Airports Commission Discussion Paper 04:

Airport Operational Models

Heathrow Airport Limited response

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This document is Heathrow's response to the Airports Commission's fourth discussion paper on airport operational models. Our response follows a structure similar to the Commission's own paper.

Contents

1. Overview

The UK is in a global race for trade, jobs and economic growth. The international economy is changing with the rise of emerging markets like Brazil, Russia, India and China. There are only six hub airports worldwide that have regular, direct connections to more than 50 long-haul destinations. To truly compete in global terms, hubs need scale to combine the local and transfer demand that makes long-haul networks viable. Large hub airports with a home-based, major network airline will increasingly shape the nature of intercontinental connectivity. A global race for this direct connectivity, and the substantial economic benefits that go with it, is well underway. No country has more than one major long-haul hub. London has one of these Premier League hubs and also has the natural advantages of geographic location and local demand, which should mean that the UK is a winner, but unlike its competitors, the UK is hampered by a lack of hub capacity.

Airports, airlines and route networks: possible futures

Of the futures outlined by the Airports Commission, **'Future 1',** where the major role of hub airports is enhanced, is best supported by the evidence. Continuing liberalisation is leading to fewer, larger network carriers, who are, in turn, concentrating their operations at fewer, larger intercontinental hubs. These scale hub operations provide competitive advantage to both the hub airlines and the host country. For airlines, they are the most efficient and competitive way of connecting many different destinations - enabling more destinations to be served directly more frequently, at lower cost and for better revenue. In essence, hub scale and connectivity are self-reinforcing. For the host country, international connectivity through a hub airport supports economic growth. Direct flights are critical to trade with emerging markets. UK businesses trade 20 times more with emerging markets with daily flights than those with less frequent or no direct service. In addition, the rate of growth in UK trade is substantially lower where daily flight connections with Heathrow are not available.

Competitor countries have realised the importance and value of this future. As a result, they are much better prepared for it than the UK. Competitor hubs including Frankfurt, Paris, Amsterdam, Madrid, Dubai, Istanbul and Doha either already have, or are committed to developing, capacity at a single hub that is 50% greater than Heathrow. Consequently, without additional hub capacity, the UK risks losing out - potentially losing its hub - particularly if, as expected, there is significant further consolidation amongst Europe's network airlines.

Whilst the UK's hub capacity constraint currently points towards a **'Future 2',** where UK connectivity declines in the face of growth from Middle Eastern and Far Eastern carriers and hubs, this future of weaker direct connectivity can be avoided if hub capacity is added in the UK. London is one of the world's leading cities, and has all the attributes needed to win the global race for direct connectivity. These include an excellent geographic location for global aviation flows, a strong base of local long-haul demand focused on a large productive metropolitan area and home base to one of the world's major network airlines and alliances. London is very well placed to compete and win if it has the capacity at a single hub to do so.

A **'Future 3'** with any material integration of hub and point-to-point models is extremely unlikely. A diversification of the Low Cost Carrier (LCC) point-to-point model into long-haul flying is not commercially competitive. This is because:

- Point-to point and network models are structurally different - for example only 4% of LCC passengers are transfers versus 35-55% for network airlines at their hubs. A typical long-haul route, Heathrow-Nairobi, draws on 177,000 transfer passengers from 42 different inbound routes. Without transfer passengers, LCCs would be uncompetitive
- LCCs are effective on short-haul as they run simple aircraft fleets, fit more seats into an aircraft and keep them in the air longer. These tactics are not competitive differentiators for long-haul
- Demand for long-haul travel is relatively much lower, thinner, more variable and less price elastic than short-haul, rendering the point-to-point model ineffective
- Airlines need to tailor their long-haul offer to business class passengers
- There is much less scope in long-haul for LCCs to differentiate on cost e.g. fuel represents 50% of long-haul costs
- Leaders of the major LCCs say it is a distraction from their core model
- Ryanair and easyJet have recently placed orders for 300+ aircraft, costing over £15 billion, with not a single long-haul aircraft among them. These orders will shape the competitive landscape for the next two to three decades.

Key characteristics of airport models and the structure and operation of the UK aviation sector

London and the UK have benefited from a highly effective and complementary combination of airport types: a leading global hub providing global connectivity and numerous point-to-point airports providing local catchments with excellent connections to Europe, seasonal holiday destinations and a handful of long-haul connections to overseas hubs. However, with our hub operating at over 98% capacity, the UK is unable to serve growing international demand. If the other airports were capable of meeting hub demand they would be doing so now as they all have spare capacity. A recent OECD report has found that the UK's hub *"is underperforming in long-haul connectivity relative to its local market".* Their analysis indicates that Heathrow ought to be operating to at least 20 more long-haul destinations. Our hub is slipping out of the Premier League of the world's international hub airports. Paris and Frankfurt will push Heathrow into third place in Europe within the next ten years. They already boast around 2,200 more flights to mainland China than Heathrow each year. There are 26 emerging market destinations with daily flights from other European hubs that are not served daily from Heathrow: including destinations such as Manila, Lima, and Chongqing. We estimate that with additional hub capacity, Heathrow could be providing regular direct connections to 40 more long-haul destinations by 2030, making the UK a winner.

Consequently, the UK is cutting itself off from growth and risks businesses and their supply chains choosing to locate overseas around other increasingly better connected hubs. We could already be missing out on up to £14 billion per year in lost trade due to poor connections. This figure could rise to £26 billion a year by 2030. Our lack of runway capacity is already hurting UK regional connections, by pushing 9,000 UK regional flights per year out of the hub. Consequently there are now 18 UK regional airports connected to European hubs – but not to Heathrow.

If choice and competition are the tests, a globally competitive single hub offers the only successful future. Heathrow's long-haul network is already the most heavily competed of the world's biggest cities. Across the 90 routes, 48 airlines compete with 246 daily services. Relieving the capacity constraint will also have the benefit of reducing the upwards pressure on airfares that increasing levels of un-served demand apply at Heathrow. Two smaller, second division, London hubs on the other hand would inevitably result in fewer directly accessibly long-haul destinations, a less attractive choice of long-haul flight timings, less competition and higher average long-haul ticket prices.

The 'dispersed' hub model discussed by the Commission, with reference to Germany, does not really exist. Germany's single, scale intercontinental hub is Frankfurt. It generates the long-haul connectivity, carrying 67% of Germany's long-haul passengers. Munich, Dusseldorf and Berlin, on the other hand, offer regional, short-haul connections.

A secondary UK hub outside the South East is not viable. Airlines could today choose to establish hub operations at Birmingham or Manchester, but they choose not to, as there is insufficient demand. Despite being the second largest city in the UK by GMP (Gross Metropolitan Product), Birmingham only represents 4% of UK passenger traffic. Since 2005, even with Heathrow constrained, the UK regions have only seen regular direct services added to one new long-haul destination outside of the Middle Eastern hubs: Manchester - Los Angeles. In stark contrast, the hub capacity constraint has driven an artificial increase in the number of flights from the UK regions to the Middle East hubs. For example, there were six times as many flights from Manchester to the Middle East in 2012 as there were in 2000. This by-passing of the UK's hub is weakening UK connectivity and the UK economy.

Likewise a second UK hub in the South East is not attractive or viable. It is just not possible to have two successful hubs because splitting the hub halves the pool of transfer passengers. A successful network depends on having a central hub - the transfer passengers on every arriving flight support the viability of every departing flight. Attempts to create a dual hub between Heathrow and Gatwick were tried in the 1970s and 1990s but both ended in failure because airlines were unable to attract sufficient transfer passengers at Gatwick to make services viable. The airlines moved back to Heathrow. The premiums paid for Heathrow slots are further testament to this.

The Commission rightly highlights a handful of potential reasons why airline alliances have not moved to a second London airport to date. These include Heathrow's: scale to operate as a hub; higher yields; high density catchment of affluent travellers; and high profile overseas. The high costs of switching airports and the releasing of slots at Heathrow for the benefit of competitors are other important influences. Looking further ahead, there are several key reasons why it is highly unlikely that Star Alliance, SkyTeam or a major network carrier will ever choose to move to a second UK airport whilst Heathrow is the hub:

- **Less attractive catchment areas**: the centroid of demand for South East passengers is Denham, 10 miles north of Heathrow. Demand is not 'geographically neutral' and consequently a move away from this centroid would drive a major loss of demand for a moving alliance. This demand would be captured by competitors remaining at Heathrow
- **Loss of valuable transfer traffic:** Alliances are certainly not 'self-reliant' at Heathrow. Over 7 million passengers either transfer between alliances and or non-aligned airlines. 12% more long-haul passengers transfer onto Star Alliance from outside the alliance than from within it.
- **Lower yields:** For 40+ years, firms have chosen to locate near the hub airport. Over 200 of the UK top 300 businesses have headquarters within 25 miles of Heathrow. This dense, embedded business population means that 30% of Heathrow's passengers are travelling for business; more than double the level of other London airports. With airline yields therefore much higher at Heathrow, airlines are extremely unlikely to choose to go elsewhere.
- **Star Alliance and SkyTeam European hubs**: why would an alliance want to build a hub that competes with their own hubs, Frankfurt, Paris and Schiphol, a few hundred miles away on mainland Europe?
- **Terminal 2:** From 2014, Star Alliance carriers will be co-locating in Heathrow's new Terminal 2, a £2.5 billion development. Being co-located in a world class facility gives carriers little incentive to move.
- **Airlines make the decisions – not alliances:** Star has 28 members and SkyTeam 19. Alliances are umbrella organisations. Ultimately it is the individual airlines that make their own decisions, reflecting their own commercial interests. This can often include establishing codeshares or joint businesses with carriers outside their alliance.
- **Political considerations:** A relocation – to what would be seen internationally as a secondary London airport – would likely be poorly received politically in a flag carrier's home state. This may have wider implications for the treatment of UK based airlines in those states.

Ultimately, alliances will not choose to move to a different London airport as their operations will continue to be considerably more profitable at Heathrow. In an industry where profit margins average 0.6%, even 1% of volume or yield is often critical to viability.

Conclusion

Hub airports are different. Only a single hub airport can provide the flights to long-haul destinations that Britain needs to connect to growth. Trends reinforce the market logic of this, rather than the reverse. If the UK is to maintain its global hub status then it must build from strength and add the capacity to compete at a single hub.

2. Airports, airlines and route networks: possible futures

Q1. Do you consider that the analysis supports the case for increasing either hub capacity or non-hub capacity in the UK? Is there any additional evidence that you consider should be taken into account?

The UK has a shortage of hub capacity, not non-hub or point-to-point capacity. Indeed, the Commission's own remit is to identify how to maintain the UK's position as Europe's 'most important aviation hub'. Heathrow is operating at 98% of capacity and has been running at over 95% for nearly ten years. There is plenty of spare point-to-point capacity at Stansted, Luton, Gatwick and London City, (45%, 20%, 22%, and 41% spare ATM capacity respectively)[1]. Only Heathrow creates the intercontinental connectivity that directly connects the UK to global growth. The current lack of hub capacity is cutting us off from this growth opportunity.

The UK's connectivity is suffering as a result of our hub capacity constraint. A survey by the Board of Airline Representatives in the UK, which represents almost 90 scheduled airlines, shows that more than half (53%) are locating flights in other countries that they say would have come to the UK, were there spare Heathrow capacity. 86% of airlines said that they would put on more flights to the UK if additional take-off and landing slots were available at Heathrow[2]. Growth is not waiting, it is going to the UK's competitors. The UK's need for more hub capacity is urgent.

Note: We include further evidence that should be taken into account in this paper, in our prior submissions to the Commission's Discussion Papers and our recent publications "One Hub or None" and "Best Placed for Britain".

Q2. To what extent do the three potential futures outlined in Chapter 2 present a credible picture of the ways in which the aviation sector may develop? Are there other futures that should be considered?

Future 1

Of the futures outlined by the Commission, 'Future 1' is best supported by the evidence. In this scenario, continuing liberalisation of the aviation sector drives further airline consolidation and results in further enhancement to the role played by major hub airports. This future points to a continuation of existing trends and the continued delivery of long-haul connectivity by the well-established network airline model.

With wide ranging international governmental support, continuing liberalisation is to be expected[3]. This liberalisation will drive further consolidation. For example, the last few months have witnessed the proposed merger between American and US Airways, and Delta seeking to form a joint business with Virgin[4]. While restrictions on foreign airline ownership can be expected to place some form of ceiling on global consolidation, airlines are using joint businesses to circumvent this and achieve the same consolidation objective. For example British Airways: American Airlines; British Airways: Japan Airlines; American Airlines: Japan Airlines; Delta: Air France / KLM etc.

As the Commission's paper identifies, the EU is currently less consolidated than the US, with the top five EU carriers holding a 52% share versus 82% share in the US[5]. This less consolidated position reflects the legacy of the EU's numerous flag carriers and indicates that there is relatively more consolidation yet to come in Europe. In the US, *"the reality is that during the last few years all the major American carriers have undergone network overhauls that resulted in concentrating flying at their hub strongholds"* [23]. It is also anticipated that American Airlines merger with US Airways will lead to their downscaling hub operations in Philadelphia and Phoenix in favour of concentrating larger operations in New York, Dallas and Los Angeles. In Europe, examples of concentration include the relative declines of Barcelona, Malpensa, Brussels, and Zurich. Indeed, across both Europe and the US we are seeing a Premier League of hubs distancing themselves from a second division of more regionally focused airports.

This continued consolidation is leading to fewer and larger network carriers, who are concentrating their operations at fewer and larger intercontinental hubs. London needs the single hub capacity to be able to participate. In Europe, where there are currently five major hubs, it is questionable whether all of them will survive. Lufthansa now operates 65% of the slots at its home hub, Frankfurt (Star Alliance operates 78%). Air France / KLM now have 59% at its hub in Paris (SkyTeam 66%) and 58% at its hub in Amsterdam (SkyTeam 65%). British Airways has increased its share of slots at Heathrow from 37% in 2000[6] to 51% today (oneworld 56%), and Iberia holds 50% of the slots at Madrid (oneworld 54%)[7]. It is clear that scale matters, and hub capacity will enable the major European airlines and alliances to build their international networks.

These scale hub operations provide competitive advantage to both the hub airlines and the host country. For airlines, they are the most efficient and competitive way of connecting many different destinations (for more information see Section 3, page 7). This is because they enable more destinations to be served directly more frequently, at lower cost and generating better revenue. In essence, hub scale and connectivity are self-reinforcing.

For the host country, international connectivity through a hub airport supports economic growth. UK businesses trade 20 times more with emerging markets with daily flights than those with less frequent or no direct service[8]. In addition, the rate of growth in UK trade is substantially lower where daily flight connections with Heathrow are not available. This relationship does not only exist in the UK. A strong relationship between the amount of trade and the amount of direct flights is evident in competitor countries too. This relationship suggests that increased international direct connectivity through a hub airport is vital for supporting increased trade and economic growth; and that a lack of connectivity could choke off trade that would otherwise develop.

Competitor countries have realised the importance and value of this future. As a result, they are much better prepared than the UK. So while the UK's competitors have invested in hub capacity, as a country we are being left behind. Heathrow is permitted 480,000 flights a year. All four of Heathrow's competitor European hub airports - Paris,

Frankfurt, Madrid and Amsterdam - either already have or are committed to developing plans for enough runway capacity to serve an average of around 700,000 flights per year each, nearly 50% more than Heathrow[34]. In Amsterdam and Paris, the government is clear that the airport, and the connectivity it provides, is a critical part of the economy[10]. In Dubai, Emirates is rapidly expanding its fleet to grow and provide the passenger traffic to fill the new airport. Turkish Airlines, meanwhile, is creating new routes and connections with the support of the Turkish government, to become 'a major global player' in air transport. If the UK is to compete in this future it urgently needs to add more capacity at a single hub.

Future 2

The growing importance of Asia and the Middle East will clearly be a key factor in the development of global aviation in the decades ahead. However, the UK could be a winner in this race for global connectivity were it not held back by its lack of hub capacity. While the UK's hub capacity constraint might currently point towards a **'Future 2',** where the importance of UK aviation declines in the face of growth from Middle Eastern, Far Eastern and European carriers, this future of weaker direct connectivity can be avoided if hub capacity is added in the UK. Future 2 defines a part of the problem - it should not be regarded as the solution.

London is one of the world's leading cities, and has all the attributes needed to win the global race for direct connectivity. These include:

- A strong base of local, international demand focused on a large, productive, affluent, metropolitan area
- An excellent geographic location for global aviation flows
- The home base for one of the world's major network airlines and alliances, with the added competitive benefits of being served at Heathrow by one of the world's most comprehensive set of 83 global airlines[7].

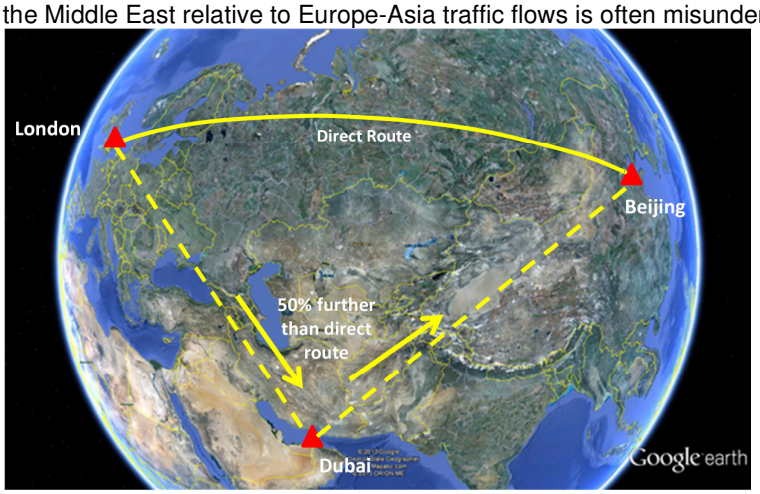
London's attractive demand base features:

- Population and Gross Metropolitan Product (GMP) that position it as Europe's hub of choice. With a GMP of €390 billion, London is one of the world's most productive cities – placing it well ahead of Paris €190 billion and Amsterdam €70 billion[8]. Going forward, London has been characterised as having the potential to be the 'BRIC capital of the world'[9]
- 'Leading city' status and the world's largest direct long-haul aviation market. This strong base of local demand forms the backbone of the hub, supporting a range of destinations and frequencies, enabling Heathrow to be at one end of six of the world's ten busiest intercontinental routes[39]. Although fast-growing hubs such as Dubai, Doha and Istanbul may rise with the support of transfer traffic, they will struggle to match the scale and premium passenger mix of London's direct long-haul market. Passengers place a real premium on flying direct, and are unlikely to be persuaded to fly indirectly, for example via the Middle East, if there is a direct option available. Heathrow's passengers on average pay 16% more to fly direct where there is an option to do so[10]
- The relative strength of London's services sector, a sector with a high propensity for international air travel.

London's excellent geographic location offers:

- The best location for European - Americas traffic flows
- Shorter direct routes to the Far East. The position of the Middle East relative to Europe - Asia traffic flows is often misunderstood based on our viewing the world on a flat map. The most direct route for Europe - Asia traffic is over northern Europe and Russia, not the Middle East. Consequently it is about 50% further to fly from London to Beijing via Dubai than it is to fly direct
- Greater convenience relative to other hubs for many Europe - Asian traffic flows. For example, it is 900 miles further to fly from Beijing to Zurich via Dubai than via Heathrow[11]. Flying via the Middle East will often involve a much longer journey.

Figure 1: The position of the Middle East relative to Europe-Asia traffic flows is often misunderstood



The Commission's discussion paper (Figure 2.8) shows an illustration of the world's economic centre of gravity shifting over the Middle East towards Asia. A more granular assessment by McKinsey shows the centre of gravity heading

over Northern Europe towards Russia, and by 2025 it is estimated to be over the Russia / Kazakhstan border[12]. This distinction is significant as it sets a more balanced perspective on the economic shift and the relatively more central position of Northern Europe and the relatively less central position of the Middle East.

The Commission also references the importance of *"Dubai's strategic geographic location, with two thirds of the world's population within 8 hours flying time"*. A more appropriate demand measure for long-haul travel is the distribution of upper and middle income households. In the decades ahead, these households will continue to be distributed very differently from population as a whole. By 2030, McKinsey estimates that North America and Western Europe will represent 43% of households with incomes over $70K (66% in 2011). South and East Asia, the Middle East and North Africa will represent 37% (17% in 2011)[13]. This distribution indicates that Western Europe will continue to be an exceptionally attractive location for a global aviation hub: Heathrow is within a 12 hour flight of 96% of the world's household disposable income, compared to just 63% from Dubai[25].

The current and growing bypass of London by traffic from the UK regions to Middle Eastern hubs (1.4 million passengers per annum now bypass Heathrow and use Dubai and Istanbul[11]), is not a purely a function of a very competitive proposition offered by Middle Eastern airlines and hubs. Indeed, the primary driver is the capacity constraint at Heathrow, which has led to far fewer flights being operated from Heathrow to both UK regional airports and to Asia than would otherwise have been the case. These 'bypass' passengers are helping to strengthen the connectivity of Middle Eastern hubs at the expense of UK direct connectivity. In turn, this leads to an off-shoring of UK growth and employment potential. The overwhelming majority (greater than 70%)[14] of these 'bypass' passengers could fly non-stop from the UK to their final destination if there were sufficient capacity available at Heathrow.

Heathrow not only hosts a home-based major network airline, but also facilitates competition from a wide set of network airlines as it:

- Is home to British Airways and oneworld's primary global hub
- Supports other major alliances, including Star Alliance and SkyTeam, which also have a major presence in London
- Serves one of the world's most comprehensive sets of airline customers globally
- Heathrow's long-haul network is the most heavily competed of the world's biggest cities. Across the 90 routes, 48 airlines compete with 246 daily services. Several long-haul routes have five carriers competing.

In summary, London will continue to be an exceptionally attractive location for a leading global hub, even in the context of rapid Asian and Middle Eastern growth. However, the competitiveness of the UK's hub is being increasingly undermined by the capacity constraint. The on-going delay in adding hub capacity in the UK may result in traffic being permanently lost. In the years to come, it is likely that there will be fewer, larger hubs across Eurasia – with not all of the five major EU hub airports expected to survive as major players over the longer term. London must retain one of them if it is to maintain its status as a global hub and is very well placed to compete as long as it has the single hub capacity to do so. If we invest in a single hub we can avoid a 'Future 2' where UK businesses and passengers are forced to fly via the Middle East and other overseas hubs to access many global destinations.

Future 3

A 'Future 3' with any material integration of hub and point-to-point models (P2P) is extremely unlikely. Low Cost Carrier (LCC) diversification from the P2P model into long-haul operations is not commercially viable. This is because P2P and network models are structurally different, with the P2P model not being competitive for long-haul. The P2P model is characterised by:

- Routes made viable on the basis of direct demand only
- Schedule optimised to maximise time in the air
- Simple aircraft fleets with fast turnarounds
- Short-haul flying, with more seats fitted into an aircraft

The network model on the other hand is characterised by:

- Thinner origin and destination demand, pooled and smoothed at hubs
- High proportion of transfer passengers
- Complex fleet management to match supply to demand e.g. different seat configurations by market
- Better suited to long-haul fed by short-haul
- Schedule optimised to maximise connectivity
- An offer that is tailored to business class and economy passengers, and often first class / premium economy too

The Commission rightly identifies that *"The low-cost model is most effective when used within a short-haul network, with flights up to 4 or 5 hours in length. The model becomes less effective beyond this, where fuel costs become a more significant proportion of total flight costs and passengers require more legroom and comfort, both of which become harder to provide at such low cost."*

The key reasons why the P2P model is inappropriate for long-haul include:

Thinner long-haul demand requiring the pooling and smoothing of demand at a hub to make routes viable

Longer distances mean that global demand for long-haul travel is only 12% that of short-haul[30]. On average, the demand between two cities located much further apart (requiring a long-haul flight) is one seventh of that between cities located closer together (requiring a short-haul flight). Hubs enable this thinner demand to be pooled, such that there is the critical mass to make a route viable. Hubs also "smooth" the demand to enable high load factors across all

hours of the day, all days of the week and all months of the year. The price elasticity of transfer traffic enables airlines to smooth out the variability of origin - destination demand.

A further challenge of the thinner long-haul demand is that airlines are necessarily trying to meet it using aircraft that have at least twice as many seats. Short-haul flying is dominated by B737 and A320 aircraft, which typically have 150 seats[15]. On the other hand a more typical long-haul aircraft, which is necessarily larger for greater range, might have 250 to 500 seats to try to fill. This dual challenge of thinner, less elastic demand and larger aircraft makes transfer passengers a necessity.

Dubai, Istanbul and Heathrow's competitor hubs in Europe have an average of 55%[38] transfer passengers on their network carriers. Meanwhile the transfer rate on the LCCs, Ryanair and easyJet, in London, is under 4%[16].

Much less scope on long-haul to differentiate on unit cost

A key difference is that fuel represents a much larger proportion of long-haul costs – in the order of 50%[17].

There is also little room on long-haul for replicating the LCCs short-haul approach of having more seats on their aircraft; seats in economy are already pretty close together and passengers travelling for more than 8 hours are much less willing to compromise further. In fact, recent years have seen the emergence of more premium economy long-haul products which offer more legroom.

There is also minimal scope for the 'improved aircraft utilisation' that has been a feature of the LCCs' short-haul model by very effectively squeezing an extra flight into a short-haul aircraft's day. Across their fleet, this can create a 10-20% increase in capacity. This extra daily flight is achieved by keeping the aircraft on the ground for as little time as possible via fast turnarounds. However, there is no opportunity for this more efficient aircraft utilisation on long-haul as the aircraft are in the air for most of the time, only turning round once or twice per day.

LCCs have realised cost savings on short-haul by operating a single aircraft type e.g. B737 of A320. Having a single type on long-haul would be uncompetitive as the major network airlines optimise aircraft types across their network by route, season, day and time of day to best match demand.

CEOs and leaders of the major LCCs say long-haul and transfers distract from their core model:

"I don't think it is ever envisaged that Ryanair would get into the long-haul market. Long-haul for us is flying to the Canaries or to Greece at the moment… As far as flying across the Atlantic is concerned, a lot of the things we do, like 25 minute turnarounds, are not that relevant in the context that you are not going to get an extra flight like you will from Shannon to London if you do it often enough during the day."
Michael Cawley, Deputy Chief Executive, Ryanair[18]

"We believe that we do what we do very well and it is short-haul European market primarily. That is what we do very well, that is the model and that is what we are going to focus on for the next five years."
Carolyn McCall, CEO, easyJet[19].

The Commission finds that *"Some low-cost airlines are also seeking to tap into these routes in an effort to capture a share of the market, with Norwegian Air Shuttle, for example, opening routes from Oslo and Stockholm to Bangkok and New York by the end of 2013."* There will continue to be the occasional LCC with ambitions to diversify into long-haul - of which Norwegian airlines is the latest example - and as many additions to the catalogue of failure (e.g. the collapse of Canada's Zoom Airlines and AirAsia X shutting down many of their routes including London). However, the evidence indicates that they will not succeed with a P2P long-haul model.

The evidence also suggests that numbers of passengers self-connecting from low-cost short-haul flights onto network long-haul carriers will not grow to a material level:

- The huge success of the LCCs on short-haul does mean that network carriers will continue to look for ways to reduce their cost base, particularly on short-haul. However this does not imply a merging of the P2P and network business models. We are seeing hybrids of "low cost" and "full service", but not of P2P and network.
- Some reference examples such as IAG's acquisition of Vueling (or Lufthansa's Germanwings) to suggest that there is a hybrid type LCC / network model emerging. However, neither of these examples fits the model. IAG has been very clear that Vueling will continue to be a standalone LCC and Germanwings operates a P2P network that specifically does not include Lufthansa's Frankfurt central hub. These developments reflect cost pressures on the short-haul market not a "hybridisation" of the network model
- JetBlue, often referred to as a hybrid carrier, only connects with network carriers at the margins, opportunistically where it suits them as a top-up. Only 0.5-1% of their passengers transfer onto another carrier at their largest bases New York JFK and Boston Logan.
- Most passengers will find 'self-connecting' difficult to book and ultimately unattractive as they would risk having to pay for a second long-haul flight if they missed their 'self-connection'
- LCC schedules are necessarily too dispersed to provide meaningful levels of transfer passengers to long-haul. easyJet, for example, has 22 European bases[20] and serves nearly five times as many destinations as British Airways, at a quarter of the frequency[21]. This is in stark contrast to the frequent, integrated schedule at a single hub required to consolidate long-haul transfer feed competitively
- The relatively small numbers of LCC passengers who do transfer today generally do so onto further short-haul LCC destinations or long-haul charter type destinations e.g. Florida and the Caribbean

- In addition, any LCC choosing to re-orient their businesses towards feeding long-haul would be exposing themselves to high commercial risk. There is a significant operating cost implication in doing this e.g. passenger and baggage connections handling costs, integrated sales systems, slower turnarounds that result in lower aircraft utilisation etc. These costs would leave them uncompetitive versus pure LCCs.

The actions of LCCs speak louder than words. Michael O'Leary recently mused that he would like to commence transatlantic flights with $10 fares (also suggesting this in 2008), he has also talked of charging for toilets and removing the seats from Ryanair aircraft altogether to help lower prices. None of these has happened. At the Paris airshow in June 2013, easyJet and Ryanair between them announced orders or options for over 300 aircraft, valued at over £15 billion[22] which included not a single long-haul aircraft. On the other hand, 90% of current aircraft orders for new longer range aircraft types (B787 and A350) are from airlines that operate a network model. Most of the remaining 10% of orders have been made by charter type operators[23]. These orders will shape the competitive landscape for the next two to three decades.

Q3. How are the trends discussed in Chapter 2 (e.g. liberalisation, growth of low-cost carriers, consolidation of alliances, and technological changes) likely to shape the future of the aviation sector? Do they strengthen or weaken the case for developing hub versus non-hub capacity?

The following trends all strengthen the case for additional hub capacity:

Market liberalisation/consolidation of alliances: Continued liberalisation and associated consolidation will lead to fewer and larger network carriers, concentrating their operations at fewer and larger intercontinental hubs. If the UK is to maintain its status as a global hub it needs the capacity at a single hub to compete in this era of consolidation.

The Commission rightly identifies that *"Access to Heathrow is tightly constrained. It is often said to be the biggest barrier to removing bilateral constraints on routes between the UK and emerging markets".* The on-going capacity constraint will continue to be a barrier to the UK being able to benefit from liberalisation, and adding capacity at other UK airports will not help.

Growth of Low Cost Carriers: the evidence indicates that LCCs will continue to be a feature of short-haul travel, exploiting a P2P model. Any material integration of hub and P2P models is extremely unlikely. LCC diversification from the P2P model to long-haul operations is not commercially viable (see question 2).

Technological changes – new generation aircraft, A350 and B787: The Commission's discussion paper suggested that *"Airbus (A350) and Boeing (Boeing 787) are reducing the scale of passenger demand needed to make a long-haul route viable…*[which]*… may encourage airlines to by-pass hub airports and serve direct connections."* and *"The A350 and Boeing 787 aircraft, which can be operated profitably on long-haul routes with lower passenger numbers".* However, while these new, more efficient and longer range aircraft represent important industry developments, they are very unlikely to lead to the hub bypass referenced by the Commission. Instead, the evidence indicates that they will extend and deepen the reach of the hub model:

- Seat numbers on these new aircraft types are similar to those on the aircraft they are typically replacing. The different versions of the B787 typically have 240-320 seats and the new A350 will have 270-350 seats. For Boeing the B787 has similar number of seats to the B767 and fewer than the B777s. The new A350 has similar seat numbers to the existing A340[24].
- Over the 10 years that Boeing has been taking orders for the B787, 90% of the ~900 orders have been placed by network carriers. These carriers are not planning to use these new aircraft for 'hub bypass'. Quite the opposite, they are planning to use them to replace existing aircraft based at their hubs or add moderate numbers of new services and destinations from their hubs.
- The B787s already in service today are primarily being used across the existing networks of network carriers. Again, there is no evidence of new 'hub-bypass' routes.
- These new, more fuel-efficient longer range types support the network model by enabling airlines to operate their existing network at lower cost and, critically, to better match aircraft type to the demand of a particular service by day of week, timing, season or route.
- The increased range of the B787, relative to the B767 types it has typically replaced, does not bring that many new, serviceable cities into the range of a direct service from Western Europe. This is because most of the extended range sits over the world's oceans. A high level estimate indicates that ~4 new cities might become viably serviceable from London by a network carrier. None of these cities have a home-based network carrier and, as a result, British Airways would be the only obvious airline likely to consider operations[25].

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3. Key characteristics of different airport operating models

The Commission's paper is right to recognise key operational and demand characteristics of Europe's five major hub airports. It is these characteristics which make Heathrow such a formidable global hub.

Operational characteristics include:
Apron, terminal and runway capacity: Heathrow has invested £11 billion over the last ten years developing its hub infrastructure, e.g. transfer facilities, baggage systems and intra-terminal connectivity not found at P2P airports.

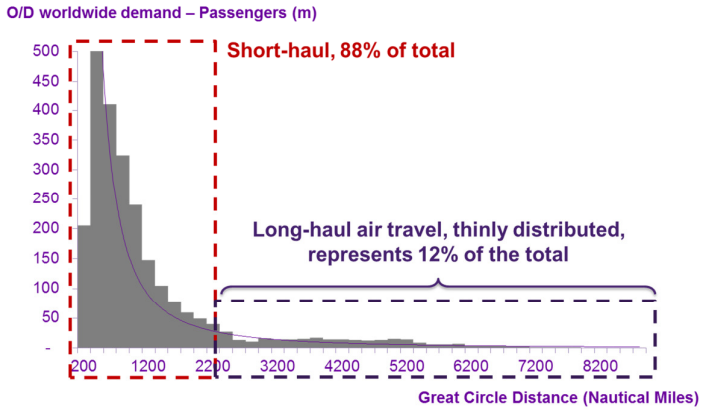
Demand characteristics include:
Proximity to demand and surface access: 12 million people will be within 60-minute travel time of Heathrow[26]. Since the 1970s, around £20-25 billion of rail infrastructure with a connection to Heathrow has been invested or committed[1].
Proximity to business passengers: the centre of gravity for South East passengers is Denham, just 10 miles from Heathrow. 202 of the HQs of the UK's top 300 companies are located within 25 miles of Heathrow. Multiple industry clusters have developed and grown around West London and the Thames Valley over the last 50 years, each responding to and then reinforcing the strength of Heathrow's location[1]. Consequently, 30% of Heathrow's passengers are travelling for business[16].
Global geographic location: London is exceptionally well placed for intercontinental passenger flows

Beyond these hub characteristics, we need to better understand the long-haul network model. Network carriers use scale hubs to make their services viable. A hub's scale and connectivity are self-reinforcing. As an illustrative example:

- One hub with 200 city destinations connects 39,800 origin and destination city pairs
- Two hubs with 100 city destinations each connect 9,900 city pairs – in total 19,800 city pairs[27].

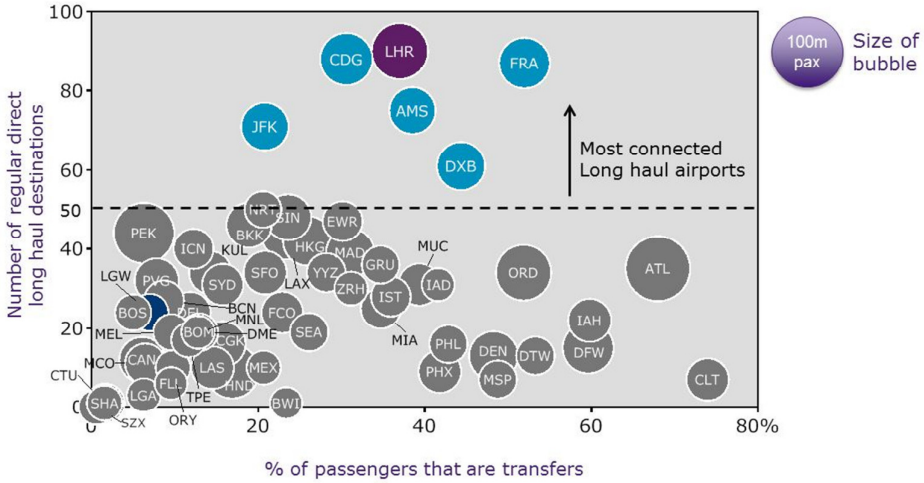
Hence we can see that one new route at a large hub like Heathrow makes many more new connections than adding the route at a smaller airport, in turn making the route more viable. Globally, long-haul accounts for only 12% of worldwide passenger journeys (short-haul accounts for the other 88%). Only a very small proportion of these long-haul journeys, 10%, are actually served by direct flight[30]. For example a passenger originating at Manchester with a final destination of Accra will route via Heathrow due to the lack of demand on this Manchester - Accra journey making a regular service unviable. Making long-haul routes viable to operate requires network airlines to consolidate the demand of the other 90% of origin-destination routings that passengers are travelling.

Figure 2: Origin/destination worldwide demand by Great Circle Distance[28]



Hubs make these long-haul routes viable by combining local demand with transfer traffic. Hubs also "smooth" the demand to enable high load factors across all hours of the day, all days of the week and all months of the year, smoothing out the variability of origin - destination demand. If we consider the route example of Heathrow-Mexico City in 2012, which had a daily service throughout the year, the route carried passengers who were travelling on 1,121 different origin-destination routings. Similarly Heathrow - Dallas, served four times per day, carried passengers travelling on 7,532 different origin-destination routings[29]. The pooling and smoothing of demand from thousands of routings to make a long-haul route network viable is in stark contrast to the P2P short-haul model that focuses on a single origin and destination pair. The thin nature of long-haul demand means that scale hubs are necessary to pool demand and make routes viable. Only six of the world's airports are able to offer regular, direct, long-haul services to more than 50 destinations - Heathrow is one of them (see figure 3)[30].

Figure 3: Best connected long-haul airports [30]



The combination of low demand and larger aircraft make extensive long-haul connectivity relatively rare. The thinner demand and the greater number of seats to fill on larger long-haul aircraft mean that demand must be aggregated from both a strong local catchment and transfer passengers.

Further liberalisation and airline consolidation are supporting the transition to the more attractive economics of larger hubs. Fewer, larger, network carriers are increasingly focusing their long-haul operations in fewer, larger intercontinental hubs. For example, the five major European hubs, Paris, Amsterdam, Frankfurt, Madrid and Heathrow have added an average of 13 regular long-haul routes each (net) since 2003. Over the same period the rest of Europe's 25 biggest airports added an average of only three regular long-haul routes each[37].

A recent OECD publication provides a useful analysis of hubs[31]. They find that bigger hubs deliver disproportionately greater connectivity (see Figure 6 in their document[32]): *"In general, hubs reduce time travel costs for consumers by providing more direct and more frequent links, with the main distinguishing effect being present in the supply of direct long-haul connectivity. By providing connectivity to transfer passengers, hubs generate connectivity for local consumers. These connectivity advantages for local and connecting passengers tend to get bigger when hubs grow larger. They increase in a nonlinear way. One large hub generates more connectivity than the sum of two hubs of half the size"* …and…"*A strong path dependency is present in the development of hubs over time: there are clear cost, demand and connectivity advantages for the hub carrier to add new flights to an already established hub. Every new flight to the hub generates an increasing number of connections via the hub."*

The OECD publication also assesses the relationship between the size of the metropolitan population and the level of connectivity delivered. They find that *"For London, this means that the airport is underperforming in long-haul connectivity relative to its local market."*

This 'underperformance' in connectivity is the capacity constraint in action. The OECD's analysis indicates that Heathrow ought to be operating to at least 20 more long-haul destinations, and probably many more given the scale of London's population and GMP. This assessment aligns closely with Frontier Economics' finding that there are 26 emerging market destinations with daily flights from other European hubs that are not served from Heathrow[8]. The findings of both sources are strong evidence that London should be the clear winner if it has the capacity to compete in the race for global connectivity.

Q4. What are the impacts on airlines and passengers of the fact that the wave system at Heathrow operates under capacity constraints?

In its assessment of hub connectivity, the Commission found that *"oneworld are able to offer an average of 31 feasible connections from each inbound flight at Heathrow whilst SkyTeam can offer an average of 38 at Charles de Gaulle and Star can offer an average of 50 at Frankfurt".* This lower level of connectivity at Heathrow is driven by two issues. Firstly, Heathrow is operating at 98% of its permitted capacity and therefore there is little opportunity for oneworld to add new connections. Secondly, Star and SkyTeam hold a greater proportion of the slots at Frankfurt and Paris.

With the wave system at Heathrow operating under capacity constraints, each arriving flight is able to connect to relatively fewer departing flights than is the case at competitor hubs. For airlines this means a need to focus more on operating flights that are relatively less reliant on transfer passengers, and consequently thinner long-haul routes become less viable. For passengers it means fewer intercontinental destinations are directly accessible. Over time this would likely result in the home based network carrier, British Airways, retrenching its network towards a focus on thicker trunk routes. This shift would carry the risk of becoming subscale versus competitor network carriers such as Air France / KLM.

Q5. How does increasing size and scale affect the operation of a focal airport? Is there a limit to the viable scale of an airport of this kind?

Increasing the size of a hub airport should not affect the operation as long as the airport's design supports key hub operating criteria. In our "Long-term options" submission to the Commission in July we will say more about the wider topics that are central to the effective operations of a scale hub. These include runway operations, airspace operations, taxiway design, apron sizing, terminal strategy, surface access, sustainability and community engagement.

The world's largest airport, Atlanta, is a useful reference point for scale. In 2012 it handled 930,000 aircraft movements and 95 million passengers[33]. Its runway, terminal and taxiway layout are good examples of the design that enables scale operations of a hub airport. Many of these design principles have been used to shape larger scale hubs and they can already be seen in Heathrow's own existing two runway masterplan. A well-designed hub could have a capacity well in excess of the 95m passengers handled by Atlanta today. Dubai, Istanbul and Beijing already have plans to develop hubs with capacity for 140 million passengers.

Heathrow has made an £11 billion investment in its two runway hub masterplan over the last 10 years. The most obvious aspect of the plan is the focus on fewer, larger terminals. This approach delivers a better passenger experience, more competitive minimum competitive connection times, and more efficient operations. Performance against these measures is central to a hub's competitiveness.

Terminal 5 and Terminal 2 form the core of the masterplan's 'toast rack' terminal and satellite layout, between the runways. The toast rack layout enables efficient hub operations at scale and is more scalable as demand grows. It will also be capable of delivering highly competitive minimum connection times of 45 minutes. The toast rack layout significantly improves the flow of aircraft around Heathrow and consequently the utilisation of the runways. Behind the

scenes there are wider investments in a host of other hub infrastructure including transfer baggage systems, inter terminal transfer systems and wider, upgraded, taxiways.

The Commission's discussion paper rightly recognises that airlines based at a scale hub airport can benefit from economies of scale through staff utilisation, overheads, and effective utilisation of feeder traffic networks. There are also wider advantages including:

- Higher load factors and, ultimately, higher yield
- Cost sharing / efficiencies e.g. joint check-in, lounges, baggage handling
- Scale benefits realised through third parties, such as transport providers, and support services focusing their investment around hubs.

Q6. Would expanding UK hub capacity (wherever located) bring materially different advantages and disadvantages of expanding non-hub capacity? You may wish to consider economic, social and environmental impacts of different airport operational models.

Expanding non-hub capacity would provide no benefit as there is already plenty of spare non-hub capacity.

However, expanding UK hub capacity would deliver greater economic benefits than any other currently proposed major transport infrastructure project - not only to the UK as a whole, but to its regions, passengers, business and the local community around the hub[1,34].

Passenger benefits:

- More journeys served to more long-haul destinations, more directly, more frequently, throughout the year, at better timings – and, with more airline competition, at better prices.

Business benefits:

- More growth markets become more frequently and directly accessible - enabling business to compete globally
- More direct services resulting in more businesses choosing to locate in the UK creating more, better quality jobs
- More support for the further development of industry clusters - improving access to resources including talent, suppliers and research. This fosters collaboration and sharpens competition by encouraging specialisation and productivity
- More destinations and higher frequency of services to support time sensitive global supply chains and associated freight operations.

UK benefits:

These include significant direct, indirect and induced contributions to the UK economy - intercontinental aviation connectivity bringing about the wider economic benefits of trade in services and goods, tourism, investment, productivity and innovation.

The UK could be missing out on up to £14 billion of trade per year due to poor connections[8]. This figure could rise to £26 billion a year by 2030. In addition, if Heathrow remains constrained, Oxford Economics estimates that by 2021 this could lower employment by 141,400[35].

In particular, aviation connectivity opens up the UK to the global tourism market, with inbound visitors spending almost £19 billion in the UK economy[10]. 74% of passengers from a long-haul destination enter the UK via Heathrow[14]. In 2010 foreign tourists that used Heathrow are estimated to have generated 152,000 jobs in the UK[34].

UK regional benefits include:

- Greater access to existing and access to new connections that are not sustainable from local airports alone
- More trade and investment for the whole country and more UK passengers as a result of greater connectivity. Foreign Direct Investment comes to the connector country, i.e. the host of the best connected hubs. This foreign investment then leads to regional investment and jobs across the country. For example, foreign companies employ 82,000 people in the North West, and 78,000 in the East of England[1]. See our response to question 10 and *"Best Placed for Britain"* for further details.

Local community benefits include:

- Support for local employment, with more than 100,000 jobs around Heathrow dependent on the hub
- Support for relatively higher levels of people employed. Jobs in the region are, on average, "better jobs", with 6% more jobs in management than the national average
- Stimulation for wider investment in surface access (around Heathrow), with increasingly large parts of the South East accessible within 60 minutes[1].

Expanding hub capacity also has the potential for adverse impacts on local communities - for example, as a result of aircraft noise, air quality impacts or compulsory purchase of property. We will say more on how these impacts can be mitigated in our July submission to the Commission on long-term options.

Expanding UK hub capacity is also more sensible for emissions. If Heathrow continues to be constrained, there will be 700,000 tonnes more carbon produced globally each year[36]. The environmental benefit of expanding hub capacity over non-hub capacity reduces both the number of UK long-haul passengers transferring through European hubs and the number of international passengers that will detour round the UK (unable to take advantage of Heathrow's global location). Flying direct from the UK is shorter and avoids an additional landing and take-off - the most carbon-intensive

part of the journey. Heathrow is also optimally located for efficient passenger, staff, supplier and business accessibility and a focus for public transport which other airports cannot hope to emulate.

Not expanding hub capacity has the potential to do huge damage to London's competitive position - and result in the UK as a whole becoming increasingly cut-off from growth.

Q7. Do focal airports and non-focal airports bring different kinds of connectivity and, if so, which users benefit the most in each case?

Connectivity is a combination of destinations served and the frequency, timing and capacity of flights. Global hub airports are distinguished by providing excellent long-haul connectivity, fed by a strong short-haul network. Hubs need a relatively much larger short-haul network to feed their long-haul network. It is not possible to have a long-haul only hub. In fact, of all global hubs, Heathrow has the lowest ratio of short-haul to long-haul flights of 2:1. Point-to-point airports on the other hand are distinguished by their provision of largely short-haul connectivity and tend to have a much stronger leisure focus.

The additional connectivity benefits of hubs lie in:

- A much larger number of long-haul destinations. Heathrow has direct flights to 75 destinations worldwide that are not served by any other UK airport[34]. 87% of London's long-haul passengers are served out of Heathrow[16]
- Greater frequency of flights to each destination - Heathrow offers three times the frequency of the South East's P2P airports[7]
- Departures throughout the day and week providing more convenient services
- A much better continuity of connectivity[37]
- Choice and competition, with a wide range of global network carriers competing with the home based carriers.

Heathrow, the UK's hub, accounts for just 24% of all UK flights but 77% of all long-haul flights[7]. In London, 65% of all business passengers depart from Heathrow, rising to 95% for those going long-haul[16].

The Commission's paper states that *"large focal airports with substantial market power usually charge a premium to airlines which is passed on to the consumer. In dispersed networks airports are more likely to effectively compete with each other, driving prices down"* …and that… *"The most significant potential for competition, however, is likely to be in London and the south east, which is served by as many as six major airports"*

This suggestion that dispersed network airports are able to offer lower prices to consumers than hub airports is inaccurate and not evidenced. On the contrary, adding capacity at a single UK hub enables more journeys to be served to more long-haul destinations, more directly, more frequently, throughout the year, at better timings, with more airline competition at better prices. Key facts relating to the single hub advantage include:

- One large hub is able to deliver significantly better connectivity than two smaller hubs
- Airline price competition can often be keener when operating routes in parallel from the same hub airport. Historical evidence suggests ticket prices fall on routes where a second carrier is introduced. For example, fares from Heathrow to Mexico City and San Diego fell by 24% and 30%[38] respectively when a second carrier was introduced on the route. Not adding hub capacity will delay the introduction of competition on these long-haul routes thereby forcing higher ticket prices in the long term as demand outstrips supply
- Heathrow's long-haul network is the most heavily competed in the world: 56% of routes (44 long-haul destinations) are regularly competed by two or more carriers. In addition Heathrow has six of the top ten long-haul intercontinental routes in the world, each route on average contested by five airlines[7]
- Heathrow's un-competed long-haul routes would be likely to experience competition if there were more hub capacity (e.g. destinations in emerging markets such as Kuala Lumpur, Buenos Aires and Karachi), or would not be served at all were it not for the transfer feed provided by the hub
- Heathrow's charges are tightly regulated. The level of the charges is driven by the infrastructure costs required to service network airlines. In fact, the return to shareholders at Heathrow is lower than at other regulated airports. Airport charges are a small proportion of the overall ticket price. In contrast, any pursuit of a dispersed or dual hub model would leave Heathrow constrained, with the un-served demand putting further upwards pressure on ticket prices. The cost to consumers of the capacity constraint can already be seen in the slot prices at Heathrow: "*an early morning daily slot at Heathrow is valued at around £15 million"* [5].

Q8. What would be the competitive effects (both international and domestic) of a major expansion of hub capacity, and what are the associated benefits and risks?

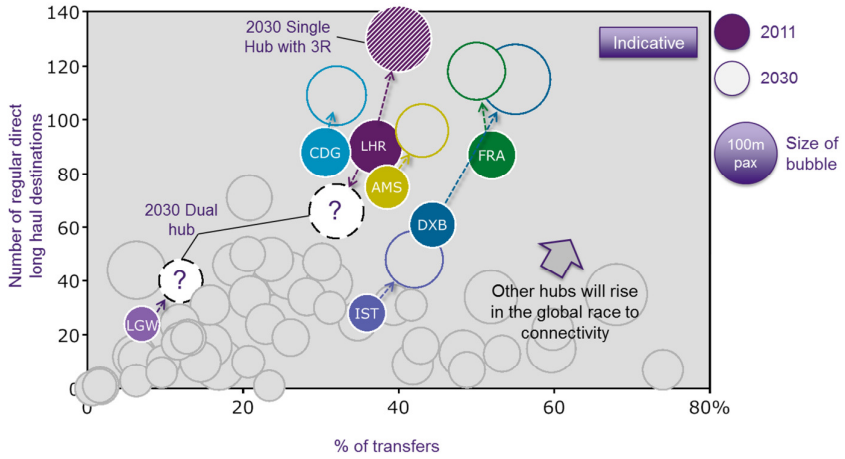
By 2030 there is expected to be significant growth in the number of long-haul destinations served by the world's top international airports (see Figure 7). Heathrow's future could play out in two scenarios. In the first, Heathrow remains constrained, transitioning from being the leading international airport in the world to being ranked fourth or fifth, at best, as the number of long-haul destinations served declines, and frequency on thicker trunk routes increases. This scenario would have serious adverse implications for UK connectivity, the UK economy, passenger choice and ticket prices.

In the second scenario, where the current capacity restriction is removed with a third runway, analysis of worldwide route demand and benchmarking against our airport peers leads us to estimate an unconstrained Heathrow would be able to regularly serve 110 long-haul destinations - 20 more than today - including Manila, Kathmandu, Kochi, Goa, Phuket, Jakarta, Bogota, Harare, Santiago, Denpasar-Bali, Lima, Mombasa, Durban, Osaka, Thiruvananthapuram (India) and Ho Chi Minh City[39].

If this scenario is extrapolated to 2030, 130 long-haul destinations would be regularly served - a further increase of 20. These would include: Astana, Hanoi, Koh Samui, Caracas, Baghdad, Kabul, Quito, Lilongwe, Belo Horizonte, Nagoya, Khartoum, Porto Alegre, Tashkent, Port Harcourt, Peshawar, Fukuoka, Krabi, Penang, Chengdu and Fuzhou. It is important to highlight that Heathrow would also have the capacity to connect to a number of domestic routes currently served by competing hub airports in Europe, for example: Guernsey, Jersey, Inverness, Isle of Man and Humberside[43]. Connecting ten UK regional airports, with an average of three services each per day, and connecting 40 more long-haul destinations with a daily service requires 50k ATMs (Air Transport Movements) per annum. This represents about 20% of the full potential additional ATMs of a third runway. The remaining 80% of additional capacity would be used to improve connectivity via increased frequencies on existing long-haul routes and across the short-haul network. None of this will happen unless capacity is added at a single hub airport.

This analysis shows the stark choice faced by the UK. Either, add single hub capacity and win, or fail to add capacity and lose out to our competitor countries like Germany, France and the Netherlands. We can either add capacity at a single hub and maintain the UK's Premier League global hub status while adding regular direct connections to the UK regions and 40 more long-haul destinations - or we can slide into the second division.

Figure 4: Future scenarios in 2030[39]



Note: The above chart includes 2030 estimates only for those airports coloured. Heathrow can share further details of the logic / evidence supporting the assumptions that determine the 2030 positions of each of the airports shown. Some explanation is given in the footnote.

As outlined in our response to question 6, a major expansion of UK hub capacity would deliver significant benefits to the UK, UK regions, passengers, business and local community. Key competitive effects include:

- Enabling airlines (particularly home based carriers) to better compete for routes and transfer passengers - particularly those originating in the UK
- Increasing competition on existing routes - thereby lowering prices for consumers
- Increasing relative attractiveness of the UK as a place to do business

The competitive risks include:

- Permitting capacity expansion that may never be built, if planned for the wrong location
- Transition risks arising from any attempt to close Heathrow and move the hub; there are no successful global examples of moving an airport more than 25 miles from an existing site.

Q9. To what extent do transfer passengers benefit UK airports and the UK economy?

Transfer passengers enable access to a greater pool of demand than would otherwise be accessible from just the local catchment. They act as a flexible resource, filling aircraft when there is insufficient local demand to do so. They serve to keep routes both regular and viable. Let us take the Heathrow to New York JFK route as an example. 2.8 million passengers travel on the route each year[40]. A third of them are transferring at Heathrow. These transfer passengers help make many other routes viable, particularly Indian, African Middle Eastern and Central Asian routes. For example 84,000 of these transfer passengers are travelling between JFK and India. They are crucial to the viability of the wide range of services from London to India, a real benefit to the UK and UK passengers. A further 127,000 are transferring to UK regional points, helping to support continued connection of UK regional cities to the UK's hub. In addition to passengers transferring at Heathrow, 250,000 passengers transfer at JFK to other cities in the US. Most of these cities aren't served by direct flights from the UK today, and so passengers transfer over JFK. If the UK hub was not full then airlines might choose to add new direct services to some of these cities. In summary, hubs do not exist without transfer passengers. Transfer passengers enable much greater intercontinental connectivity than would be viable with local demand alone. This connectivity enables increased trade, foreign investment and tourism in the UK. That trade, investment and tourism bring jobs and growth across the country.

We note that the Commission references its use of the DfT (Department for Transport) forecasting model to test the impact of *"direct long-haul routes from the UK that cannot be made commercially viable as a result of limited connecting traffic at key London airports".* For the reasons we supplied in our response to the Demand Forecasting paper, relating to the weaknesses of the DfT forecast model, the model should not be relied upon for these purposes.

4. The structure and operation of the UK aviation sector

Q10. Is there any evidence that the UK (or individual countries and regions within the UK) are disadvantaged by using overseas focal airports?

The use of overseas hubs by UK passengers decreases the UK's direct connectivity to the world. By offshoring this connectivity the UK misses out on the economic benefits. There is a two-way relationship between connectivity and trade[10]. Countries and cities with better connected intercontinental hubs have higher levels of trade, foreign investment, tourism and consequently economic contribution and employment. However, Heathrow is slipping out of the Premier League of international hub airports.

The capacity constraint at Heathrow has already driven airlines to cut 9,000 UK regional services over the 10 years that Heathrow has effectively been full. This has led to a situation where only 7 UK regional airports have a connection to Heathrow while 18 have a connection to Amsterdam[43] via Air France / KLM. The UK regions are being increasingly cut off from the UK's hub and UK regional passengers are being forced to use overseas hubs.

The UK is not only missing out on trade and investment but also subsidising our competitors in the global race. Companies know there is a direct correlation between direct flights and trade, often choosing to locate near hubs, e.g.:

- There are 111 foreign-owned businesses with headquarters in the Thames Valley that own 149 companies elsewhere in the UK employing between 45-75k workers[1]. 3.7 million people in the UK work for foreign-owned companies
- Companies from the US, Japan, Australia, Hong Kong, South Africa and Canada account for half of these jobs and employ 600,000 people outside London and the South East
- Heathrow is surrounded by 22 high quality business clusters – the highest concentration in the country
- Businesses such as Microsoft tell us *"Heathrow is the reason we are where we are, along with the rest of the high tech industry in the Thames Valley"*[1]
- The Commission referenced that *"A study by Bel and Fageda (2009) concludes that a 10% increase in intercontinental direct routes results in a 4% growth in international headquarters in European metropolitan areas. Focal airports may thus generate significant additional incentives for businesses that rely on air travel and transportation to locate in their vicinity"* [5]
- Competitor cities like Dubai are exploiting their connectivity to attract businesses to locate there. Recent examples of new global or regional head offices in being established in Dubai include Halliburton, IBM, Eli Lilly and Mastercard. The UK is already losing out and this trend is set to accelerate.

Longer travel times and more inefficient journeys for passengers starting or ending their journey in the UK erode the reasons for business to invest in and trade with the UK. They also make the UK less attractive for inward tourism. This is a sector worth £19 billion[10] a year to the British economy and is forecast to rise substantially.

Declining UK connectivity compared to other hubs is undermining the UK's growth strategy. HM Treasury's 'Plan for Growth' found that: *"The UK has particularly underperformed in exports to emerging markets. From 1998 to 2008, UK exports to the eight largest emerging markets increased by just over 0.5% of GDP compared to over 3% for Germany…"* and *"In 2009 the UK's position in terms of attracting new FDI inflows slipped to 5th in the world… the whole of government needs to step up its game to ensure that constraints to investment are addressed and the UK is a top investment destination…."* and "*Not only do we export just a third as much as Germany, we even lie behind the Netherlands, a country a third our size…*"[41]. Both these competitor countries have invested in developing the capacity of their hub airports.

The Commission's discussion paper makes some statements in this area that do not appear to be supported by the evidence. In particular that: i) hubs might reduce connectivity of regional airports; ii) P2P airports are likely to distribute benefits equitably across the country; and iii) P2P airports give more choice to passengers.

Firstly, UK regional airports can deliver excellent short-haul direct connectivity - with which a strong UK hub does not easily compete. However, they do not have the demand base to sustain significant numbers of long-haul direct connections. For a wide range of intercontinental connectivity, the UK regions are best served by regular connections to a strong UK hub with a wide range of intercontinental routes. Those few long-haul routes that are viable from the UK regions are being flown already - typically to seasonal holiday destinations.

Secondly, P2P airports cannot "distribute benefits equitably" as they typically do not have sufficient demand to make intercontinental services viable in the first place. Consequently, there are no benefits to distribute.

Thirdly, if there's no service to choose, there is no passenger choice. Since 2005 the UK Regions has only seen regular direct services added to one new regular long-haul destination outside of the Middle Eastern hubs[43].

Q11. What specific characteristics of the UK and its cities and regions should be considered? For example, does the size of the London origin and destination market and the density of route networks support or undermine the case for a dominant hub?

There are several key characteristics that inform the most effective airport structure for the UK and underpin the strong case for a dominant single hub. These include: the UK being an island nation; London being a leading global city and representing a large proportion of national GDP (30%[42]); the scale of London's direct long-haul demand; the UK's attractive geographic location for intercontinental passenger flows; London's potential to be the international capital of

the BRICs; Government policy to maintain the UK's global hub status; the importance of the services sector for the UK economy and; the UK being home to a single major network carrier.

The UK's characteristics firmly support the case for a strong single hub. London and the UK benefit from a highly effective and relevant combination of airport types including: a leading global hub providing global connectivity; numerous P2P airports providing local catchments with excellent connections to Europe, seasonal holiday destinations and a handful of long-haul connections to overseas hubs.

The Commission's paper questions whether London's *"extremely substantial origin and destination market"* (40 million bigger than New York or Tokyo) makes it viable for London to support two hub airports. The key driver of this relatively high demand is that the UK is an island nation, just offshore from Europe. Consequently 94 million of our passengers are travelling short-haul[16] connecting to and from Europe. Point-to-point connections to / from Europe do not necessarily require a hub airport, they are well served from one of London's four point-to-point airports. The size of the London origin and destination market supports the case for a single hub complemented by a collection of P2P airports.

Only two of the world's 20 largest cities have more than one major airport, Tokyo and New York. Tokyo's experience indicates why split hubs do not work. Nearly 70% of the passengers travelling internationally to/from the regions of Japan bypass the split hub in Tokyo, instead use overseas hubs such as Incheon (Seoul)[39]. Splitting Tokyo's hub in two has harmed Japanese connectivity for decades - Korean Air serves 45 long-haul destinations, benefiting from the feed of Japanese passengers. This is double the destinations served from Tokyo by either Japan Airlines or ANA[7].

New York has three home-based network carriers and a topography that makes supporting a single hub challenging. Relative to a city of its size, it is significantly under-connected - Frankfurt offering three times more regular long-haul destinations per habitant than New York[42,43].

In contrast, cities such as Beijing and Dubai rely on just one or two airports to meet the entire air travel needs of the city. The absence in these cities of additional P2P airports, serving different catchments of the city, results in less convenient short-haul travel for passengers.

The perspectives of airlines should also be considered. In its assessment of Heathrow's market power in 2012, the CAA summarised the airlines' perspective of the airport's market position as follows:

"British Airways and bmi said that Heathrow is the only viable airport from which to operate a hub operation. In addition, Virgin said that Gatwick can be considered a substitute for Heathrow for leisure passengers to a limited extent, but not at all for business passengers" …and… *"The inbound carriers responding to the survey were consistent in stating that they do not consider another London airport as a viable substitute... Air Canada, SAS, Swiss and TAP all said that no other London or BAA airport represented a viable substitute for Heathrow, citing reasons including the premium yields and connecting passenger feed available, and the cost of replicating existing infrastructure investments at the airport"* [11].

Q12. Could the UK support more than one focal airport? For example, could an airline or alliance establish a secondary hub outside London and the south east, for instance in Manchester or Birmingham?

The Commission questions whether the dispersed 'multi-hub' nature of German airports might be a possible model for the UK to follow, stating that the distributed population supports a wide geographical spread of major national airports. There are some important points to note here:

- In reality, Lufthansa operates an intercontinental hub operation from Frankfurt serving 75% of its German long-haul passengers, with the remaining 25% flying from other German airports mainly to duplicated destinations[43]. This is not a multi-hub system - it has one intercontinental hub with short-haul focused bases at the other cities.
- The combined Gross Metropolitan Product of Dusseldorf, Frankfurt, Munich and Berlin is ~30% of total German GDP. UK GMP and population is much more concentrated, with London alone representing 30% of national GDP.[42]
- Germany's dispersed populous and central European position attracts a large, cross-border catchment to its widely separated airports. A secondary hub in the UK could not access such a catchment .
- Germany's central position facilitates intra-European transfers (83% of Munich's transfers for example are connecting on in Europe[43]).

In the UK, 62% of the air passenger market is located in the London and the South East. Birmingham only represents 4% total passenger traffic despite it being the 2nd largest city by GMP in the UK (and 85th in the world). Only 10% of its passenger traffic flew long-haul and only around 1% was connecting[39]. This is driven by the commercial reality that airlines with the choice to establish operations at Birmingham or London choose the latter. This is due to the combined effect of the lack of demand from the local catchment of the Midlands and the hubbing strength of Heathrow.

The short comings of so the called multi-hub model has been recognised in academic literature: *"Multi-hub networks are not an optimal solution compared to the single hub solution, as a number of theoretical studies on airline network choice have pointed out: each additional hub in the network reduces the corner stone of the hub strategy, the density economies. Furthermore, additional hubs bring in additional complexity costs"* Duedden 2006; Wojahn, 2001[31]

The UK cannot support more than a single hub airport. Attempts to create a dual hub between Heathrow and Gatwick were tried in the 1970s and 1990s but both ended in failure because airlines were unable to attract sufficient transfer passengers at Gatwick to make services viable. The airlines moved back to Heathrow.

Q13. To what extent is it possible to operate a successful 'constrained' focal airport by focusing on routes where feeder traffic is critical and redirecting routes which are viable as point-to-point connections to other UK airports?

The Commission rightly finds that *"We do not consider that spreading one airline's hub operations over multiple airports in the London metropolitan area is likely to be a successful approach"*[5].

However, the paper goes on to say that *"all three alliances are relatively self-sufficient at Heathrow" and that "A complete alliance might, however, find it possible to transfer the entirety of its network to a different airport if it chose to do so and the necessary capacity was available."* We do not agree with either of these assertions.

A second UK hub in the South East is not attractive or viable. The Commission rightly highlights a handful of potential reasons why airline alliances have not moved to a second airport to date. These include the fact that Heathrow: has the scale to operate as a hub; offers higher yields; accesses a local catchment with a high density of affluent travellers; is well known overseas. At the same time, airport switching costs would be high, while releasing slots at Heathrow would benefit competitors.

There are several further reasons why it is highly unlikely that Star Alliance, SkyTeam or a major network carrier would ever choose to move to a second UK airport whilst Heathrow is the primary hub. These include:

- **Less attractive catchment areas:** the centroid of demand for South East passengers is Denham, 10 miles north of Heathrow. Demand is not 'geographically neutral' and, consequently, a move away from this centroid would drive a major loss of demand for the alliance that moves out. This would then be captured by airlines staying at Heathrow
- **Loss of valuable transfer traffic:** alliances are certainly not 'self-reliant' at Heathrow. Over 7 million passengers transfer either between alliances or to non-aligned airlines. 12% more long-haul passengers transfer onto Star Alliance from outside the alliance than from within it. Much of this cross transfer is to or from the home-based network carrier, British Airways. Moving away from the hub removes this feed, which has become even more important with IAG's acquisition of bmi, previously a Star Alliance carrier. The proportion of passenger demand at Heathrow for Star Alliance from passengers connecting from a different carrier has grown from 10% in 2011 to 13% in Q1 2013. The loss of the very conservative 7-8% of passengers suggested by the Commission would have a catastrophic impact on an airline's profitability. Star Alliance airlines are dependent upon the transfer traffic they share with other carriers. For example, 43% (308,000) of Air Canada's transfer passengers connect with British Airways[44]. The Star Alliance transfer passengers are also critically important to other carriers and routes at Heathrow. In 2012 for example, 79,000 of them, an average of 216 every day, transferred onto Jet's Mumbai services. There are many further examples: 50,000 transfer onto Malaysian Airlines Kuala Lumpur route and 48,400 transfer onto Aer Lingus' Dublin services[6,16]. These services would not otherwise be viable
- **Lower yields:** The economy west of London is closely tied to Heathrow. For more than 40 years, firms have chosen to locate near the airport. This economy is highly productive, and made up of a series of clusters of firms in similar industries. Over 200 of the UK top 300 businesses have headquarters within 25 miles of Heathrow with 6% more Thames Valley jobs in management than the national average[1]. This dense, embedded business population means that 30% of Heathrow's passengers are travelling for business, more than double the level of other London airports[16]. With airline yields consequently much higher at Heathrow, airlines would therefore be very unlikely to choose to move away and go elsewhere
- **Star Alliance and SkyTeam's European hubs:** why would an alliance want to build a hub that competes with their own primary hubs a few hundred miles away in mainland Europe?
- **Terminal 2:** From 2014, Star Alliance carriers will be co-locating Heathrow's new Terminal 2, a £2.5 billion development. Being co-located in a state of the art facility gives carriers little incentive to move
- **Airlines make the decisions - not alliances:** Star Alliance has 28 members and SkyTeam 19. Alliances are umbrella organisations, so ultimately it is the individual airlines that make their own decisions, reflecting their own commercial interests. This can include establishing codeshares or joint businesses with carriers outside their alliance e.g. Delta with Virgin. Alliance membership is fairly fluid. For example, the merger of Chile's LAN and Brazil's TAM has resulted in TAM leaving Star Alliance to join oneworld, and Lufthansa's sale of bmi (Star Alliance member) to British Airways has resulted in the business being absorbed into oneworld
- **Political considerations:** A relocation - to what would potentially be seen internationally as a secondary London airport - would likely be poorly received politically in a flag carrier's home state.

Ultimately alliances will not choose to move to a different London airport as their operations will continue to be considerably more profitable at Heathrow. In an industry where profit margins average 0.6%, even 1% of volume or yield is often critical to viability. Furthermore, there is no clear mechanism for Government to force airlines to move. Any such action would likely be fiercely resisted by the carrier(s) in question and could breach EU law, as well as such agreements such as Open Skies. It would also risk retaliatory action against UK airlines by other states.

Conclusion

Hub airports are different. The UK does not have a shortage of overall airport capacity - it has a shortage of hub airport capacity. Only a hub airport can provide the connectivity to long-haul destinations that Britain needs. Trends reinforce the market logic of this, rather than the reverse. A global race for this direct connectivity, and the substantial economic benefits that go with it, is well underway. No country has more than one major long-haul hub. London has one of these premier league hubs, and also has the natural advantages of geographic location and strong local demand. This should mean that the UK is a winner, but unlike its competitors, the UK is hampered by a lack of hub capacity. If the UK is to maintain its hub status then it must build from strength and add the capacity to compete at a single hub.

5. References

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[29] Heathrow analysis of IATA Data (Airport IS), 2012 (city pairs calculated by adding the combination of cities connected through a route when hubbing at both ends of the route is allowed)
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