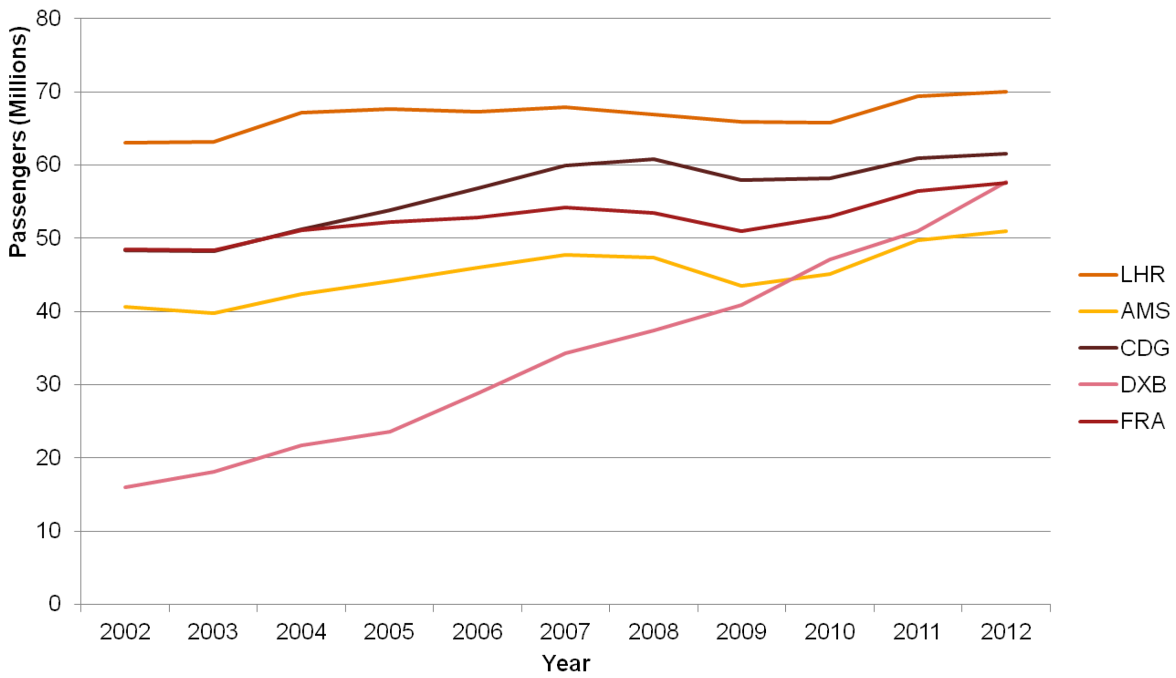
1) Directly from the airport and aviation authority websites (CAA, Schiphol, Fraport, Dubai Airport and Aeroports de Paris). This official data was considered to most accurately reflect "actual" passenger numbers and was used to determine the total passenger movements and total transfers through LHR, AMS, CDG, DXB and FRA for the period from 2002 to 2012.

2) Sabre Airport Data Intelligence, a comprehensive database that details origin-destination, segment and connections data for passengers and revenues by airline, class of travel, point of sale, etc. The database includes monthly data from January 2002 to current (usually with a 2-3 month lag) and is updated monthly. Access to IATA's Schedule Reference Service (SRS) for capacity and schedule data (also available through SRS and OAG) provides detailed segment level information for scheduled services and includes seat capacity, frequency, aircraft type, airline, etc. by month and year from January 2000 to March 2014 and is updated monthly.

Trends of Total & Transfer PAX

Although LHR is the third busiest airport in the world in terms of total passenger traffic, with its runways currently operating at 99% capacity the airport has seen limited annual growth of 1.1% in **total passenger movements** over the last ten years, from 63.0 million passengers in 2002 to 70.0 million in 2012. This is lower than the annual growth rates of the other main European hubs of AMS, CDG and FRA, which have seen passenger numbers increase annually by 2.3%, 2.4% and 1.7% respectively (note that FRA was constrained until the fourth runway went into operation in October 2011). Consequently, LHR's position as Europe's busiest airport has weakened in the last ten years with, for example, CDG's total passenger movements representing 88% of LHR's movements in 2012 versus only 77% in 2002.

Figure 1: Total passenger movements (2002 to 2012)

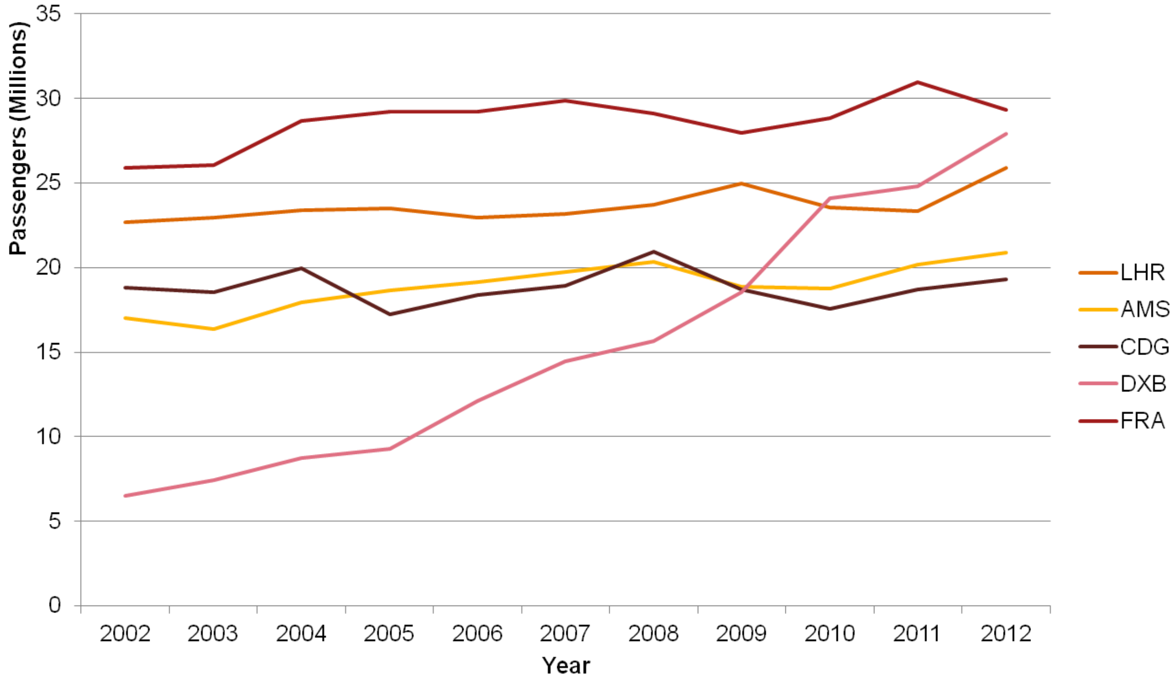


Source: CAA, Schiphol, Fraport, Dubai Airport and Aeroports de Paris

In line with the slow growth in total passenger movements, LHR has also seen limited annual growth of 1.3% in **total passenger transfers** since 2002, from 22.7 million transfers in 2002 to 25.9 million in 2012. This is consistent with the 1.3% annual increase experienced at FRA and greater than the 0.3% per annum growth seen at CDG. Of the four main European hubs AMS has enjoyed the highest annual rate of growth in passenger transfers of 2.1%, from 17.0 million transfers in 2002 to 20.9 million in 2012. However, while there has been an upwards trend in passenger numbers over the last ten years for the four European hubs, all experienced a decline in passenger movements (both total and transfers) from 2008 to 2009 due to the global economic crisis depressing demand for travel.

In contrast to the small growth seen across the four European hubs, DXB has seen very strong growth of 13.7% per annum in **total passenger movements** (up from 16.0 million passengers in 2002 to 57.7 million in 2012) and 15.7% per annum in **total passenger transfers** (up from 6.5 million passengers in 2002 to 27.9 million in 2012). This growth has been driven by the large-scale expansion of the airport (terminal capacity having more than doubled from 23 million in 2002 to 75 million in 2012) and the rapid growth of Emirates Airline (the flag carrier of Dubai), which also helped insulate DXB from the general downturn in the aviation industry during 2008 and 2009.

Figure 2: Total passenger transfers (2002 to 2012)



Source: CAA, Schiphol, Fraport, Dubai Airport and Aeroports de Paris

Trends in I-to-I Transfers

Approach

"I-to-I transfers" are defined from the **perspective of the UK**[2] and, for each of the five hub airports, exclude:

a) All passengers with a true origin or destination at the hub airport
b) All passengers with a true origin or destination at an airport in the United Kingdom

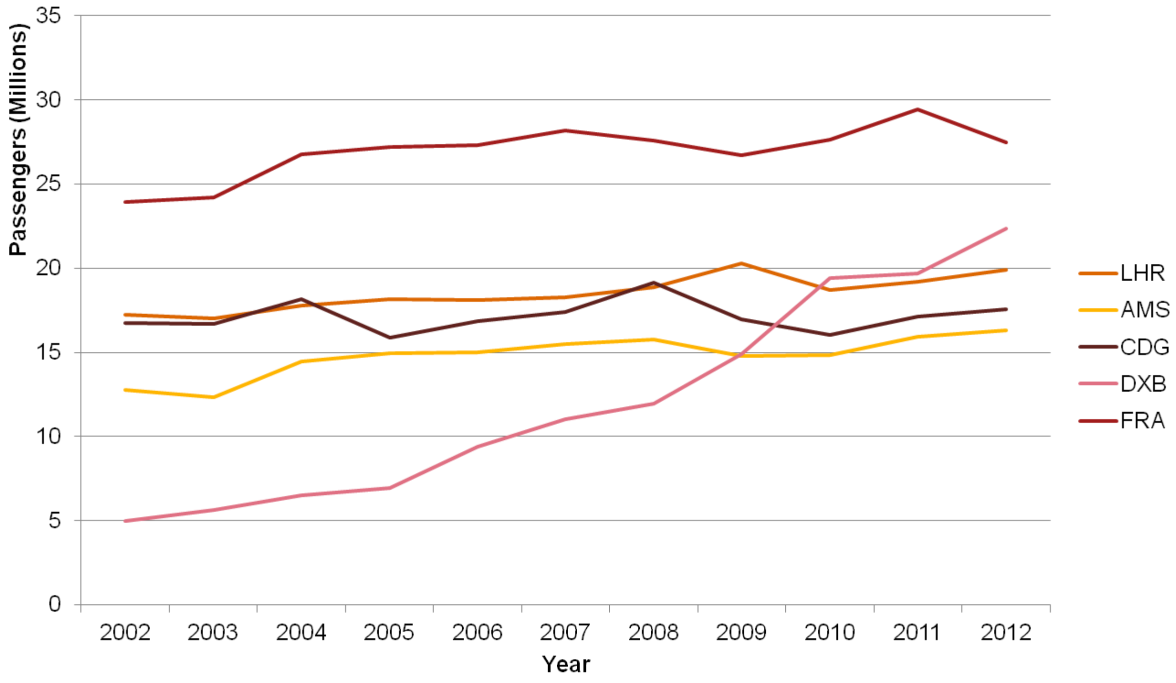
To determine the I-to-I transfers at each airport hub, the following actions were performed:

1) An "O&D Market" report was run from Sabre indicating all passenger movements through the airport
2) Filtered out all passengers with an origin or destination at the hub airport
3) Filtered out all passengers with an origin or destination in the United Kingdom
4) Doubled the passenger movements to capture transfer passengers both arriving and departing
5) Scaled the passenger movements either up or down to bring the figures in line with official transfer data

Analysis

Consistent with the trends in total passenger transfers, LHR has seen limited annual growth of 1.4% in **I-to-I transfers** since 2002, from 17.2 million transfers in 2002 to 19.9 million in 2012. This is similar to the 1.4% annual increase experienced at FRA and greater than the 0.5% per annum growth seen at CDG. Of the four main European hubs AMS has enjoyed the highest annual rate of growth in I-to-I transfers of 2.5%, from 12.8 million transfers in 2002 to 16.3 million in 2012. However, while there has been an upwards trend in I-to-I transfers over the last ten years for the four European hubs, all experienced a decline in I-to-I transfers from 2008 to 2009 in line with the general decline in total passengers movements.

Figure 3: International-to-international transfers (2002 to 2012)



Source: Sabre Airport Data Intelligence, Market Details Report

[2] International to international transfers are defined from the perspective of the UK (i.e. transfer passengers to/from countries other than the UK since the purpose of the analysis is to assess competition for international transfer passengers with UK airports.

In contrast to the small growth seen across the four European hubs, DXB has seen very strong growth of 16.2% per annum in **I-to-I transfers** (up from 5.0 million passengers in 2002 to 22.4 million in 2012). With the large-scale expansion of the airport (terminal capacity having more than doubled from 23 million in 2002 to 75 million in 2012) and the rapid growth of Emirates Airline (the flag carrier of Dubai), DXB has cemented its position as a major hub for I-to-I transfers.

Figure 4: Share of international-to-international transfers (2002 to 2012)

Source: Sabre Airport Data Intelligence, Market Details Report

LHR with 19%, FRA with 27% and CDG with 17% have all seen their share of **I-to-I transfers** reduce since 2002 (by 4, 5 and 5 percentage points respectively), while AMS with 16% is the only European hub to maintain its market share over the last ten years (down only 1 percentage point from 2002). The reduction in the market shares of LHR, FRA and CDG "has been primarily driven by the rapid expansion of DXB, which has seen its share of **I-to-I transfers** increase to 22% in 2012 (up from 7% in 2002). In addition, the combined CDG/AMS share has been squeezed due to the Air France/KLM merger in May 2004, which has reduced route duplication between the two hubs.

Ten busiest zone-to-zone routes

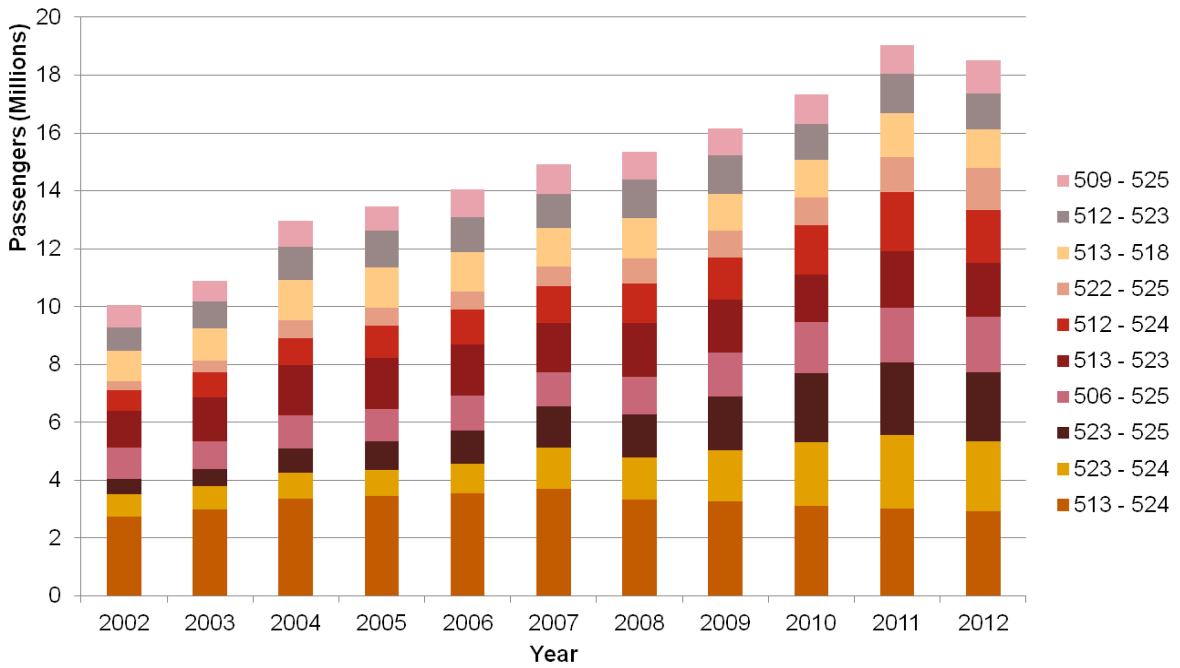
The DfT defines 48 international "zones" in the aviation model, with airports bucketed into the different zones depending on their geographic location[3]. For example, JFK International Airport is bucketed into zone **513** (United States East) and Hong Kong International Airport is bucketed into zone **525** (Far East).

The **ten busiest zone-to-zone routes for I-to-I transfers** accounted for 18.5 million passengers in 2012 (up 84% from 10.0 million in 2002). This represented 18% of the total I-to-I transfer market, an increase of 5 percentage points versus the 13% recorded in 2002. Five routes involved a North American leg originating/terminating in either zone **512** (United States West) or **513** (United States East), four routes involved zone **524** (India) and four routes involved zone **523** (Middle East) – this reflects the key role the five airport hubs play in linking East and West.

Route **513-524** (United States East-India) has consistently been the busiest routes for I-to-I transfers, accounting for 2.9 million passengers in 2012 (up 7% from 2.7 million in 2002, but down 22% from a peak of 3.7 million in 2007). This represented 3% of the total I-to-I transfer market and 16% of the ten busiest routes.

[3] See Appendix for details of the Zone Lookup.

Figure 5: Top 10 international-to-international transfers (2002 to 2012)



Source: Sabre Airport Data Intelligence, Market Details Report

Routes **523-524** (Middle East-India) and **523-525** (Middle East-Far East), the second and third busiest routes respectively in 2012, have become increasingly prominent over the last ten years. Route **523-524** accounted for 2.4 million passengers in 2012 (up 207% from 0.8 million in 2002), representing 2% of the total I-to-I transfer market and 13% of the ten busiest routes. Route **523-525** accounted for 2.4 million passengers in 2012 (up 355% from 0.5 million in 2002), representing 2% of the total I-to-I transfer market and 13% of the ten busiest routes.

Outside of the ten busiest routes, there has been a marked decline of 64% in the number of I-to-I transfers along route **513-529** (United States East-Dublin), from 461 thousand passengers in 2002 down to 164 thousand in 2012.

Top 10 international-to-international transfers per hub

The following analysis looks at the trends in the ten busiest zone-to-zone routes for I-to-I transfers at each of the five airport hubs over the ten year period from 2002 to 2012, with the routes analysed being the ten busiest zone-to-zone routes in 2012 at each airport.

London Heathrow Airport (LHR)

LHR is the busiest airport in the United Kingdom and the third busiest airport in the world in terms of total passenger traffic, handling more international passengers than any other airport. However, LHR's runways are currently operating at around 99% capacity, limiting annual air traffic movements to 480 thousand and constraining PAX movements well below total terminal capacity of 86 million passengers.

PAX 2012: 70 million

ATMs 2012: 471 thousand

Hub for: British Airways, Virgin Atlantic

Terminals: T1, T3, T4 and T5 (new T2 to open in 2014)

Runways: 3,900m & 3,660m

Overview

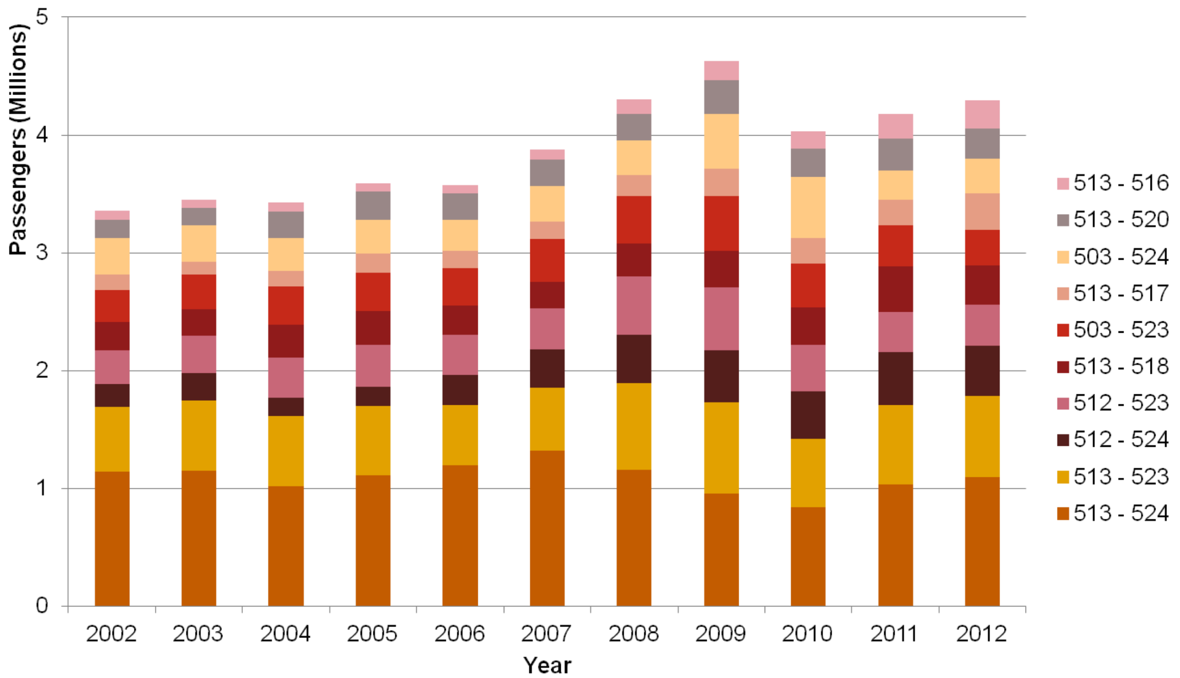
The ten busiest routes for I-to-I transfers at LHR accounted for 4.3 million passengers in 2012 (up 28% from 3.4 million in 2002). This represented 22% of the total I-to-I transfer market at LHR, an increase of 3 percentage points versus the 19% recorded in 2002. All ten routes involved a North American leg, with six routes originating/terminating in zone **513** (United States East), reflecting LHR's key role in transatlantic travel.

Busiest routes

Routes **513-524** (United States East-India) and **513-523** (United States East-Middle East) have consistently been the busiest routes for I-to-I transfers at LHR. Route **513-524** accounted for 1.1 million passengers in 2012 (consistent with 2002), representing 5% of the total I-to-I transfer market at LHR and 25% of the ten busiest routes. Route **513-523** accounted for 692 thousand passengers in 2012 (up 25% from 553 thousand in 2002), representing 3% of the total I-to-I transfer market at LHR and 16% of the ten busiest routes.

There has been a marked decline of 73% in the number of I-to-I transfers along route **513-529** (United States East-Dublin), from 416 thousand passengers in 2002 down to 113 thousand in 2012. This has resulted in route **513-529**, the third busiest route for I-to-I transfers in 2002, dropping out of the top ten busiest routes by 2012.

Figure 6: Top 10 international-to-international transfers at LHR



Source: Sabre Airport Data Intelligence, Market Details Report

Amsterdam Airport Schiphol (AMS)

AMS is Europe's fourth busiest airport by total passenger traffic and the world's fifth busiest by international passenger traffic. The airport has six runways, with plans for a seventh, and operates one terminal (single terminal concept) split into three large departure halls, which converge again once airside. With AMS approaching the limits of the capacity of the terminal, piers and aircraft stands on peak days, there are plans for further terminal expansion including the construction of a separate new terminal that would end the single terminal concept.

PAX 2012: 51 million

ATMs 2012: 423 thousand

Hub for: KLM

Terminal: One-terminal concept with three sections/halls

Runways: 3,800m 3,500m, 3,400m, 3,400m, 3,300m & 2,000m

Overview

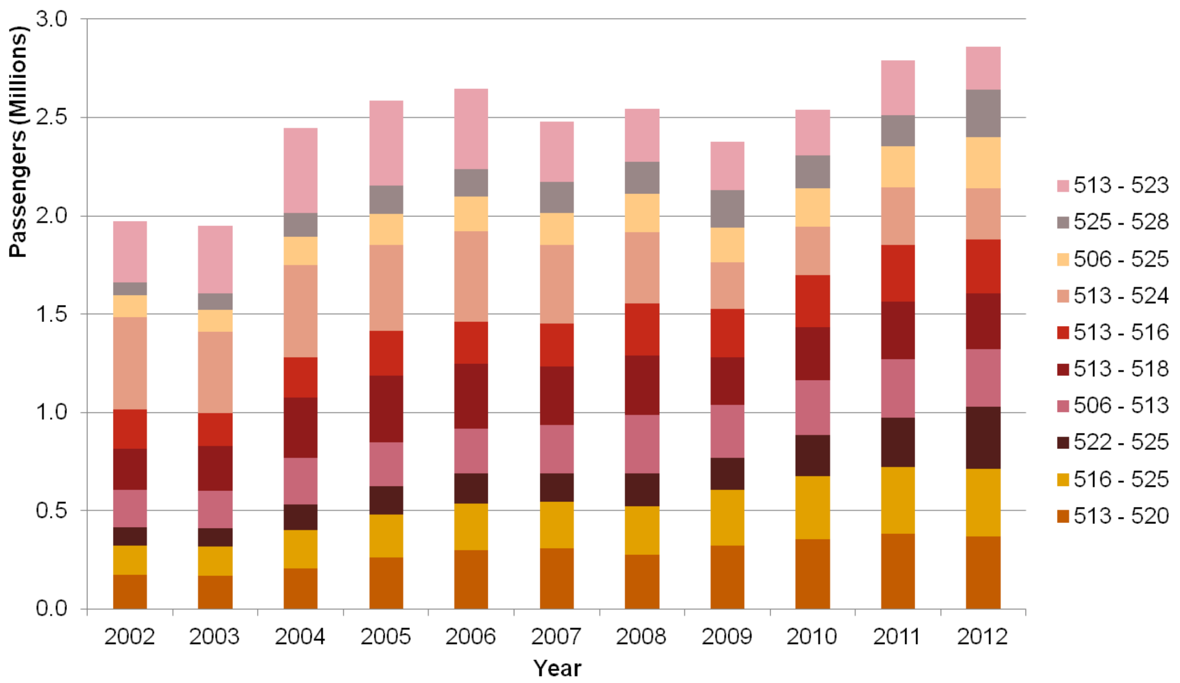
The ten busiest routes for I-to-I transfers at AMS accounted for 2.9 million passengers in 2012 (up 45% from 2.0 million in 2002). This represented 18% of the total I-to-I transfer market at AMS, an increase of 3 percentage points versus the 15% recorded in 2002. Six routes involved zone **513** (United States East) and four routes zone **525** (Far East), reflecting AMS's strategic position as a link between East and West.

Busiest routes

No single route dominated the market. The two busiest routes were **513-520** (United States East-East Africa) and **516-525** (Scandinavia / Baltics-Far East). Route **513-520** accounted for 368 thousand passengers in 2012 (up 112% from 174 thousand in 2002), representing 2% of the total I-to-I transfer market at AMS and 13% of the ten busiest routes. Route **516-525** accounted for 342 thousand passengers in 2012 (up 132% from 148 thousand in 2002), representing 2% of the total I-to-I transfer market at AMS and 12% of the ten busiest routes.

There has been a marked decline of 44% in the number of I-to-I transfers along route **513-524** (United States East-India), from 471 thousand passengers in 2002 down to 263 thousand in 2012.

Figure 7: Top 10 international-to-international transfers at AMS



Source: Sabre Airport Data Intelligence, Market Details Report

Paris Charles de Gaulle Airport (CDG)

CDG is Europe's second busiest airport (after LHR) in passengers served and Europe's busiest airport in aircraft movements, with 498 thousand ATMs in 2012. The new satellite, S4, to Terminal 2E was completed in July 2012 – dedicated to long-haul flights, it has the ability to handle 16 aircraft simultaneously and will significantly reduce connecting times for transfer passengers. With an expected capacity of 7.8 million passengers annually, the opening of satellite 4 has increased terminal capacity at CDG to 80 million.

PAX 2012: 62 million

ATMs 2012: 491 thousand

Hub for: Air France

Terminals: T1, T2 & T3

Runways: 4,215m, 4,200m, 2,700m & 2,700m

Overview

The ten busiest routes for I-to-I transfers at CDG accounted for 3.5 million passengers in 2012 (up 27% from 2.8 million in 2002). This represented 20% of the total I-to-I transfer market at CDG, an increase of 3 percentage points versus the 17% recorded in 2002. Six routes involved zone **505** (France) with a diverse range of other zones served, reflecting CDG's status as France's main international airport and a key connection to the rest of the world.

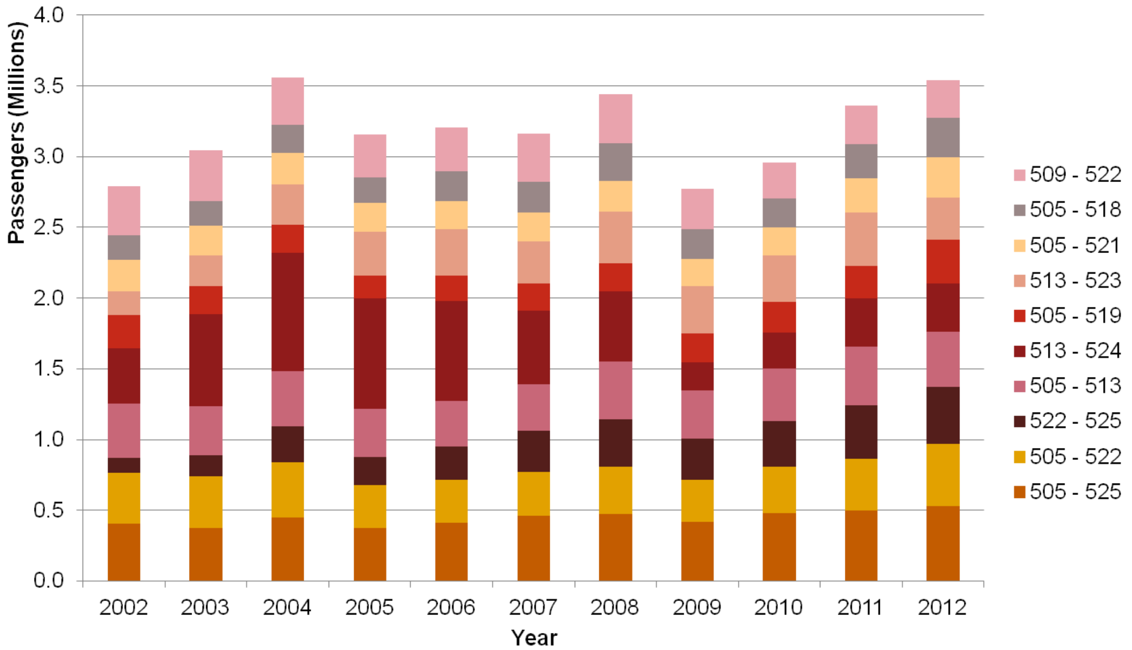
Busiest routes

No single route dominated the market. The two busiest routes were **505-525** (France-Far East) and **505-522** (France-Latin America). Route **505-525** accounted for 531 thousand passengers in 2012 (up 31% from 404 thousand in 2002), representing 3% of the total I-to-I transfer market at CDG and 15% of the ten busiest routes. Route **505-522** accounted for 436 thousand passengers in 2012 (up 21% from 359 thousand in 2002), representing 2% of the total I-to-I transfer market at CDG and 12% of the ten busiest routes.

The busiest route not involving an origin/destination in zone **505** (France) was **522-525** (Latin America-Far East), which accounted for 405 thousand passengers in 2012 (up 284% from 105 thousand in 2002). This represented 2% of the total I-to-I transfer market at CDG and 11% of the ten busiest routes.

There has been a marked decline of 59% in the number of I-to-I transfers along route **513-524** (United States East-India), from 836 thousand at its peak in 2004 down to 339 thousand in 2012.

Figure 8: Top 10 international-to-international transfers at CDG



Source: Sabre Airport Data Intelligence, Market Details Report

Dubai International Airport (DXB)

DXB is ranked the second busiest airport in the world (after LHR) in terms of international passengers served. With 2/3 of the world's population living within 8 hrs flight from Dubai, DXB is ideally placed to cement its position as a major international hub connecting Europe and North America with the rapidly growing economies of Asia and Africa. The opening of Concourse A in January 2013 has increased the collective capacity of T1, T2, and T3 to 75 million.

PAX 2012: 58 million

ATMs 2012: 344 thousand

Hub for: Emirates Airline, flydubai

Terminals: T1, T2 & T3

Runways: 4,680m & 4,320m

Overview

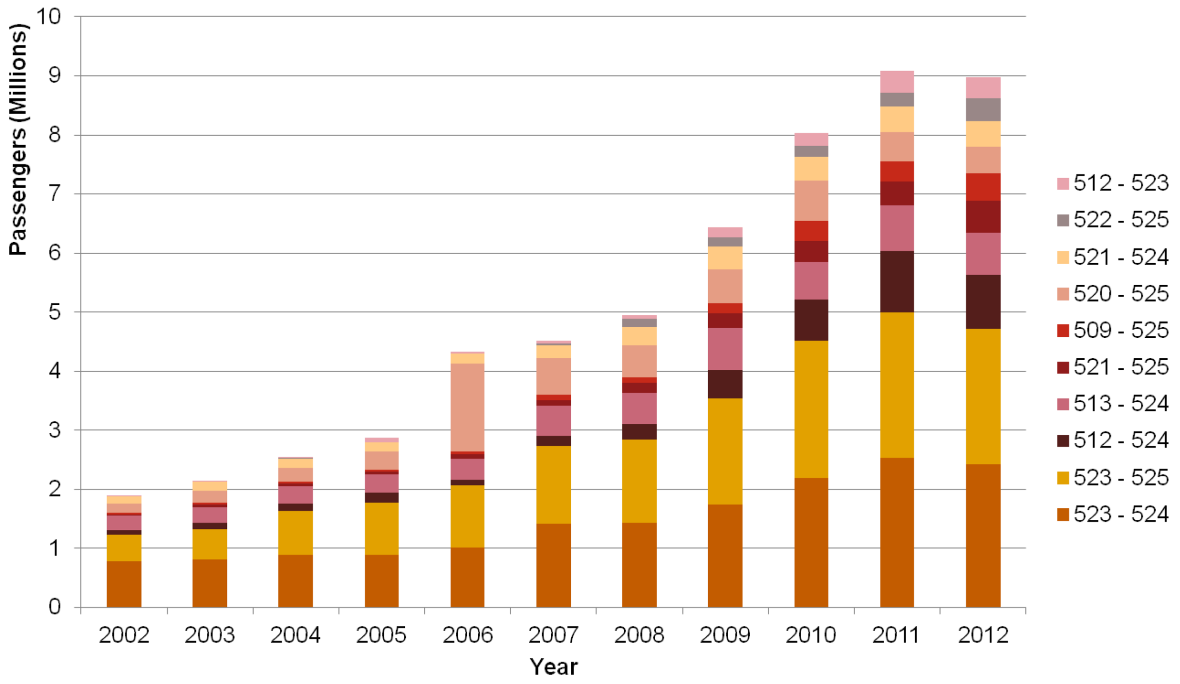
The ten busiest routes for I-to-I transfers at DXB accounted for 9.0 million passengers in 2012 (up 372% from 1.9 million in 2002). This represented 40% of the total I-to-I transfer market at DXB, an increase of 2 percentages points versus the 38% recorded in 2002. Five routes involved zone **525** (Far East) and four routes zone **524** (India), reflecting DXB's geographic advantage and importance as a major entry point into Asia.

Busiest routes

The I-to-I transfer market at DXB is dominated by two routes, **523-524** (Middle East-India) and **523-525** (Middle East-Far East), which have consistently been the busiest routes at the airport over the last ten years. Route **523-524** accounted for 2.4 million passengers in 2012 (up 209% from 785 thousand in 2002), which represented 11% of the total I-to-I transfer market at DXB and 27% of the ten busiest routes. Route **523-525** accounted for 2.3 million passengers in 2012 (up 420% from 441 thousand in 2002), which represented 10% of the total I-to-I transfer market at DXB and 26% of the ten busiest routes.

The busiest route not involving an origin/destination in zone **523** (Middle East) was **512-524** (United States West-India), which accounted for 916 thousand passengers in 2012 (up 954% from 87 thousand in 2002). This represented 4% of the total I-to-I transfer market at DXB and 10% of the ten busiest routes.

Figure 9: Top 10 international-to-international transfers at DXB



Source: Sabre Airport Data Intelligence, Market Details Report

Frankfurt Airport (FRA)

FRA is the third busiest airport in Europe and serves the most international destinations in the world (295 destinations in 107 countries). The fourth runway went into operation in October 2011, giving capacity of 700 thousand aircraft movements. Plans exist to build a large new Terminal 3 south of the existing terminals, with capacity for 25 million passengers and featuring 75 new aircraft positions.

PAX 2012: 58 million

ATMs 2012: 482 thousand

Hub for: Lufthansa, Condor

Terminals: T1 & T2

Runways: 4,000m, 4,000m, 4,000m & 2,800m

Overview

The ten busiest routes for I-to-I transfers at FRA accounted for 5.1 million passengers in 2012 (up 22% from 4.1 million in 2002). This represented 18% of the total I-to-I transfer market at FRA, an increase of 1 percentage point versus the 17% recorded in 2002. Six routes involved zone **513** (United States East) and four routes zone **506** (Germany), reflecting FRA's important role in transatlantic travel and its status as Germany's main international airport.

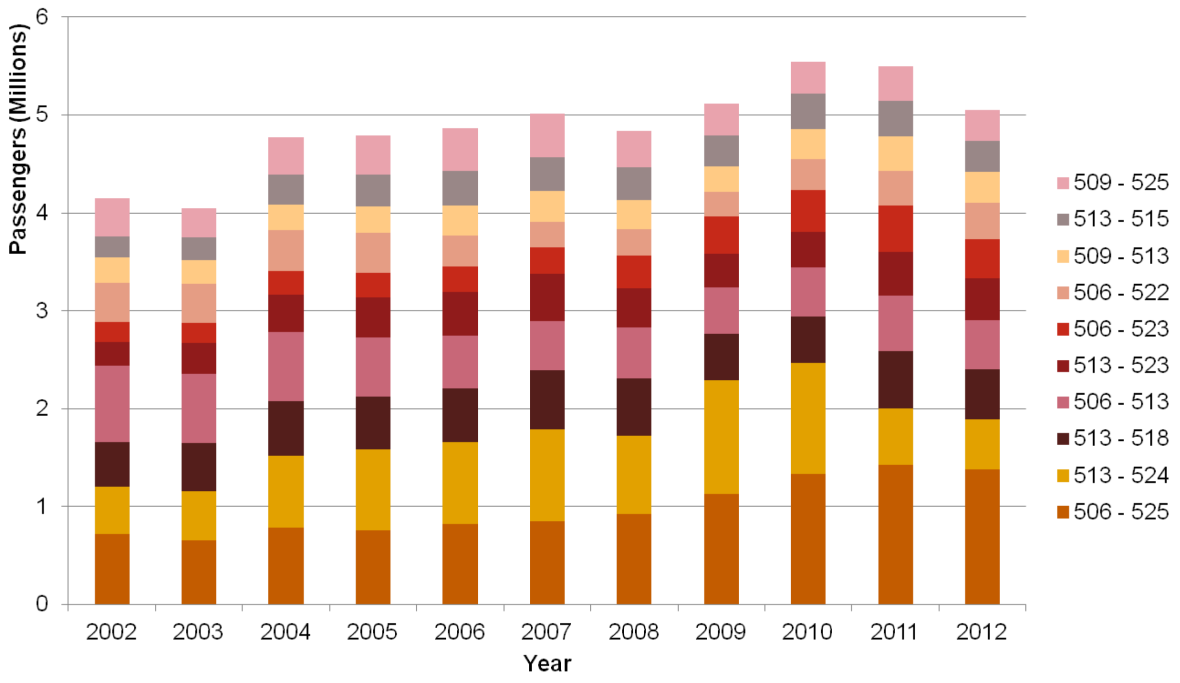
Busiest routes

Route **506-525** (Germany-Far East) has consistently been the busiest route for I-to-I transfers at FRA, accounting for 1.4 million passengers in 2012 (up 91% from 657 thousand in 2002). This represented 5% of the total I-to-I transfer market at FRA and 27% of the ten busiest routes.

The busiest route not involving an origin/destination in zone **506** (Germany) was **513-524** (United States East-India), which accounted for 513 thousand passengers in 2012 (although this is an increase of 6% from 484 thousand in 2002, it represents a significant decline of 56% from a peak of 1.2 million in 2009). This represented 2% of the total I-to-I transfer market at FRA and 10% of the ten busiest routes.

There has also been a marked decline of 36% in the number of I-to-I transfers along route **506-513** (Germany-United States East), from 780 thousand in 2002 down to 503 thousand in 2012.

Figure 10: Top 10 international-to-international transfers at FRA



Source: Sabre Airport Data Intelligence, Market Details Report

Contestable Market

Approach

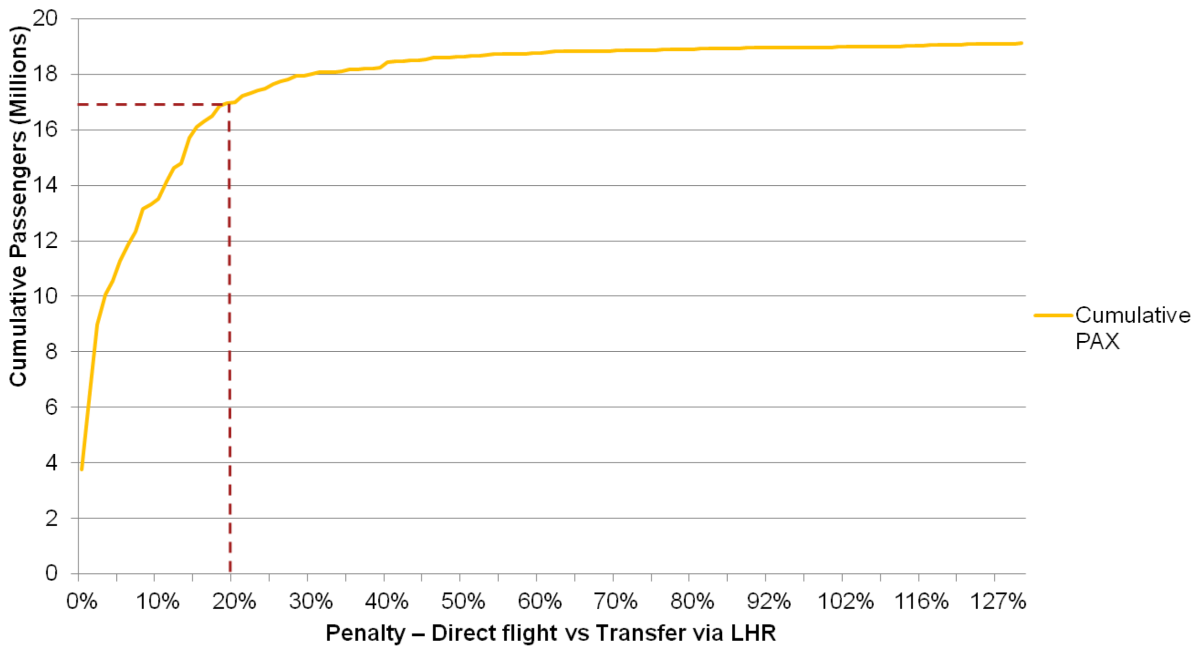
The "contestable market" for LHR is defined as the I-to-I routes operating through LHR, AMS, CDG, DXB and FRA that LHR could conceivably serve. We have considered the contestable market as having a maximum distance penalty of 20% (that is the extra distance flown as a result of connecting via LHR would not exceed 20% of the direct distance from the origin zone to the destination zone). For the purposes of the analysis, all I-to-I routes are assumed to be one-stop.

The 20% distance penalty applied was based on the LHR I-to-I transfer data for 2011 run from Sabre. The following actions were performed to determine the 20% penalty:

1) For each zone-to-zone route, calculated the direct distance between the origin and destination using the coordinates of the two zones
2) Included LHR as the connecting airport and, using the coordinates of LHR, calculated the total indirect distance if the route was flown via LHR
3) Divided the indirect distance by the direct distance, to give the "distance penalty"
4) Determined the cumulative passenger movements at each 1% penalty interval – this indicated that 88% of the market flew when the distance penalty was 20% or less

Note: The approach used only captures the contestable market connecting through the five airport hubs (rather than the whole contestable market connecting through all airports).

Figure 11: Penalty % vs Cumulative PAX (based on LHR I-to-I transfers for 2011)



Source: Sabre Airport Data Intelligence, Market Details Report

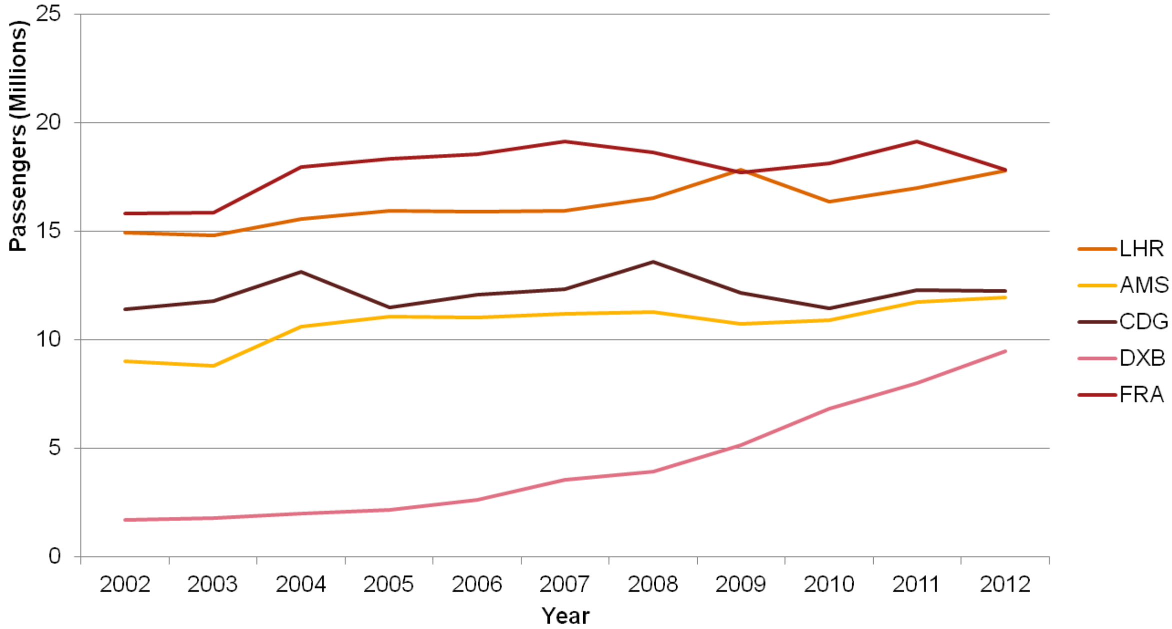
Analysis

LHR has seen limited annual growth of 1.8% in **LHR's aggregate contestable market**[4] since 2002, from 14.9 million passengers in 2002 to 17.8 million in 2012. This is greater than the 1.2% and 0.7% per annum growth seen at FRA and CDG respectively, but below the 2.9% seen at AMS (from 9.0 million passengers in

[4] LHR's aggregate contestable market is defined as the combined I-to-I transfers (from the perspective of the UK) for LHR, AMS, CDG, DXB and FRA for routes where the transfer penalty via LHR is 20% or less.

2002 to 12.0 million in 2012). In contrast to the small growth seen across the four European hubs, DXB has seen very strong growth of 18.7% per annum (up from 1.7 million passengers in 2002 to 9.5 million in 2012) in line with the significant increase in total passenger movements at the airport.

Figure 12: LHR's aggregate contestable market (2002 to 2012)



Source: Sabre Airport Data Intelligence, Market Details Report

LHR with 26%, FRA with 26% and CDG with 18% have all seen their share of the **aggregate contestable market** reduce since 2002 (by 2%, 4% and 4% respectively), while AMS with 17% is the only one of the four European airports to maintain its market share over the last ten years. The reduction in the market shares of LHR, FRA and CDG has been driven, in part, by the rapid expansion of DXB, which has seen its share of the **aggregate contestable market** increase to 14% in 2012 (up from 3% in 2002).

Figure 13: Share of aggregate contestable market (2002 to 2012)

Source: Sabre Airport Data Intelligence, Market Details Report

The ten busiest routes at LHR accounted for 4.3 million passengers in 2012 (up 28% from 3.4 million in 2002). This represented 24% of the aggregate contestable market at LHR, an increase of 2% versus the 22% recorded in 2002. However, LHR's share of the ten busiest routes fell by 3% from 36% in 2002 to 33% in 2012, driven by the rapid growth of DXB (passenger numbers at DXB across the ten busiest routes up 436% from 458 thousand in 2002 to 2.5 million in 2012) All ten routes involved a North American leg, with six routes originating/terminating in zone **513** (United States East), reflecting LHR's key role in transatlantic travel.

Figure 14: Contestable market – Top 10 LHR routes in 2012 across all five hubs

Route	Penalty	LHR (000's)	AMS (000's)	CDG (000's)	DXB (000's)	FRA (000's)	LHR's % share[5]
513 - 524	2%	1,094	263	339	715	513	37%
513 - 523	0%	692	221	297	217	429	37%
512 - 524	14%	426	111	80	918	294	23%
512 - 523	6%	346	129	114	353	295	28%
513 - 518	8%	338	285	194	-	512	25%
503 - 523	1%	303	102	129	65	165	40%
513 - 517	1%	303	150	113	-	285	36%
503 - 524	3%	301	73	75	132	169	40%
513 - 520	1%	251	368	80	56	157	27%
513 - 516	12%	245	274	61	-	128	35%
Total PAX		**4,298**	**1,975**	**1,484**	**2,456**	**2,948**	**33%**

Source: Sabre Airport Data Intelligence, Market Details Report

Figure 15: Contestable market – Top 10 LHR routes in 2002 across all five hubs

Route	Penalty	LHR (000's)	AMS (000's)	CDG (000's)	DXB (000's)	FRA (000's)	LHR's % share
513 - 524	2%	1,140	471	391	245	484	42%
513 - 523	0%	553	313	165	20	247	43%
512 - 524	14%	191	114	82	87	229	27%
512 - 523	6%	289	243	58	15	197	36%
513 - 518	8%	239	207	144	-	453	23%
503 - 523	1%	270	122	112	13	62	47%
513 - 517	1%	133	121	123	-	291	20%
503 - 524	3%	311	113	49	66	100	49%
513 - 520	1%	156	174	52	11	133	30%
513 - 516	12%	74	198	50	-	83	18%
Total PAX		**3,357**	**2,076**	**1,225**	**458**	**2,278**	**36%**

Source: Sabre Airport Data Intelligence, Market Details Report

Routes **513-524** (United States East-India) and **513-523** (United States East-Middle East) were the busiest routes at LHR. Route **513-524** accounted for 1.1 million passengers in 2012 (consistent with 2002), representing 6% of the contestable market at LHR and 25% of the ten busiest routes. However, LHR's share of

[5] See Appendix for LHR's share of the top ten routes from 2002 to 2012.

route **513-524** fell by 5% from 42% in 2002 to 37% in 2012, driven by an increase of 470 thousand passengers at DXB. Route **513-523** accounted for 692 thousand passengers in 2012 (up 25% from 553 thousand in 2002), representing 4% of the contestable market at LHR and 16% of the ten busiest routes. However, LHR's share of route **513-523** fell by 6% from 43% in 2002 to 37% in 2012, driven by an increase of 196 thousand passengers at DXB and 182 thousand at FRA.

Characteristics of those routes not included in the contestable market

Routes were excluded from the contestable market if a connection through LHR would result in a distance penalty in excess of 20%. The characteristics of the excluded routes in 2012 for each airport hub are summarised in Figure 16.

Figure 16: Characteristics of excluded routes (2012)

Airport	Total excluded market 2012 (000's)	Characteristics of routes excluded
LHR	2,096	• routes originating/terminating in zone **525** (Far East)
AMS	4,381	• routes originating/terminating in zone **516** (Scandinavia / Baltics) • routes originating/terminating in zone **525** (Far East)
CDG	5,317	• domestic transfer passengers originating/terminating in zone **505** (France)
DXB	12,890	• routes originating/terminating in zone **523** (Middle East) • routes originating/terminating in zone **525** (Far East) • routes originating/terminating in zone **524** (India)
FRA	9,644	• domestic transfer passengers originating/terminating in zone **506** (Germany) • routes originating/terminating in zone **518** (East Europe) • routes originating/terminating in zone **516** (Scandinavia / Baltics)

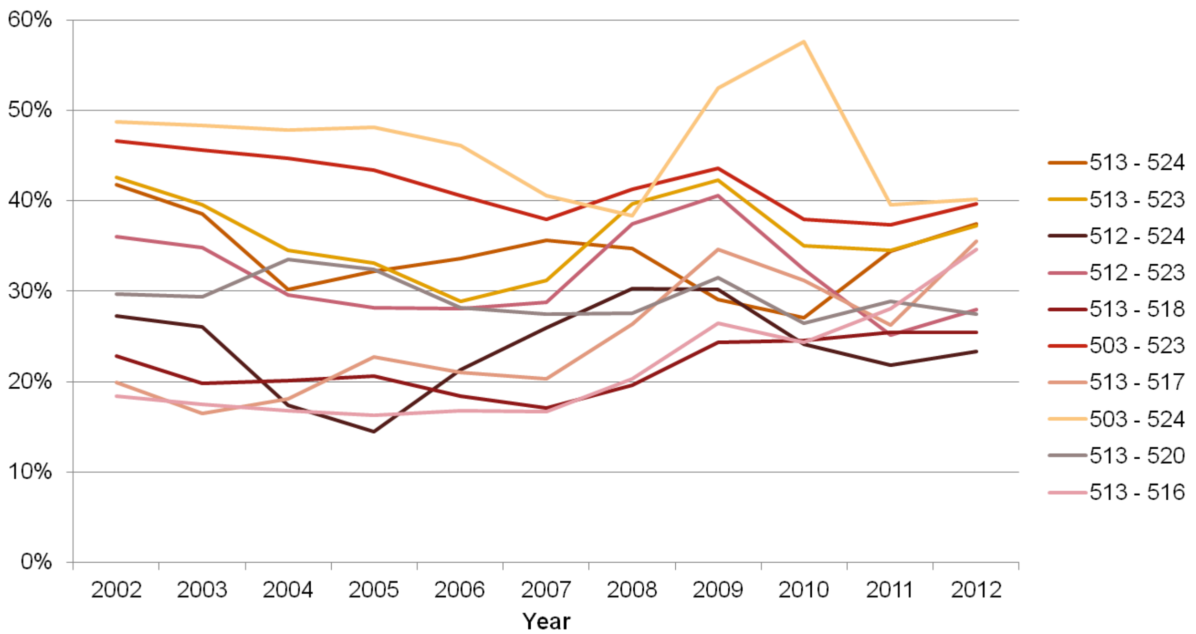
Appendix

Figure 17: Zone Lookup

Code	Zone	Airport	Latitude	Longitude
501	Belgium / Luxembourg	LUX	50.85	3.15
502	Canada West	YVR	49.18	-123.17
503	Canada East	YYZ	43.68	-79.63
504	Canary Islands	TFS	28.05	-16.57
505	France	LYS	45.43	5.05
506	Germany	TXL	52.57	13.28
507	Greece	SKG	40.52	22.97
508	Greenland / Iceland	KEF	63.98	-22.62
509	Italy	VCE	45.50	12.35
510	Netherlands	RTM	51.95	4.43
511	Republic of Ireland	ORK	51.83	-8.48
512	United States West	LAX	33.93	-118.40
513	United States East	JFK	40.65	-74.23
514	Iberian Peninsula	AGP	36.67	-4.50
515	Other Med. States	LCA	34.88	33.63
516	Scandinavia / Baltics	HEL	60.32	24.97
517	Central Europe	PRG	50.10	14.27
518	East Europe	SVO	55.97	37.42
519	West Africa	LOS	6.58	3.32
520	East Africa	CAI	30.12	31.40
521	South Africa	JNB	-26.13	28.25
522	Latin America	POS	10.60	-61.35
523	Middle East	DXB	25.25	55.35
524	India	BOM	19.08	72.87
525	Far East	NRT	35.77	140.38
526	Australia	SYD	-33.95	151.17
527	Channel Islands	JER	49.22	-2.20
528	Paris	CDG	49.02	2.55
529	Dublin	DUB	53.43	-6.25
530	Amsterdam	AMS	52.30	4.77
531	Frankfurt	FRA	50.03	8.57
532	Brussels	BRU	50.90	4.48
533	Zurich	ZRH	47.47	8.55
534	Dusseldorf	DUS	51.28	6.75

535	Copenhagen	CPH	55.62	12.65
536	Madrid	MAD	40.48	-3.57
537	Munich	MUC	48.35	11.78
538	Rome	FCO	41.82	12.25
539	Milan	LIN	45.45	9.28
540	Stockholm	ARN	59.65	17.92
541	Vienna	VIE	48.12	16.55
542	Oslo	FBU	59.90	10.62
543	Barcelona	BCN	41.30	-2.08
544	Athens	ATH	37.90	23.73
545	Hamburg	HAM	53.63	9.98
546	Lisbon	LIS	38.77	-9.13
547	Geneva	GVA	46.23	6.12
548	Nice	NCE	43.38	7.12
473	-	LHR	51.48	-0.47
471	-	LGW	51.15	-0.18
480	-	MAN	53.35	-2.27

Figure 18: Contestable market – LHR's share of the top ten routes (2002 to 2012)



Source: Sabre Airport Data Intelligence, Market Details Report