Boosting capacity where it matters most – the nub is the hub

The CBI's position on future aviation capacity

"The CBI recommends hub capacity at a single location as the best way of boosting connectivity with new markets"

Business and politicians alike want to see the UK revive its role as a trading nation. We all share an ambition to seek out and exploit global export opportunities – wherever they arise. With global growth increasingly coming from emerging markets – whether those of today, such as the BRICS, or those of tomorrow like the MINTS or 'next 11' – we must be ready to move quickly and build the right connections.

As growth continues to tilt to the east, we can't always predict where the next opportunity will arise, but what we can do is give ourselves the best possible chance of success by maximising our connections with the rest of the world. We need to ensure our decisions are future-proofed to keep the UK on the right path, giving business the right tools that allow them to get into these markets at the earliest possible opportunity.

Air links are a big part of this equation. Connectivity is, and will continue to be, the lifeblood of new trade. While the link between direct air connections and trade growth has now been established, the UK still falls behind our competitors when it comes to forging new air links with emerging markets – constrained by the limits of our physical infrastructure. The Airports Commission is currently tasked with finding a solution to this capacity crunch – and businesses across the country are clear about what must be delivered, and when.

Firstly, inaction is no longer an option. In its interim report, the Commission was unequivocal about the need for new capacity to be built. When Sir Howard Davies delivers his recommendations on the location of new capacity in summer 2015, it is imperative that the new government of the day acts immediately to create the necessary planning policy statements and statutory instruments to get building by the end of the parliament. We have ducked the difficult decisions for too long – the Commission's steer must be taken and actioned without fail. To do this, we need to see all political parties acting with the country's economic interests at heart and committing to seeing through the Commission's work and recommendations in manifesto statements.

Regarding the type of capacity required, businesses are clear about the problem: the inability of the current aviation network to keep pace with our competitors in delivering links to emerging markets. Our network, as it currently stands, cannot resolve this problem: in simple terms, it offers spare capacity where there is little demand for such flights, and no capacity – at our current constrained hub airport – where demand is greatest. Today, the CBI is releasing new research that demonstrates a hub airport with spare capacity offers the greatest chance of new routes to emerging markets being created. UK businesses want to see additional hub capacity prioritised as the best prospect for supporting new trade.

New hub capacity – together with concerted action that supports the development of our network of point-to-point airports across the UK – should deliver the greatest number of connections to the greatest mix of markets and destinations at the most affordable cost for business and the public alike.

As to how to deliver that capacity – this is a question for the Commission. No one can predict with any certainty how the aviation industry and airport operating models will continue to evolve over the coming decades – just as few could have forecast the impact of the rise of budget airlines or dominance of airline alliances over the last twenty years – and it is for the Commission to decide how best to deliver new hub capacity. The Commission must balance the economic imperative with environmental considerations and logistical realities to serve the new government in 2015 with a politically deliverable solution.

To this end, the CBI is today calling on the Airports Commission to deliver recommendations that:

1) make a strong political and economic case for action in the next Parliament, with a clear schedule that delivers spades in the ground by 2020.

2) set out clearly the type of capacity required to maximise the UK's connections with the rest of the world. The CBI recommends hub capacity at a single location as the best way of boosting connectivity with new markets.

3) set out a compelling narrative for how to bolster competition by maximising links across the UK, developing an action plan to make the best use of our existing capacity by improving surface access.

4) give politicians a clear timetable for the consideration of additional capacity beyond 2030 to prevent another capacity crunch in the future.

It is essential that the Commission makes a strong political and economic case for action in the next Parliament – with a clear schedule that delivers spades in the ground by 2020

There is no easy way to boost our export performance; however, we know that most new export opportunities begin with simply getting to where we want to sell. Independent research conducted by Steer Davies Gleave and published in the CBI's 2013 report Trading places highlights what businesses have long known: with the right direct air links, trade will follow, creating **a virtuous circle of activity**[1]. Flights grow trade, which in turn grows demand for flights.

The UK remains at the heart of global aviation connectivity but, as with our exports, these links tend to focus more on our established trading partners, where demand is greatest, rather than with the markets that we need to grow. Businesses rate the UK's links with established markets highly, with 82% and 80% of firms reporting that they are satisfied with links to North America and the EU respectively. The picture is very different however for emerging markets. Just 44% and 41% of businesses are satisfied with links to China and Brazil respectively in 2013[2].

This is not surprising – the evidence suggests that we are falling behind our competitors when it comes to new air links with emerging markets. Analysis of the share of new routes over the last two decades from the EU to the BRIC economies indicates that the UK has been pushed back to fourth or fifth position for new routes to China, Brazil and Russia, from the EU. The UK not only lacks the links that our competitors have with large regional cities in Brazil and China such as Recife, Salvador, Wuhan and Xiamen, but also any direct links to countries such as Chile, Indonesia, Taipei and Peru.

New flights require capacity and demand in order to be economic – but in recent years, the UK has experienced problems on both fronts, limiting our ability to serve new markets.

In the south-east, we are already experiencing the impacts of constraints on runway capacity, with projections showing that all of London's airports could be full as early as 2025[3]. More immediately, the UK's hub, and main existing source of emerging market routes, Heathrow, is already full and is slipping behind its international competitors. Heathrow has grown 53% in the last 20 years, substantially slower than Frankfurt (84%), Paris Charles de Gaulle (142%) and Amsterdam Schiphol (160%), illustrating the impact that capacity limits have had when compared to hubs with room to grow[4].

Furthermore, where we do have spare capacity in the rest of the UK, we are seeing poor surface access limiting demand growth. Travel times to and from an airport will affect the number of passengers that will realistically make use of it, with a knock-on impact on the feasibility of delivering new connectivity. Civil Aviation Authority (CAA) research indicates that 50% of all passengers choose an airport based on their ability to reach it quickly, rising to 65% outside of London[5]. Yet with less than 25% of passengers currently travelling to UK airports on public transport, and a decline to just 11% for airports outside of London, clearly poor access options is holding our airports back[6].

With the UK already falling behind, it is more pressing than ever that we tackle the dual issues of capacity and demand to lay the foundations for the new routes we need. CBI members would like to see the Airports Commission pressing for immediate action from the new government in 2015, recommending durable, deliverable solutions that create the infrastructure capable of supporting the routes we need. This also means highlighting the urgency of this matter by setting out a clear schedule for its delivery in the next Parliament, with spades in the ground by 2020.

The Commission must prioritise the type of capacity required to maximise the UK's connections with the rest of the world. The CBI recommends additional hub capacity at a single location as the best way of boosting connectivity with new markets

While CBI members are clear that the Commission must deliver a comprehensive and coherent strategy that makes the most of connectivity and capacity across the UK, they recognise the priority that must be afforded to lack of spare hub capacity that is choking off new routes to emerging markets.

While all airports have a role to play in delivering better connectivity, not all airports play the same role. Businesses feel that a thriving UK hub is not only likely to deliver the greatest opportunity to boost direct connectivity to a wider range of destinations as a result of transfer passengers, as has been the case to date, but is also essential for the attractiveness of the UK as an investment destination. Figures from the latest CBI-KPMG infrastructure survey support this view, with almost half of all businesses (49%) considering the availability of air connections with emerging markets as either critical or important in their choice of investment location[7]. With the current pinch-point existing at the UK's hub, this therefore constitutes a priority for action.

In addressing this shortage, there is little appetite from business users currently using the UK's hub to land at another airport in the region, collect baggage, clear customs and then travel to a dedicated long-haul hub. This means that if a UK hub is to successfully put on new routes by drawing on transfer passengers, as well as ensure that the whole of the country benefits from access to these connections through domestic flights, it must be at a single site rather than a split hub or constellation model, which would not support new routes at scale.

Hub-and-spoke and point-to-point explained

A hub airport combines (normally) short-haul transfer passengers (who fly into the airport from one of its 'spoke' airports) with travellers from the local catchment area to create a pool of passengers sufficiently large for airlines to sustain flights to destinations that would otherwise be uneconomic if the hub was relying purely on local demand. As a result, the success of these airports in serving emerging markets relies as much having the spare capacity for short-haul routes as it does the space for new emerging market routes.

An airport operating point-to-point routes (direct 'A to B' flights) tends to rely on the demand from its local catchment area to service direct routes. Long-haul flights can be sustained on a point-to-point basis if the demand from the local catchment area is sufficient. This catchment area can be increased by improving surface links, reducing the amount of time passengers take to reach the airport, therefore driving up potential demand.

New hub capacity must go hand-in-hand with action to get the most from our existing capacity. The Commission should set out a compelling narrative for how to maximise links across the UK, developing an action plan to make the best use of our existing capacity by improving surface access and competition

CBI members are happy to access the south-east's hub capacity for long-haul, marginal routes that cannot be economically established elsewhere in the UK because of limits on demand, but they are clear that development of the south-east's hub capacity is not the only action required.

If the UK is to maximise its connectivity, increasing the range of options open to businesses, reducing overall journey times by providing direct flights wherever possible**,** as well as providing competition that will deliver lower airfares for consumers, we must support the growth of our network of point-to-point airports up and down the country.

This is essential if we are to ensure that we provide the best possible level of connectivity to the established markets that form the bedrock of our trade currently, while ensuring that the domestic routes that link all parts of the UK up to the capital – and the hub capacity it can provide – are able to flourish alongside new long-haul connections.

This approach is also vital if we are to exploit the latent demand that exists up and down the country for those emerging market routes that are now transitioning from marginal destinations to popular ones. With large conurbations not only in the south-east but also in the Midlands and north-west, demand already exists for the more popular emerging market routes – whether to Beijing or to Delhi.

Connectivity in the south-east cannot be treated in isolation – it must be seen in the context of connectivity across the whole country. That is why businesses are keen for the Airports Commission to deliver with its final recommendations an action plan for government to maximise connections at airports in all parts of the UK. This means setting out a number of priority surface access upgrades that will significantly boost demand at key UK airports so that these projects can be factored into the UK's infrastructure delivery plans in the coming years.

"Connectivity in the south-east cannot be treated in isolation – it must be seen in the context of connectivity across the whole country"

It is essential that the Commission also gives politicians a clear timetable for the consideration of additional capacity beyond 2030 to prevent another capacity crunch in the future

The decision on the next runway in the south-east is already well overdue. Fifty years without the building of significant new capacity in the south of England has meant that we are only now, at the point where our airports are filling up, making a decision about what to do next. With new capacity taking up to and possibly beyond a decade to deliver, all of London's airports will be perilously close to being full by the time the first new tranche of capacity comes online.

With 85% of large multinational businesses considering air connections to established and emerging markets alike to be either a crucial or significant factor in their decisions regarding where to invest, indecision and uncertainty can have a material impact on investment in the UK, even long before existing capacity runs out[8].

The Airports Commission's interim review showed that demand forecasts suggest that not only will the UK require one new runway in the south-east by 2030, but that a second additional runway is likely to be required as early as 2050[9]. This being the case, we must avoid another damaging investment hiatus in our airport infrastructure and a blow to business confidence by learning the lessons of the past.

Any durable solution to the UK's capacity crisis must set in train a process that looks further ahead. CBI members urge the Airports Commission to set the groundwork for this decision now by outlining a clear timetable for the consideration of the UK's further runway capacity requirements – not only in the south-east, but across the whole of the country.

Footnotes

[1] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[2] *Connect more: CBI/KPMG Infrastructure survey 2013*, CBI & KPMG, 2013

[3] *UK aviation forecasts*, Department for Transport, January 2013

[4] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[5] *Passenger airport preferences: results from the CAA passenger airport survey*, CAA, November 2011

[6] *Ibid*

[7] *Connect more: CBI/KPMG Infrastructure survey 2013*, CBI & KPMG, 2013

[8] *Ibid*

[9] *Interim report*, Airports Commission, 2013

For further information or a copy in large text format, please contact:

Mark Dittmer-Odell, Head of infrastructure, CBI

T: 020 7395 8142

E: mark.dittmer-odell@cbi.org.uk

Maximising the UK's emerging market connectivity

Delivering capacity that best supports UK trade growth

"While all airports have a role to play in growing the UK's connectivity, not all airports play the same role"

To deliver sustainable growth, the UK needs to renew its role as a trading nation. The scale of the challenge is considerable, so it is essential that we pull all of the levers at our disposal that help us get our goods and services into the markets that we want to sell to.

The Chancellor has set ambitious targets for UK exports, but we cannot ignore that in recent decades, the signs have not been positive. From 6.1% of global exports in 1980, our share now sits at almost half of that in 2013 – 3.3%[1]. What's more, performance in recent years has continued to disappoint. Since 2008, total export volumes have risen by just 4% - a much smaller rise than experienced by other major global exporters, such as the US (17%), the Netherlands (16%) and Germany (15%), illustrating the scale of the challenge we face as a country if we want to catch up[2].

Underpinning this persistent erosion of the UK's global exports is our reliance on mature, slower-growth export markets, against a comparatively smaller presence in faster-growing emerging economies. 64% of our exports are still bound for EU and US markets with a projected annual growth rate of 4.3% in the coming years, yet by comparison, just 3% of our exports in 2011 headed to China, while 1% headed to Brazil – markets that, collectively with other emerging economies, the IMF expects to grow at an annual average rate of 7.4%[3].

If we are to reverse our declining share of global exports, it is therefore essential that we do everything within our power to diversify our focus. While there is no single solution, the evidence is clear that simply getting to the destinations we want to sell to is a key part of this puzzle. Independent research conducted by Steer Davies Gleave and published in the CBI's 2013 report Trading places highlights what businesses have long known – with the right direct air links, trade will follow, creating a virtuous circle of activity[4].

By looking at trends in direct air links and trade between 48 pairs of countries over a 20 year period, a clear picture emerges, showing that not only does a statistically robust relationship exist between trade and flights, but also a mutual causality. Flights grow trade, which in turn grows demand for flights. This analysis demonstrates that on average an additional flight to a high-growth market boosts trade by as much as £175,000. This means that for each and every daily route between the UK and an emerging market economy, UK trade could receive a shot in the arm by as much as £128m a year – that's an additional £1bn a year from eight new routes alone.

Given the size of the challenge – and the potential size of the reward if we get it right – it is essential that a long-term solution to the current aviation capacity crunch has the UK's connectivity needs at its heart. This means prioritising a solution that not only delivers connections to our established markets, where we already export our goods and services, but also to the markets that we aspire to reach – the emerging markets of today and tomorrow. As a result, it is essential not only that we increase our overall capacity to cope with demand growth for flights to our existing trade partners as demand increases, but that we also build the right capacity capable of sparking new routes to those destinations we do not currently reach.

As a result, the CBI commissioned Steer Davies Gleave (SDG) to gather data internationally with regards to the strengths and weaknesses of different airport operating models for growing our links to emerging markets when measured against the criteria set out by our membership: maximising direct connections to the widest range of new markets, delivering increased frequency, and therefore flexibility, and providing the cheapest possible airfares.

On the basis of this data, it is clear that while all airports have a role to play in growing the UK's connectivity, not all airports play the same role. Our findings indicate:

- While hub and point-to-point airports both play a key role in growing air links to a wide range of markets, hubs with large amounts of transfer passengers tend to be the catalyst for new routes, providing direct connections to a wider range of emerging market destinations, with greater frequency.

- Hubs that are constrained tend to draw fewer transfer passengers, limiting the catalytic effect that make them a national asset. Without transfer passengers, established routes still thrive, but the chances of new routes emerging are diminished. This makes additional hub capacity a priority if nurturing new routes is the goal.

- Competition between airports for routes not only provides greater choice once a route becomes more popular, but also reduces airfares. As a result, to provide optimal connectivity, upgrades to hub capacity must be complemented by a thriving network of competing airports to maximise the UK's connections.

The CBI offers this analysis as input to the work of the Airports Commission to demonstrate the economic imperative for additional hub capacity to support the UK's trading ambitions.

While hub and point-to-point airports both play a key role in growing air links to a wide range of markets, hubs with large amounts of transfer passengers tend to be the catalysts for new routes

Hub airports provide access to a wider range of destinations…

Analysis of growth patterns from hub and non-hub airports in the last two decades demonstrates that both airport operating models have grown strongly. Comparing trends at five pairs of hub and non-hub airports in developed countries – paired because they serve the same geographical markets – the evidence shows passenger demand has soared at both[5].

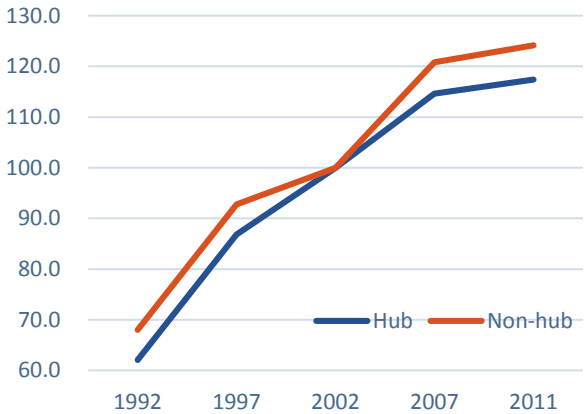
As analysis in the CBI's previous report *Trading places* demonstrated, since 1993, demand for flights increased at developed hubs by 98%, while non-hubs grew by 119%, albeit from a lower base[6]. By indexing at 2002 levels, the demand for flights from both sets of airports is clearer still: both sets closely follow the same trajectory, responding in a similar fashion to changes in demand (**Exhibit 1**). As a result, it is clear that both airport models are vital to supporting growth in the connectivity that underpins UK trade.

Yet while growth has been strong at both sets of airports, demonstrating that both have a role to play in delivering better connectivity, this does not mean that they play the same role. One of the primary benefits of a hub airport has traditionally been held up as its ability to put on a wider range of long-haul routes to destinations where there is marginal demand to make a route viable, using transfer passengers in order to reach the threshold of viability sooner[7].

This being the case, we would expect to see hub airports serving a wider range of emerging market routes, with greater frequency, and this is borne out in the data from our sample (**Exhibit 2**). Unconstrained hubs serve the largest number of emerging market destinations, with an average of 27 destinations served to our sample of 15 emerging markets. Frankfurt leads the way with some 45 destinations in the sample, with Amsterdam delivering connections to 31 and Paris CdG connecting to 26.

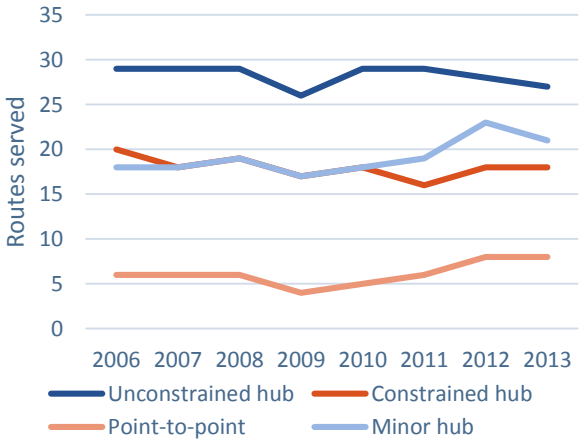
Vying for second place in provision of connectivity are minor hubs[8] and constrained hubs[9]. Dusseldorf scores well, with 24 emerging market destinations, while Brussels delivers connections to 17. By comparison the constrained hubs sit in the middle, with Heathrow delivering 22 connections, JFK 19 connections and Newark 13.

Exhibit 1: Indexed evolution of passenger demand at hub and non-hubs in developed economies (2002=100)



Source: ACI

Exhibit 2: Average number of emerging market routes served



Source: OAG

Finally point-to-point airports deliver on average 8 routes, with Barcelona delivering connections to a particularly high number with 18 routes, but with the rest of the sample lagging further behind at around 10 routes or below. Gatwick serves 11 routes from our sample of emerging markets, while US non-hubs deliver much lower levels of connectivity, with San Diego providing 4 routes and Baltimore just 1.

Besides demonstrating that hubs tend to deliver a greater number of routes to the emerging markets in our sample, this data shows a number of other interesting features.

The first is that constrained hubs (which airlines tend to use as a principal base for transfers) and minor hubs (where airlines operate some transfers on particular routes) tend to score similarly. This is perhaps less surprising however when taking into account that despite these differences in definition, the amount of transfer passengers at each is similar. Brussels and Dusseldorf operate with 36% and 31% transfer passengers respectively, while Heathrow operates at 27%, Newark at 34% and JFK at 16%, despite being the principal hubs for major airlines.

Secondly, it is interesting that Barcelona has bucked the trend in the sample, scoring almost as highly as many of the hub airports. Delving into this more deeply, of the 18 routes served in our sample, 13 were with Russia, leaving just 5 with the other 14 emerging markets. Underlying this, data is a number of seasonal routes run by airlines such as Vueling and Transaero, principally bringing tourists inbound to Barcelona.

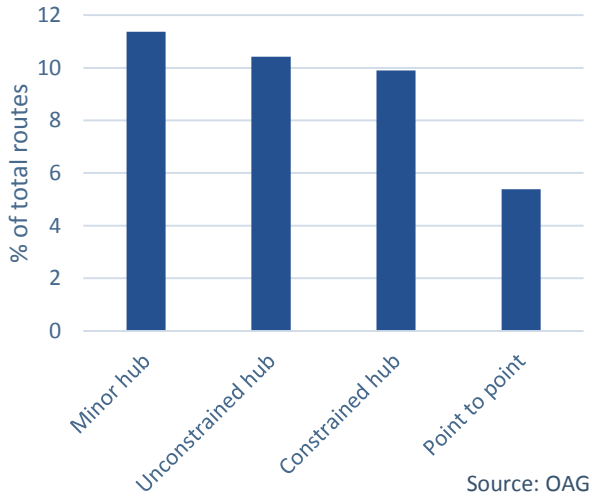
While tourist routes clearly also have the ability to drive trade, the large number between Russia and Barcelona distorts the figures, as many of the Russian departing destinations are relatively small in size. This outlier is indicative of a wider consideration in the sample, with large numbers of tourist routes, especially with holiday destinations in Turkey for European airports (particularly inflating Dusseldorf's connectivity figures) and Mexico in the case of US airports (inflating San Diego's figures), driving up numbers.

One rough way of stripping out the impact of over-inflated numbers due to a large range of tourist destinations in a single market is to consider the number of countries out of the 15 in our sample that is served by each hub and point-to-point airport, giving a better sense of the breadth of connectivity to different markets. Taking this approach changes the picture significantly, with hubs with spare capacity serving on average 10 of the 15 countries in our sample, constrained hubs serving 9, minor hubs serving 4.5 and non-hubs serving 3 markets. This would appear to suggest that point-to-point airports tend to serve specific emerging markets rather than a wide range, with often more extensive connections to those emerging markets that are nearby – as is the case with Barcelona, Dusseldorf and San Diego in the examples above.

Looking at the sample that underlies these results however, it would be fair to say that the hub airports within the sample are often larger airports – and therefore we would expect them to serve more emerging market destinations in total. As a result, it is worth looking at the percentage of overall routes that go to the emerging markets in the sample to gauge whether this is simply about size.

Taken on this basis, a clear division remains visible between those airports operating with transfer passengers and those without. Expressed as a percentage of routes, minor hubs, unconstrained hubs and constrained hubs all score around 10% of routes to these markets with very little variation, while pure point-to-point routes score at closer to 5% (**Exhibit 3**).

Exhibit 3: Emerging market routes as a percentage of total routes



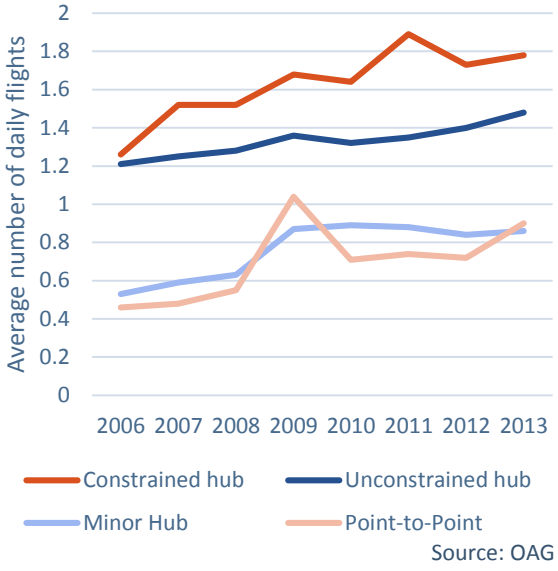
…with hub airports also serving emerging markets with greater frequency

Having a wide range of routes however counts for very little if the flights are not available when business users need them. Routes can vary in their frequency considerably – ranging from serving a destination several times a day to a once weekly service. As a result, not all routes are equal in the connectivity that they provide.

Turning to look at the frequency of services on the routes in our sample, the picture suggests that not only do hubs serve a wider range of emerging market destinations, but that they also serve them more frequently (**Exhibit 4**). Looking at the average number of daily flights to those destinations served by each of the airports, constrained hubs are shown to deliver the greatest frequency, with an average of 1.75 flights a day to each emerging market destination served, with unconstrained hubs delivering around 1.5 flights. Significantly further behind are both point-to-point with 0.9 flights per day[10], followed by minor hubs with an average of 0.8, although until 2013 minor hubs tended to serve routes more frequently.

Besides demonstrating that hub connections with emerging markets tend to be 'thicker' than minor hubs and point-to-point airports, one of the particularly interesting findings that this demonstrates is that hubs with constrained capacity deliver the greatest frequency of all, suggesting that these airports are reducing services elsewhere in order to increase the frequency to emerging market destinations they already serve. The implication of this would seem to suggest that as a result, constrained hubs are even less likely to explore new routes as they become full, preferring instead to place greater emphasis on ensuring that existing routes that are already profitable are fully exploited.

Exhibit 4: Average number of daily flights on emerging market routes



Source: OAG

Airports without transfer passengers are rarely the catalyst for ***new*** emerging market routes

That hubs serve a wider range of destinations with greater frequency than non-hubs suggests that these airports have been more effective at delivering the kind of demand required to create new routes in the past. What this alludes to, but does not demonstrate alone, is the 'catalytic effect' that marks out hubs as potentially game-changing for a country's international connectivity.

The CBI's report *Trading places* demonstrated that the relationship between direct flights and trade works both ways[11]. By analysing time-series data for lagged effects, where one variable impacts on the other in

"…not only do hubs serve a wider range of emerging market destinations, but they also serve them more frequently"

subsequent years, the research shows that direct flights boost trade, which in turn boosts demand for even more direct flights, creating a virtuous circle of activity.

If no route exists already however, it is difficult to get this virtuous circle started. Hubs provide that spark. By drawing together ground demand with passengers from the catchment areas of other airports, this allows a route to become viable much earlier – crucial not only for delivering the widest range of connections, but also delivering first mover advantage to countries in accessing new markets.

This would explain why in this sample hubs tend to serve a wider range of emerging market destinations. This also explains why a modest positive correlation exists between transfer passengers at an airport and number of emerging market destinations served (**Exhibit 5**).

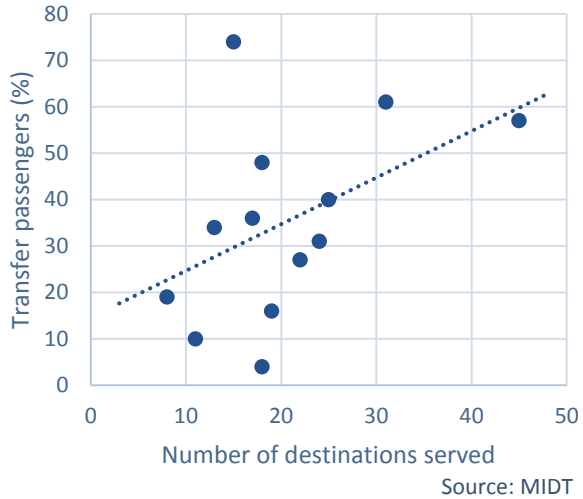
Given the wide range of factors influencing the destinations served, including historical links and geographical location, as well as the relatively small sample size, this is not conclusive. What is more illuminating however is a comparison of the different destinations served by airports operating in broadly the same geographical markets. By comparing pairs of airports operating in the same context (e.g. Heathrow and Gatwick; Frankfurt and Dusseldorf), the catalytic nature of hub airports become more apparent. Analysis of which destinations within our sample of 15 emerging markets are served by each demonstrates that non-hubs rarely provide connectivity to key economic centres in emerging markets that are not available at a hub – suggesting that in general, point-to-point airports replicate, rather than instigate new connections (**Exhibit 6, page 7-8**).

One of the most notable aspects of this breakdown is that there are few destinations that might be considered centres of economic growth in our sample of emerging market destinations that are served exclusively by non-hubs or minor hubs and yet a considerable number served by hubs.

While non-hub airports can deliver connections to some of these destinations, as demonstrated by the links between Gatwick and Dusseldorf and Beijing, the routes between Brussels and Mumbai or the links with Moscow that many non-hub airports have, these are rarely new connections not offered at a hub. Of those additional links that are offered, these tend to be either with popular tourist destinations in Turkey or further afield such as Cancun or Goa, or links with Russia. This suggests that the track record of non-hubs for growing brand new routes is relatively poor, especially if there is little tourist demand to kick-start the route.

By contrast, the longer-haul emerging market routes in the sample are almost exclusively served by hub airports – especially where there is no historical link between origin and destination. This provides further support for the view that hub airports with transfer passengers play the role of 'game-changer', allowing airlines the scope to test new routes, acting as the potential catalyst for growth in trade that then feeds back into even better connectivity.

Exhibit 5: Transfer passengers on long-haul routes vs. number of emerging market routes served



Source: MIDT

Main finding: Hub capacity is a national asset when it comes to growing connections to new markets, with transfer passengers making new routes viable.

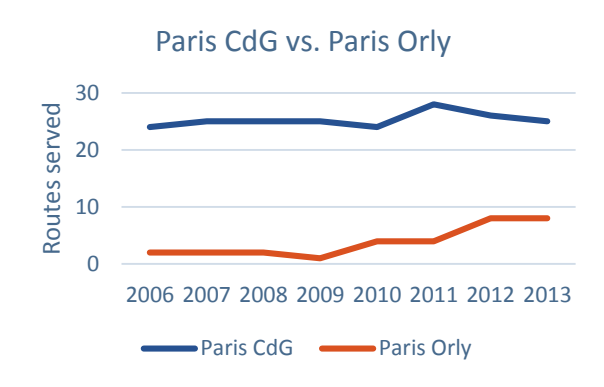
Exhibit 6: Hubs and non-hub connections compared in 15 emerging markets[12]

Paris Charles de Gaulle (hub) vs. Paris Orly (non-hub)

0 destinations served exclusively from Paris Orly

19 destinations served exclusively from Paris CdG including:

- **BRICS:** China (x4), Brazil (x3), India (x3), Russia (x1), South Africa (x2).
- **Others:** Malaysia, Thailand, Peru, Chinese Taipei, Mexico and Colombia.



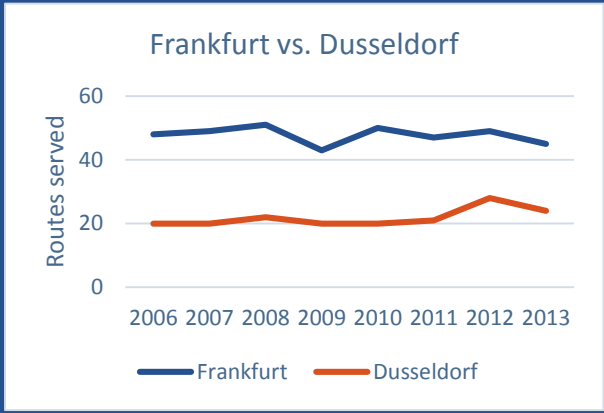
Frankfurt (hub) vs. Dusseldorf (minor hub)

6 destinations served exclusively from Dusseldorf including:

- **BRICS:** Russia (x5)
- **Others:** Turkey (1x tourist destination)

25 destinations served exclusively from Frankfurt including:

- **BRICS:** China (x4), Brazil (x4), India (x6), Russia (x4), South Africa (x2).
- **Others:** Malaysia, Thailand, Chinese Taipei, Mexico and Colombia.



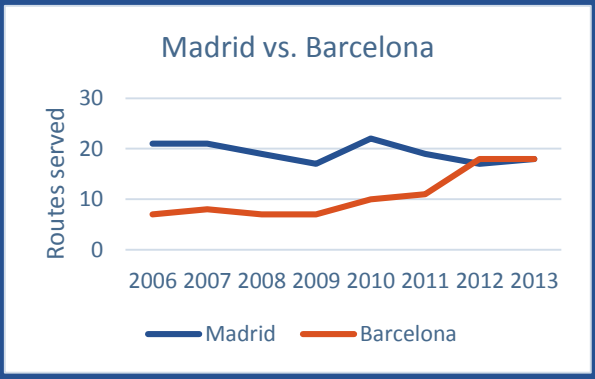
Madrid (hub) vs. Barcelona (non-hub)

10 destinations served exclusively from Barcelona including:

- **BRICS:** Russia (x9)
- **Others:** Turkey (1x tourist destination)

10 destinations served exclusively from Madrid including:

- **BRICS:** Brazil (x2) China (x1)
- **Others:** Chile, Colombia (x2), Mexico, Peru



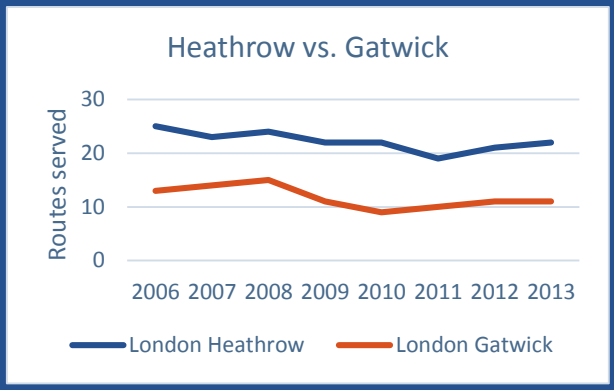
Heathrow (hub) vs. Gatwick (non-hub)

7 destinations served exclusively from Gatwick including:

- **BRICS:** No routes
- **Others:** Turkey (4x tourist destinations), Mexico (1x tourist destination – Cancun), India (1x tourist destination – Goa) and Thailand (1x tourist destination – Phuket).

17 destinations served exclusively from Heathrow including:

- **BRICS:** Brazil (x2), China (x3), India (x5), Russia (x1), South Africa (x2).
- **Others:** Malaysia, Mexico (Mexico City), Thailand (Bangkok).



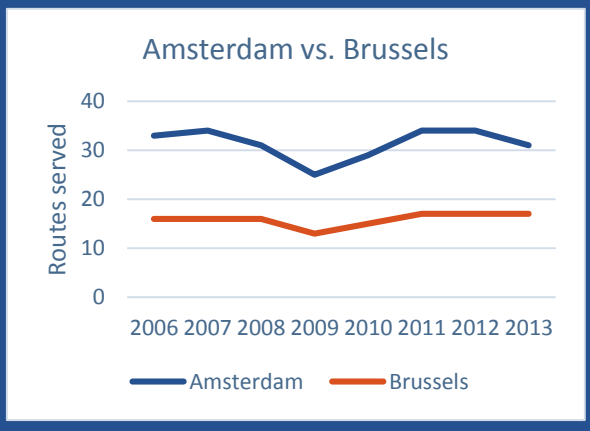
Amsterdam (hub) vs. Brussels (minor hub)

3 destinations served exclusively from Brussels including:

- **BRICS:** No routes
- **Others:** Turkey (2x tourist destinations), Thailand (1x tourist destination – Phuket)

19 destinations served exclusively at Amsterdam including:

- BRICS: Brazil (x2), China (x5), Russia (x1), South Africa (x2)
- Others: Chinese Taipei, Malaysia, Mexico, Peru and Turkey (4x tourist destinations)



But hubs that are constrained tend to draw fewer transfer passengers, limiting the catalytic effect that makes them a national asset. This makes additional hub capacity a priority if we are to grow new routes

Constraint at a hub leads to prioritisation of point-to-point routes over transfer passengers

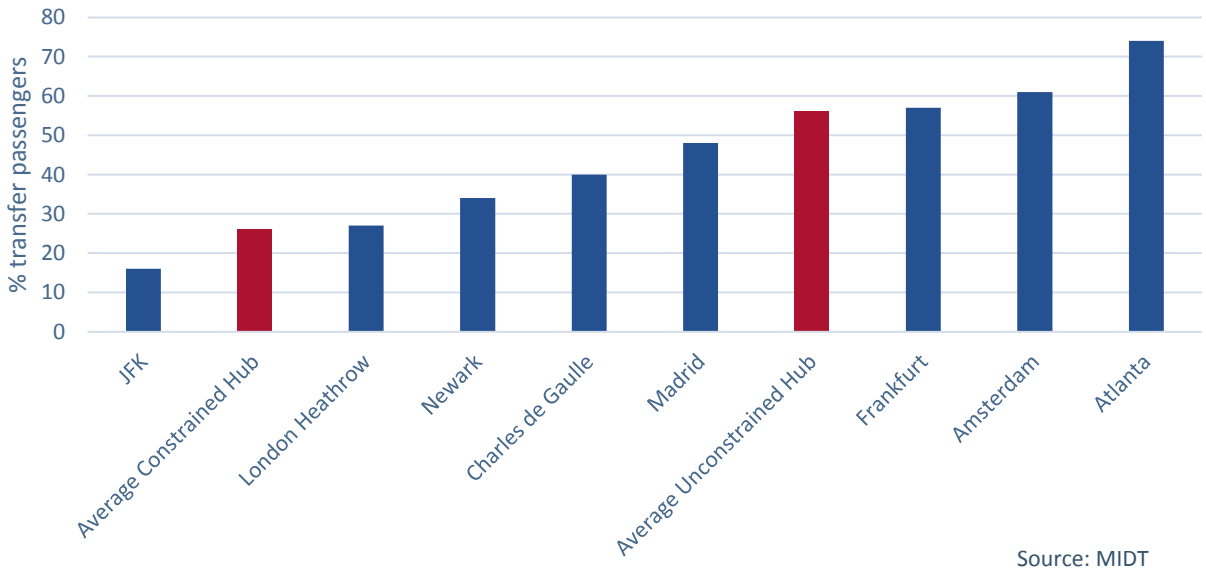
As demonstrated above, while hubs as a group serve a wider range of emerging market destinations than non-hubs, it is hubs with spare capacity that tend to serve the widest range within our sample, with constrained hubs serving on average nearly a third fewer destinations.

This is perhaps not surprising, if we take into account that the constrained hubs tend to draw to a lesser degree on transfer passengers – a key enabler of the development of new routes. Looking at the proportion of transfer passengers that the constrained hubs in our sample use in order to fill long-haul flights in particular[13], the figures show that despite large national carriers that operate a hub-and-spoke model basing themselves at each of these airports, the figures are relatively low. The proportion of transfers at Newark is the largest at 34%, followed by Heathrow at 27% and JFK at 16%. By comparison, the figure is much higher at hub airports that are unconstrained (**Exhibit 7**), with figures ranging from above 70% to 40%. Taking averages of the airports in our sample, constrained hubs use 26% transfer passengers, while unconstrained hubs make use of 56% transfer passengers to fill long-haul routes.

The relatively low number of transfer passengers can be explained by two factors: high levels of ground passengers available to fill aircraft and the nature of capacity constraint, which limits the availability of spare landing slots for short-haul routes. Taken together, these factors tend to lead to the prioritisation of origin and destination over transfer passengers.

Demand at a hub airport is composed of two factors: passengers accessing the airport from the local ground population and passengers transferring. One of the reasons that the airports in our constrained sample have been able to grow their connectivity with emerging markets with relatively lower levels of transfer passengers has been because they score well on the availability of ground passengers. Both London and New York clearly have large populations

Exhibit 7: Transfer passengers as a % of travellers on long-haul routes



Source: MIDT

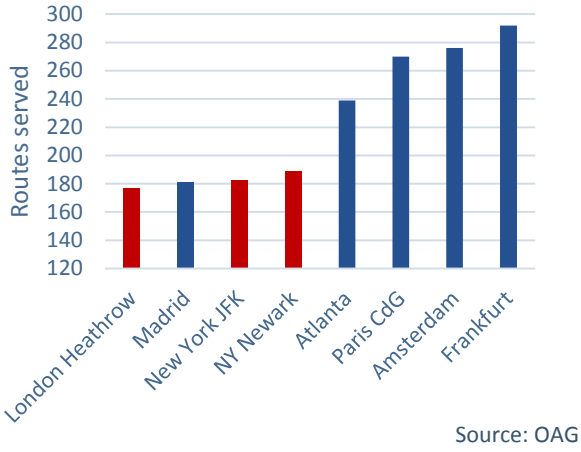
to draw on, meaning the contribution that needs to be made by transfer passengers in order to make many routes viable is relatively smaller, although nevertheless often still significant. By contrast, clearly some hubs in the unconstrained sample rely heavily upon transfer passengers precisely because they lack the ground population. Amsterdam has a metropolitan population of just over 1.5 million, yet is able to sustain one of the world's largest hubs by calling on 60% transfer passengers.

As such, a large ground population is an asset to an airport for sustaining long-haul routes, but it also affects the nature of a hub where it is constrained. With space at a premium at a constrained hub, it makes less economic sense to serve a large range of short-haul destinations that are both principally point-to-point in nature, so can be served at other airports, as well as being less profitable than long-haul routes. A landing slot at a hub airport for a long-haul route is the same as a landing slot for a short-haul route, and so it makes sense to prioritise long-haul routes – especially if a large ground population can drive a large proportion of the demand.

This prioritisation is evident at the constrained airports in our sample. Looking at the total number of routes, both established and emerging, the difference between constrained and unconstrained hubs is notable, with the unconstrained hubs serving considerably more – in some cases almost double (**Exhibit 8**).

The decline of domestic routes that serve Heathrow as it has reached capacity is illustrative of this broader decline in short-haul routes, and therefore a decline in the potential growth of transfer passengers. Since 1990, 11 airports, including Inverness,

Exhibit 8: Total destinations served – constrained (red) and unconstrained (blue)



Source: OAG

Liverpool, Durham Tees Valley, Plymouth and the Isle of Man have lost previously held connections with Heathrow.

By contrast, this can be compared with other unconstrained hubs with large ground populations, where ground population and transfer passengers thrive alongside one-another. Paris CdG serves some 270 routes compared to below 180 for Heathrow, drawing on both a large ground population in excess of 12 million. With a larger ground population, it would be expected that as a percentage of passengers this would make up a larger proportion than the other hubs in the sample, however Paris CdG still sustains 40% of its long-haul traffic from transfer passengers – some 13 percentage points higher than Heathrow.

With spare capacity, the choice is not either / or.

"Constrained hubs tend to draw to a lesser degree on transfer passengers – a key enabler of the development of new routes"

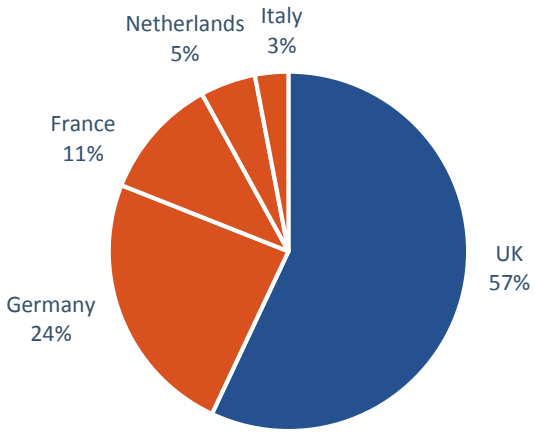
This means long-haul routes with strong historic demand in the market of the constrained hub tend to thrive…

The prioritisation of ground passengers over transfer passengers has a knock-on effect for the routes that are served by constrained hubs. Rather than expanding the number of markets served by drawing on transfer passengers, this tends to lead to an even greater concentration on those markets that are already popular with the ground population – where an airline already knows it has demand without having to draw on transfers.

This explains why when spare slots at Heathrow come up, these are often used to serve established long-haul markets in the US. It also explains however why the UK does particularly well with *specific* emerging market countries. In the CBI's report *Trading places,* it was noted that the UK does particularly well in growing new routes to India, capturing some 57% of all new routes from the EU in the last 20 years (**Exhibit 9**)[14]. With strong historical links and family connections and some 1.45 million people in the UK of Indian descent, strong demand can be driven to India from the UK ground population alone. Considering the other markets in our sample with which the UK scores well, South Africa is one of the successes – again with which the UK has historical ties, and the other is Thailand, which is particularly popular among British tourists, and so caters for large volumes of point-to-point traffic.

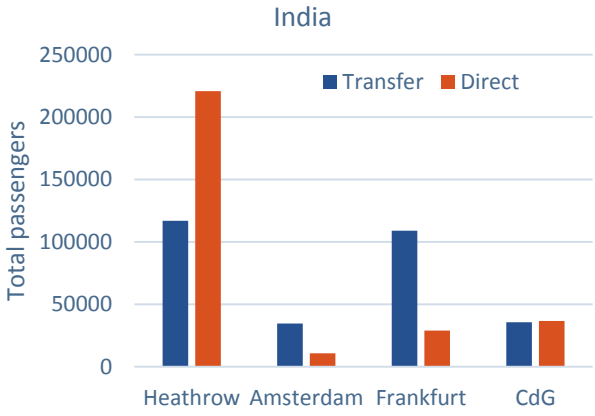
Comparing the proportion of traffic from European hubs to these destinations underlines this trend. With the exception of Madrid, all of the other European hubs in our study serve these markets, although in smaller numbers, as would be expected. What is perhaps most notable however is that without historic ties, they draw more heavily on transfer passengers than ground passengers in order to do so (**Exhibit 10**)[15].

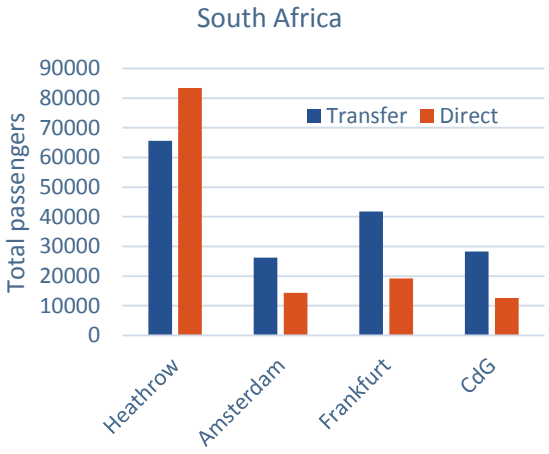
Exhibit 9: Share of new EU flights in the last 20 years (%) – India



Source: EUROSTAT, OAG Data

Exhibit 10: Share of direct and transfer passengers over two months to India and South Africa





Source: MIDT

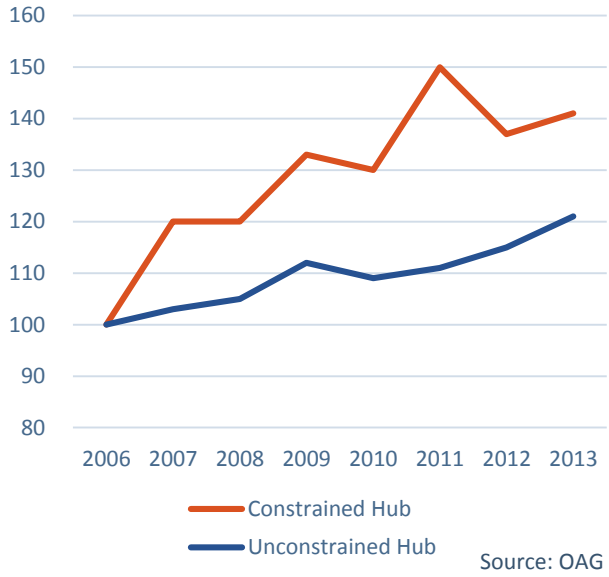
By comparison, Germany is estimated to have around 100,000 residents in the country either of Indian descent or currently holding an Indian passport. Considering this fact, it is therefore perhaps somewhat remarkable that Germany has still managed to capture 24% of new EU flights in the last 20 years.

Despite a much lower ground demand, Frankfurt captures as many transfer passengers for Indian markets as Heathrow, with the result that Frankfurt's services, while not as frequent as Heathrow's serves similar breadth of locations. In fact, while Heathrow serves five destinations in India directly, Frankfurt serves six. For South Africa too, while Heathrow is able to offer frequent services to both Cape Town and Johannesburg because of high levels of ground demand, both locations are also offered as direct flights from Charles de Gaulle, Frankfurt and Amsterdam – despite relatively low levels of demand around the airports themselves.

While the UK still draws on significant amounts of transfer passengers for these routes, this is more testament to the fact that large ground demand makes regular flights to these destinations feasible.

This in turn makes hubbing at the UK an attractive proposition for passengers from across Europe who lack direct connectivity – because of the flexible range of flights available to connect onto. This further increases the UK's dominant share in these markets, explaining why in recent years despite capacity constraints, constrained hubs have increased the frequency with which they serve the markets they do serve – even faster than unconstrained hubs (**Exhibit 11**).

Exhibit 11: Indexed growth of flight frequency to emerging markets (2006=100)



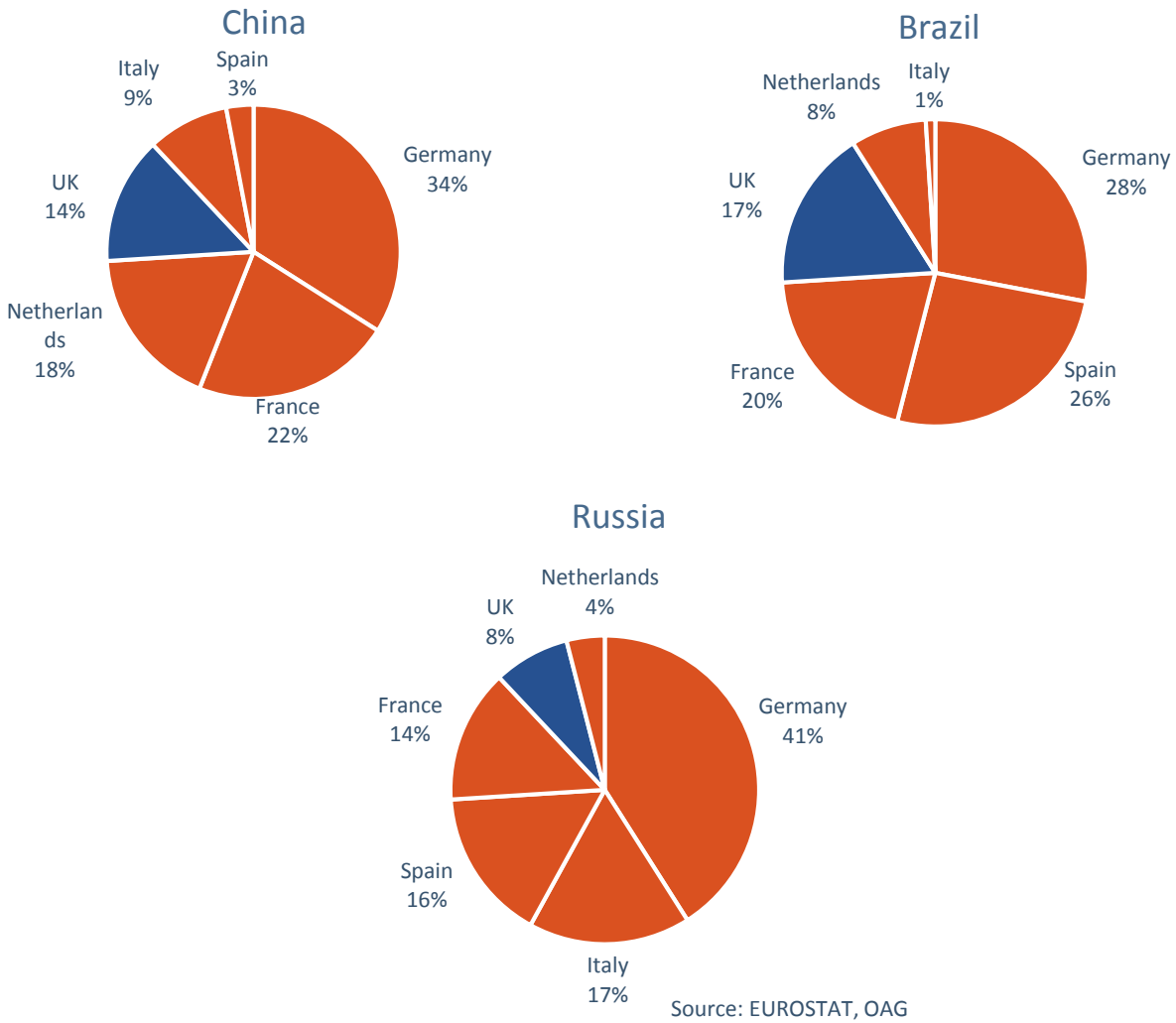
…however without spare capacity that allows short-haul to flourish alongside long-haul, the benefits of a hub are reduced

On the flip side however, this may also explain why the UK fares much worse when it comes to new routes to destinations in emerging markets with no historical link, which therefore would require transfer passengers in order to become viable – at least initially. Analysis of the UK's share of flights to Brazil, China and Russia in the last 20 years has placed the UK at 4th or 5th among EU nations (**Exhibit 12**).

While the UK still serves these countries directly, as would be expected for such large markets, it has so far failed to dip its toe into the more marginal destinations, sticking instead to providing regular services to those destinations already offered at other European hubs. As a result, Heathrow offers daily services to locations such as Rio, Beijing, Shanghai, Sao Paolo and Moscow – all destinations served by other EU hubs, yet signs that new links are emerging are in short supply. By comparison, other EU hubs have started to explore their options in these markets – expanding the number of locations served, as the example of new routes from EU hubs to China demonstrates (**Exhibit 13, page 14).**

While serving the capital cities of these markets is sometimes viable using ground passengers alone from major European cities (as shown by the links between non-hubs and Beijing), if an airport is to serve more marginal destinations in these markets, transfer passengers are a must. The larger the pool of transfer passengers, the greater the chances of new routes being sparked.

Exhibit 12: Share of new EU flights in the last 20 years (%) – China, Brazil and Russia



Source: EUROSTAT, OAG

Exhibit 13: Growth of marginal routes to emerging markets – China

While Heathrow serves a number of the core cities in emerging markets, other EU hubs that draw on larger numbers of transfer passengers are starting to explore their options in more marginal destinations not currently served by other hubs, giving them 'first mover advantage' in these markets. Inevitably whilst testing a new route, these begin with just a handful of flights a week, however as the CBI's 2013 report *Trading places* demonstrated, new routes lead to new trade, which will in turn feed back in to greater frequency, and so these initial links act as a key catalyst.

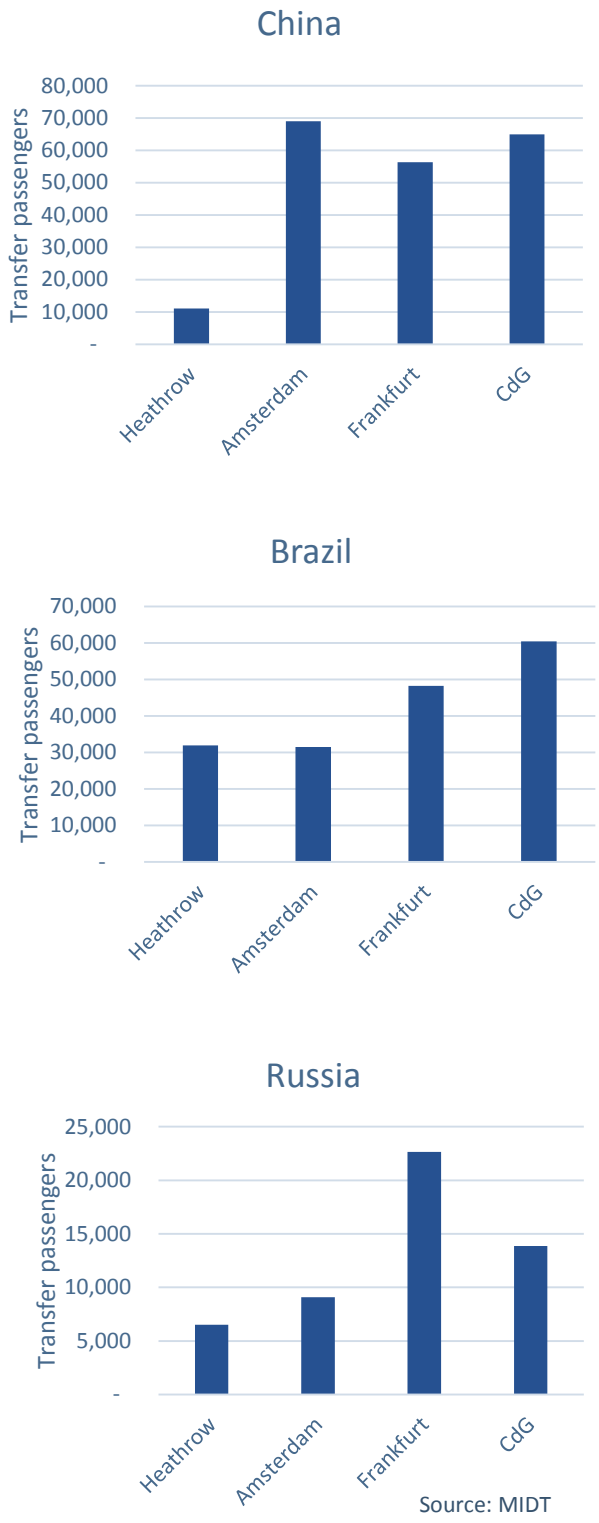
The evidence in the case of China demonstrates this tendency. When compared to other European hubs, Heathrow offers no routes to China that are unique to it, however its competitors have started to explore links with new locations, including:

- Amsterdam to Xiamen – 3 times a week
- Paris to Wuhan – 3 times a week
- Amsterdam to Hangzhou – 3 times a week
- Frankfurt to Shenyang – 2 times a week
- Frankfurt to Nanjing – once a week

Given however that for China, Brazil and Russia, the UK's number of transfer passengers is often far lower than other EU hubs (**Exhibit 14**), the catalytic nature of a hub is likely to be affected, meaning that demand never reaches the critical mass required in order to make a new route viable – even if the runway capacity existed to allow it to be put on in the first place.

As a result of these transfer passengers, other European hubs with smaller ground populations are also often able to provide either just as frequent, or more frequent services than Heathrow does, despite its large ground population – bringing with it a larger range of flights and offering greater flexibility to those passengers traveling from the hub's home market.

Exhibit 14: Total number of transfer passengers over a two-month period to China, Brazil and Russia



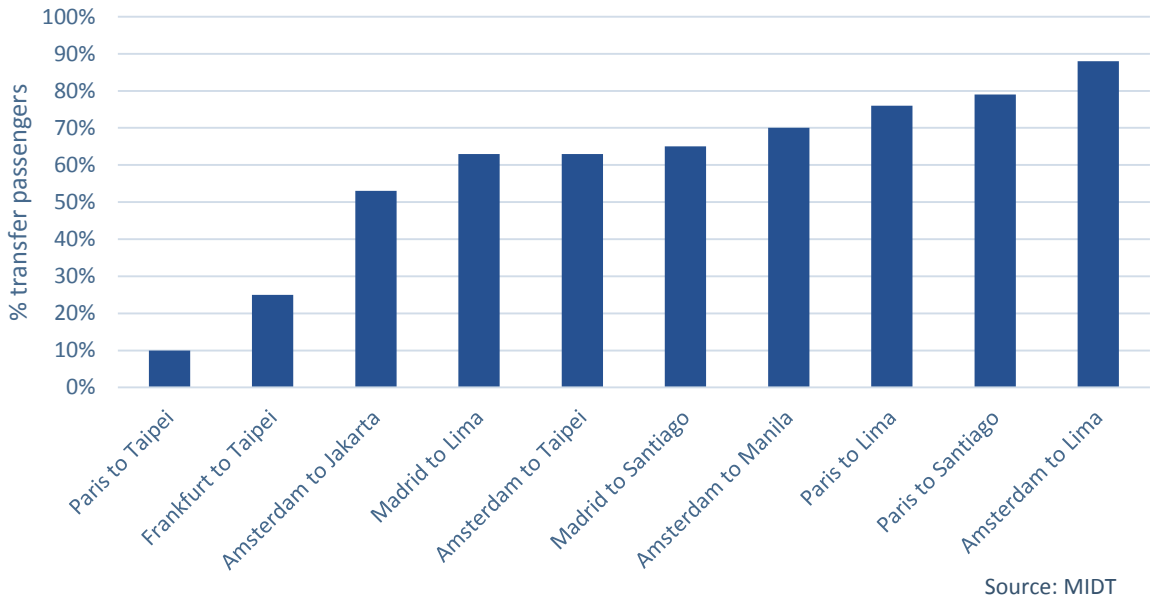
The same logic applies outside of the BRICS too, inhibiting growth of routes to the emerging markets of the future, as well as the present. Consideration of how other EU hubs manage to deliver routes to marginal destinations in our sample in South America and South-East Asia demonstrates this well. For those markets in our sample currently not served by the UK at all, but served by other EU hubs at least four times a week (Peru, Indonesia, Taipei, Chile and the Philippines), the reliance on transfer passengers is considerable in most cases (**Exhibit 15**).

For many of these routes, the number of transfer passengers is between 60-80%. At the lower end of the scale tend to be those markets where historical links exist, as with Madrid's provision of flights for South America, or the Netherlands' link with Indonesia – although even here, it is worth noting that the amount of transfer passengers remains high – often over 50%, despite the historical ties.

At the very lowest end is however the link with Taipei, which is served from Frankfurt, Paris CdG and Amsterdam with services at least four times a week, but not from any airports in the UK. Here, the percentage of transfer passengers for both Frankfurt and Paris CdG is relatively low, at 25% and 10% respectively. Despite this however, the UK currently lacks a direct link – from hub or from point-to-point airports. This would appear to suggest that while many routes run with a majority of transfer passengers, in reality it is often the case that while transfer passengers are the key difference, it is often a relatively small percentage that can open up new destinations.

Regardless of the percentage needed, if the UK has ambitions to grow links with these markets, given the lack of historical connections, transfer passengers will be of critical importance. These are just the markets that are not served by the UK in our sample however. With the UK also currently lacking direct routes to destinations served by other EU hubs in Bolivia, Uruguay, Ecuador, Cameroon, Ivory Coast, Burundi, Niger, Tanzania, Uzbekistan and UAE, among others, the potential cost of a lack of transfer passengers is potentially much more far reaching – especially when the next generation of emerging markets are factored in.

Exhibit 15: Proportion of transfer passengers on routes not served from the UK



Source: MIDT

With transfer passengers playing a key role in *growing* our connections, it is vital that we not only sustain a national hub, but that it actually has spare capacity to grow

Transfer passengers are the crux of the catalytic effect, playing a far greater role in our growth than the price of a cup of coffee as they transfer between flights – they are what sparks the initial connectivity that sets in train a virtuous circle of trade growth and demand for direct air links. This means that if we are serious about growing the number of destinations that we serve, boosting our connections to emerging markets and therefore boosting trade, we can't simply relocate short-haul to another airport and have a hub that specialises in long-haul routes. This would be tantamount to pulling the rug from underneath them and business passengers are unlikely to accept arriving at one airport, collecting luggage and clearing passport control, travelling to another airport and checking in again in order to transfer.

Furthermore, allowing transfer passengers to thrive plays another key role for the UK by providing all parts of the country with access to the connectivity of a hub. Direct connections are clearly preferable for businesses, however this is not possible to all destinations from all parts of the country, and so where this is the case, easy and frequent indirect access to hub capacity via domestic flights becomes a key factor in regional connectivity.

While the airports outside of the south-east can, and do access other European hubs, this should not be considered as an acceptable alternative for allowing them access to the UK's hub. Access to different hubs increases the number of options open to these airports, and with the close alignment of demand between the rest of the UK and London, it is reasonable to expect that many of the routes offered would be particularly useful for the UK's wider business community. Furthermore, with demand into a UK hub from the rest of the country likely to be particularly strong, driven in part by those travellers who want to access the capital, spare capacity would likely see these routes thrive, bringing with them a larger number of domestic transfer passengers.

Main finding: When the Commission makes its decision on the new capacity requirements that will support the UK's future as a trading nation, the solution must be an option that provides additional hub capacity. With our existing hub capacity already exhausted, this is an urgent priority.

"Transfer passengers are the crux of the catalytic effect… they are what sparks the initial connectivity that sets in train a virtuous circle of trade growth and demand"

Upgrading hub capacity must be complemented by thriving networks of competing airports if we are to maximize the UK's connectivity

Point-to-point airports can play a key role in increasing the range of destinations from which more popular emerging markets can be accessed…

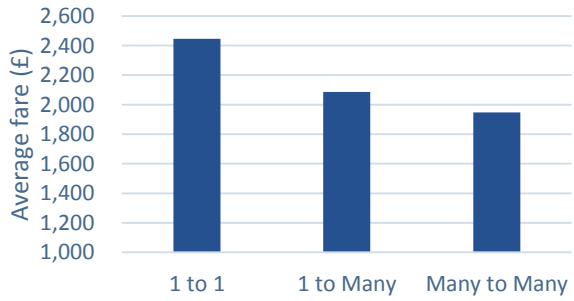
Prioritising upgrades to our hub capacity cannot however be the end of the story if we are to deliver optimal connectivity across the UK well into the future – for emerging and established markets alike. Even with one new additional runway in the south-east, passenger forecasts indicate a second new runway may be needed as early as 2050, while large conurbations of population outside of the south-east means the latent demand already exists for routes to some emerging markets alongside more established routes – demand that will become all the greater as new trade links solidify.

As demonstrated previously in **Exhibit 1,** this has led to overall demand growth at point-to-point airports that has mirrored the demand growth at hubs, greatly increasing the UK's connectivity to important established market trading partners. It has also meant however improved access to some of the emerging markets that were previously of more marginal interest to travellers as they have become more mainstream destinations. Connections between Gatwick and Beijing, Brussels and Delhi or Barcelona and Bogota demonstrate how, as emerging markets begin to transition to become more established markets, or where emerging markets have historical links, point-to-point airports are able to offer new connection options – delivering direct connectivity across a country, with greater flexibility and choice for passengers.

…while competition for these more popular routes reduces airfares too

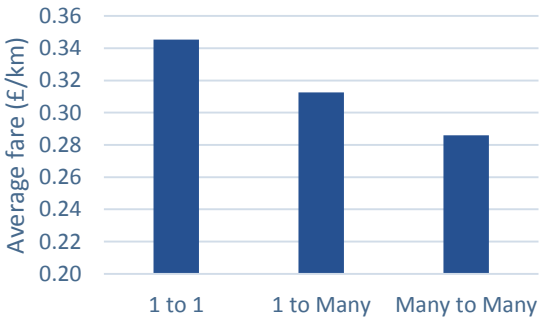
By having a thriving network of airports with the right infrastructure to serve as many destinations as possible, not only would the UK deliver business passengers greater flexibility and choice – both key concerns for business users, but it would also inject competition into the marketplace on these routes, delivering reduced airfares – another key factor in the UK's connectivity. Analysis of existing intercontinental routes between established markets demonstrates that where competition has thrived, airfares have fallen. Comparing routes served between destinations where there is just one airport at each end; those that have one airport at one end and multiple at the other; and finally those where there are multiple airports at each destination, the impact on price is clear - whether by absolute airfare, or on a per-kilometre basis. Flights between the US and Europe demonstrate this well (**Exhibit 16**). Transatlantic routes between cities with multiple airports are £500 cheaper on average than those between cities with single airports. When taken on a per-kilometre basis too, this difference is maintained (**Exhibit 17**), with fares £0.05 cheaper per km on routes served by multiple airports at each end.

Exhibit 16: Average fare by airport competition – Europe to US routes



Source: Google flight

Exhibit 17: Fare per kilometre by airport competition – Europe to US routes



Source: Google flight

This trend is reinforced by large datasets available on intra-continental travel in the US too. The US Department of Transport publishes a 10% sample of all domestic passenger tickets each quarter, including price paid. Analysing this dataset in the same way as intercontinental flights demonstrates again that routes served by multiple airports at each end provide cheaper airfares – whether on an absolute (**Exhibit 18**) or per-kilometre (**Exhibit 19**) basis, with a reduction of around £0.08 per km.

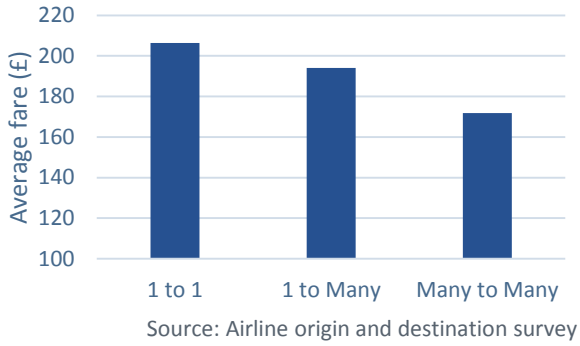
If we are to deliver optimal connectivity, the decision to increase hub capacity and upgrade point-to-point airports cannot be either / or

If the UK is to deliver an optimal mix that combines the widest range of direct destinations in emerging markets, higher levels of frequency and longer-term affordability, our strategy cannot afford to just concentrate on increasing hub capacity – it needs to also ensure that the conditions are right to allow other airports to thrive, providing competition on routes that are popular enough to facilitate point-to-point connections.

This means that while it is essential that we get a decision on the immediate capacity we require to address the current crisis in the south-east, it is also critical that we ensure point-to-point airports are able to exploit demand for emerging market routes where it already exists. Good connections to airports are an essential driver of passenger demand. Research conducted by the Civil Aviation Authority (CAA) highlights this, with other 50% of passengers in a 2011 survey highlighting surface access as a key determinant of choice of airport, rising to 65% outside of London[16]. The lesson is clear: the larger the catchment area of an airport, the greater the chances of creating viable flights. Cutting journey times from home or business to the airport can make a better business case for using the UK's existing capacity to either access new markets, as well as bolstering established links. With CAA figures indicating that on average less than 25% of those travelling to UK airports arrive by public transport, declining to just 11% outside London, there is clearly still much scope for improvement[17].

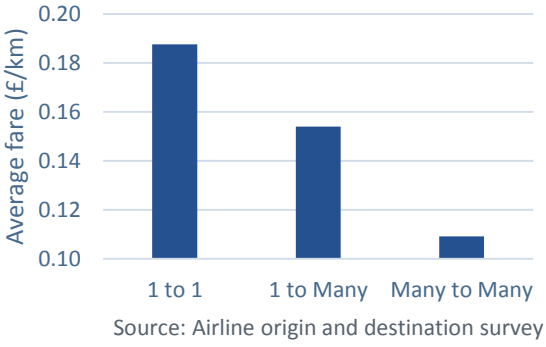
This also means kick-starting the process of thinking about the UK's longer-term runway capacity needs in order to avoid further crunches after 2030 that risk limiting some of the UK's key airports, and therefore

Exhibit 18: Average fare by airport competition – intra US routes



Source: Airline origin and destination survey

Exhibit 19: Fare per kilometre by airport competition – intra-US routes



Source: Airline origin and destination survey

competition. The Airports Commission's interim review indicates that demand increases may see a second runway needed in the south-east as early as 2050. If the UK is to avoid another damaging hiatus in its airport infrastructure that once again limits the development of new routes, it is essential that we learn the lessons of the past by starting the review of our longer-term needs now.

Main finding: If we are to deliver optimal connectivity, we cannot simply focus on the next runway in the south-east. We need a thriving network of airports with the right infrastructure capable of allowing them to reach their potential.

The CBI's position on future aviation capacity

Air connectivity will play a vital role in boosting trade with the high-growth emerging markets the UK needs to be active in to successfully renew our reputation as a trading nation and rebalance our economy. Currently, our connectivity to established markets is good, however the evidence is increasingly clear that the UK is falling behind our EU competitors when it comes to growing these emerging market links.

We must, as a matter of urgency, take steps that address this gap. The findings of this research indicate that in order to provide optimal connectivity to these markets, serving the widest possible range of destinations directly, with high levels of frequency and with the greatest range of consumer choice and affordability, we need the Commission to deliver recommendations that:

1. make a strong political and economic case for action in the next Parliament, with a clear schedule that delivers spades in the ground by 2020.
2. set out clearly the type of capacity required to maximise the UK's connections with the rest of the world. The CBI recommends hub capacity at a single location as the best way of boosting connectivity with new markets.
3. set out a compelling narrative for how to bolster competition by maximising links across the UK, developing an action plan to make the best use of our existing capacity by improving surface access.
4. give politicians a clear timetable for the consideration of additional capacity beyond 2030 to prevent another capacity crunch in the future.

Footnotes

[1] ONS data, 1980-2013

[2] *UK Economic Outlook Quarterly,* CBI, 2013.

[3] IMF Forecasts, 2014-2019

[4] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[5] Hubs: Paris CdG, Frankfurt, Amsterdam, London Heathrow, Atlanta. Non-hubs: Manchester Lyon, Dusseldorf, Brussels, Baltimore.

[6] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[7] A hub airport was defined for the purpose of this study as one which serves as a major interconnecting point for passenger journeys, and is therefore characterised by the presence of one or more major airline scheduling flights so as to provide the greatest possible connecting opportunities for transfer passengers.

[8] Given that some airlines do offer limited transfers through both Brussels and Dusseldorf (while not basing their operations here), we have distinguished these two airports as 'minor hubs' within the results, reflecting the nuances observed in airline operations.

[9] Constrained hubs are defined as those that are full at the peak travel periods in the mornings and evenings, meaning that it is difficult for airlines to schedule in-coming and out-going aircraft in waves in order to maximise the opportunities for passengers to transfer to onward connections.

[10] Baltimore was excluded from this sample because it only serves 1 emerging market destination, so frequency on that route would heavily skew the numbers

[11] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[12] Includes Brazil, China, Russia, India, South Africa, Chile, Chinese Taipei, Colombia, Indonesia, Malaysia, Mexico, Peru, Philippines, Thailand and Turkey.

[13] Different figures have been used in different studies for the number of transfer passengers at hub airports. The figures here differ because the data used excludes short-haul transfers in order to give a consistent figure across airports, as well as to isolate the long-haul emerging market routes that form the focus of this study.

[14] *Trading places: Unlocking export opportunities through better air links to new markets*, CBI, 2013

[15] The figures take into account numbers over two separate months, September 2013 and March 2014, representing typical summer and winter scheduling and demand.

[16] *Passenger airport preferences: results from the CAA passenger airport survey*, CAA, November 2011

[17] Ibid

Data Sources

Department of Transport (US), *Airline Origin and Destination Survey DB1B Market*

Airports Council International (ACI), *Annual traffic data*

Eurostat, *Air Transport Statistics*

Google, *Google flight*

Marketing Information Data Tapes (MIDT), September 2013 and March 2014.

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For further information or a copy in large text format, please contact:

Mark Dittmer-Odell, Head of infrastructure, CBI

T: 020 7395 8142

E: joe.bloggs@cbi.org.uk