

Review of submissions: competition impacts



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1 Review of submissions: competition impacts

1.1 Background

The Airports Commission requested ITF/SEO to provide technical assistance with analysing responses that pertain to the previous work undertaken by the ITF/SEO¹. This report assesses the submissions by the stakeholders in relation to competition impacts and compares them with the ITF/SEO results and the literature.

Specifically, we review the following studies:

1. InterVISTAS (2014). The Importance of Airport Competition on Air Fares Paid by Consumers. November 2014
2. Frontier Economics (2014). Impact of airport expansion options on competition and choice. A report prepared for Heathrow Airport Ltd, April 2014.
3. Gatwick Airport Ltd. (2015). Supporting Traffic & competition analysis.
4. British Airways (2015). British Airways response to the Airports Commission Public Consultation on new runway capacity in the South East. 3 February 2015.
5. CAA (2015). CAA response to the Airports Commission consultation: increasing the UK's long-term capacity.
6. CBI (2015). Boosting capacity where it matters most- the nub is the hub. The CBI's position on future aviation capacity.
7. Virgin Atlantic (2015). Virgin Atlantic Response: Airports commission final consultation on shortlisted options for new capacity.
8. EasyJet (2015). EasyJet response to the Airports Commission consultation.
9. Heathrow Airport Main submission.

The note is focused on discussing the competition impact assessments as requested by the Airports Commission. We do not consider the likelihood of airline responses and Airports Commission scenarios. The focus of our review will be on the first two studies, with a more concise review of the other submission, as far as relevant.

¹ ITF (2014). Impacts of expanding airport capacity on competition and connectivity: the case of Gatwick and Heathrow. Report prepared for the Airports Commission, December 2014. <http://www.internationaltransportforum.org/Pub/pdf/14Impacts-Airport-Capacity.pdf>; ITF (2014). Expanding airport capacity: competition and connectivity. The case of Gatwick and Heathrow. <http://www.internationaltransportforum.org/Pub/pdf/14Airports.pdf>

1.2 InterVISTAS on competition and air fares (submission by Gatwick Airport Ltd.)

Scope of the study

On behalf of Gatwick Airport Limited, InterVISTAS² assessed the impact of different types of airport competition on fare levels for different city pairs. The report adds to the existing literature by separating the effect of competition between airlines operating out of different airports (called ‘airport competition’) serving the same destinations from the effect of low-cost carrier operations in specific markets. The study is based on fare data from both the European and the US markets, while previous findings were largely based on the US market only.

Although not explicitly mentioned, the InterVISTAS study considers intra-European and intra-US routes only. The study considers average economy class fares between different European and US city pairs. The analysis looks at average fares of *all* airlines operating in the market (direct and indirect) and not the average fares charged per airline. The study does not consider business class fares. These are important limitations, given the strong London business market and extensive long-haul network.

The two main questions considered in the study are:

- What is the impact of different types of airport competition on air fares?
- How does the presence of low-cost carriers (‘LCCs’) influence overall fare levels for an origin-destination city pair?

Summary of methodology and data

InterVISTAS’ econometric approach uses cross section variation to identify the parameters to be estimated in order to address the question as to whether competition between airports (and carriers and carrier types) is an important factor in explaining fare differences between markets. InterVISTAS acknowledges that this question is different from the main question the Airports Commission may be asking, that is, whether on a given route, changes in competition between airports/carriers/carrier types explains changes in fares on a given route. To answer this question, both a dataset consisting of a large number of routes that have experienced meaningful changes in competition and a more elaborate model of how carriers respond (price and capacity) to changes in a given a market would be required.

InterVISTAS’ methodology permits the use of cross sectional data. Their analysis is based on the 1,000 largest airport pair markets in the US and Europe. Within this dataset there is substantial variation in competition between routes; sufficient for statistical estimation. In our view, a disadvantage of the approach is that the estimation might be biased as variables that differ between the different routes might not be controlled for, such as airport capacity scarcity at the airport of departure and/or arrival. Within the context of the work of the Airports Commission, scarcity is an important factor.

² InterVISTAS (2014). The Importance of Airport Competition on Air Fares Paid by Consumers. November 2014

What the literature says about the impact of competition on hub fares

Concerning the academic literature, Trethewey et al. (2005)³ provide a review of the evolution of the empirical research on the impact of market structure on airline fares in the United States. According to their review, early studies showed that average fares, adjusted for inflation, had decreased since the start of the deregulation. However, after some time researchers began to observe that the impact of deregulation on air fares was distributed unequally among routes. It was found that airport concentration in particular led to charging premiums to passengers with an origin or destination at a hub airport. These empirical findings raised major public policy concerns. However, still later research began to reveal that the issue was not so simple and that market concentration, by itself, was not such a significant factor in driving hub premiums. It was concluded that hub markets have innate characteristics that lead to higher average fares, even without concentration.

Another important factor affecting fares at some major airports turned out to be airport congestion. Economic scarcity, rather than market power per se, could be a source of fare premiums at hub airports. Limitations on airport capacity can generate scarcity rents that accrue to all airlines using the congested airport, not only to the dominant airlines (Trethewey et al. 2005). Furthermore, the higher fares at hub airports may also reflect the ‘quality of service, associated with higher frequencies and on-line connections’, as well as scarcity rents (Starkie 2007, p.5)⁴. “[...] [F]or various reasons congested airports often charge airlines inefficiently low prices [...]. This will result in high fare yields; but these high yields will reflect scarcity and not monopoly rents” (Starkie 2007, p.5).

Borenstein (1989)⁵ was one of the first authors using a sophisticated econometric approach to estimate the effects of route and airport dominance and concentration on prices. His work is regarded as one of the most influential studies in the hub premium debate. He estimated an econometric model that related the median route fare charged by each airline to a number of operational and market factors, such as route distance, unit-costs, traffic-mix, carrier identity and airport constraints, route concentration and airport concentration. He estimated the hub premium charged by the dominant airline relative to airlines without airport dominance, while previous studies estimated the degree to which the average fare at a concentrated hub airport differs from average fare at un-concentrated airports, which is not specific to the dominant airline. He found that dominance and concentration at the route level as well as at the airport level are principal determinants of price premiums of an airline, after controlling for a number of variables, such as flight frequency, distance, numbers of stops, unit-costs, carrier identity and airport constraints. In addition, he argued that frequent-flyer programs, travel agent commission override programs, and corporate discount programs are main causes of hub premiums.

³ Trethewey, M.W., & Kincaid, I.S. (2005). The Effect of Market Structure on Airline Prices: A Review of Empirical Results. *Journal of Air Law and Commerce*, 70(3), 466-498.

⁴ Starkie, D. (2007). “The dilemma of slot concentration at network hubs”. In Neumeier et al. *How to make slots work*. Aldershot: Ashgate. Downloaded from <
https://www.iata.org/whatwedo/Documents/economics/Starkie_Slot_Concentration.pdf>

⁵ Borenstein, S. (1989). Hubs and high fares: dominance and market power in the U.S. airline industry, *RAND Journal of Economics*, 20, pp. 344–365.

Additional evidence on hub premiums in the US was provided by Evans et al. (1993)⁶ who conclude by estimating reduced-form, fixed-effects price regressions that airport dominance contributes more than route dominance to an airline's ability to charge higher fares. Berry et al. (1996)⁷ confirmed this, but also concluded that the hub premium mostly applies to business passengers. They estimated that these passengers paid a premium of about 20% for flying out of hubs, while correcting for other hub specific characteristics as explained before, while for non-business travelers this was only 5% or less. Their findings are confirmed by Hofer et al. (2008)⁸ who also showed that especially LCC competition has a negative impact on average fare levels. His study concluded that LCCs do not charge hub premiums and FSCs' hub premiums tend to be lower when there is competition by LCCs. Vowles (2000)⁹ confirms the role of LCCs in determining air fares in the US. More recently, Brueckner et al. (2013)¹⁰ show that LCC competition indeed has a dramatic effect on fares, not only when the LCC carrier operates at the primary airport, but also from adjacent airports and even as a potential competitor. Brueckner et al. (2013) also find that competition from other full-service airlines at the same route has a limited effect as long as it is not substantial. The authors find no effect at all when legacy competitors operate out of adjacent airports on the fares charged at flights from the primary airport.

Lijesen et al. (2001)¹¹ were the first to examine the hub premium of European carriers. By using unrestricted economy class fare data from online travel agencies they related fares to distance, route, a market concentration index (the Herfindahl Hirschman Index) and airline specific constants. The sample data included ten European origins, with eight of them being the inter-continental hubs for their home carriers. The results revealed that price mark-ups existed on flights to or from hub airports. The average fares of Lufthansa, Air France and Swissair were 15% higher than other airlines in the sample, everything else being equal. They therefore concluded that at least some of these premiums should be attributed to market power and that the magnitude of the premiums is comparable to those found by Berry et al. (1996). In addition, Lijesen et al (2004)¹² concluded in their paper 'The Home Carrier Advantage in Civil Aviation' that airlines on each side of the market are generally found to be preferred by most passengers in their home countries. They stated that this could partly be attributed to the fact that the home carrier simply provides the most travel options from its hub airport and partly to other factors. These could include nonlinearities in frequent flyer programs, language advantages, national pride and economies of density in advertisement in the home country. This leads to generally higher fares charged by the home carrier for flights departing at its hub airport.

⁶ Evans, W N. and Kessides, I.N. (1993). 'Localized Market Power in the U.S. Airline Industry', *The Review of Economics and Statistics* 75(1), 66-75.

⁷ Berry, S., M. Carnall and P.T. Spiller, (1996). Airline hubs: costs, markups and the implications of customer heterogeneity, NBER Working paper 5561.

⁸ Hofer, C., Windle, R. & Dresner, M. (2008). Price premiums and low cost carrier competition. *Transportation Research Part E: Logistics and Transportation Review*, 44(5), 864–882.

⁹ Vowles, T., 2000. The effect of low fare air carriers on airfares in the US. *Journal of Transport Geography* 8 (2), 121–128.

¹⁰ Brueckner, J.K., Lee, D. Singer, E.S. (2013). Airline competition and domestic US airfares: A comprehensive reappraisal. *Economics of Transportation*, 2 (2013) 1–17.

¹¹ Lijesen, M. G., Rietveld, P., & Nijkamp, P. (2001). Hub premiums in European civil aviation. *Transport Policy*, 8(3), 193-199.

¹² Lijesen, M. G. & Nijkamp, P., Pels, P & Rietveld, P., (2005). The home carrier advantage in civil aviation. Tinbergen Institute Discussion Paper, No. 05-011/3.

Findings

InterVISTAS finds that the presence (or not) of an LCC in a city-pair market is the single most important driver of lower fares for consumers, which is consistent with the previous literature. In addition, it adds to the literature by providing empirical evidence for a pure airport competition effect, one that is separate from the LCC effect. This effect is smaller than the effect of LCC competition, but it is positive and statistically significant. As a result, the paper concludes that fares are on average lower for city-pairs for which carriers compete from different airports, either through V-route competition or through parallel route competition, than city-pairs for which carriers compete from the same airport. If in the latter case the competing airlines are network carriers, the fares are found to be only marginally lower than for city pairs on which one network carrier has a monopoly.

Recommendations

Based on these findings, InterVISTAS concludes that consideration should be given to where capacity will produce fare benefits for consumers and that a capacity decision that only adds capacity at the primary airport used by network carriers will have two detrimental effects from a fares point of view. First, by curtailing the growth of LCCs at secondary airports - Gatwick and eventually Stansted - InterVISTAS states that Londoners and visitors will pay higher fares in the future at all airports. Second, by inducing network carriers to serve only one airport, Londoners and visitors will forego fare competition benefits that are observed when network carrier service is available at two airports.

Review of findings and methodology

1. In general, the InterVISTAS study is transparent, robust and well-argued. It provides new insights into the role of LCC and adjacent competition on air fares at the European level.
2. InterVISTAS does not take into account a variable that reflects scarcity rents or excess demand, nor charges and fees at European airports. Although we appreciate the difficulty of doing so for all European airports, the expectation is¹³ that expansion of Gatwick will lead to substantially higher airport charges up to the current level of Heathrow. Expansion would thus make it harder for airlines using Gatwick to compete with Heathrow carriers. The question is to what extent these higher charges will affect air fares and network development. In the capacity constrained environment of Heathrow and to a lesser extent Gatwick, this is a crucial question: to what extent will fares be moderated by reducing scarcity rents as a result of increasing capacity and to what extent will higher charges be absorbed or passed through by the airlines? The majority of capacity at Gatwick is taken up by short-haul airlines. For these airlines, airport charges form a relatively high percentage of their costs, thus charge increases may act as a disincentive to growth in Gatwick, given the other, cheaper options available at other London airports. On the other hand, airlines may absorb a large part of the higher charges through reduced scarcity rents (which would only grow in the future if no capacity is added to the market). Overall Gatwick is more substitutable (by Luton and Stanstead) than Heathrow and some growth in LCC short haul flights suppressed at Gatwick may be displaced to the other airports rather than being a net loss to the London airports system as a whole.

¹³ See PwC analysis for the Airports Commission: PwC (2014). Cost and commercial viability: funding and financing. Study commissioned by the Airports Commission, November 2014.

3. The impact of charges and slot constraints on fares have not been taken into account in the InterVISTAS study. As the reduction of scarcity rents accounts for a significant part of consumer benefits (and the fact that scarcity rents will only increase with growing excess demand) and connectivity will be affected as well, we recommend that the Airports Commission views the InterVISTAS results for competition benefits in the context of the broader consumer benefits.
4. InterVISTAS studies relationships between fares and other variables in the current market, whereas the Airports Commission has a long-term horizon. Brueckner et al. (2013) find that the rise of LCCs and increases in adjacent competition has altered the way fares can be explained during the last decade. The question is, will the relationships found also apply to the period from now to 2030 or 2050?
5. InterVISTAS assesses the impact of low-cost carriers on air fares. To do so, the low-cost carrier segment needs to be defined. The definition of LCCs will remain arbitrary to a certain extent as the lines between the full-service and low-cost business models are becoming more and more blurred. Hence, the categorisation of carriers is important. The categorisation of LCCs followed by InterVISTAS is reasonable in general, although one could debate the categorisation of certain carriers (e.g. Thomson and SunExpress as full-service carriers).
6. We appreciate the efforts to distinguish between a LCC-effect and the effect of competition from adjacent airports. This distinction is important in the context of the London airports. The study is an important contribution to the literature and the way policy makers need to view airline competition in multi-airport systems. The study may also be of relevance in the European context, as European airports are relatively close to one another and hence have overlapping catchment areas.
7. InterVISTAS discards the use of the number of airlines or the common market concentration measures (HHI). Instead, dummy variables are used to include (LCC) competition. The choice for the use of dummy variables only is not clear and not well justified. Our own econometric analysis of air fares finds significant statistical results for the HHI. It may well be that the InterVISTAS results found in the study do actually represent an underlying market concentration phenomenon. In particular, the question is how robust the conclusion is that full-service competition at the primary airport does not result in lower fares. We recall Brueckner et al. (2013) who do find a fare effect of legacy carrier competition for the US, albeit smaller than in the past.
8. The study has a strong focus on LCC competition and the benefits for the UK consumer. However, it is not clear to what extent the use the air fare data (source: Diio Mi) for European routes fully covers all LCC flights, e.g. from Ryanair and what the impact of partial coverage is for the results presented. Based on the content of the appendix, we conclude that typical Ryanair routes (e.g. Bergamo-Girona) have been included, which indicates that the data used include fares of all LCC carriers.
9. For Europe, the study uses population and GDP in the region in which the airport is located. This might bias the result due to the *Modifiable Area Unit Problem*. Variables may be distorted due the size of the statistical region and the location of the airport within that region.

Review of recommendations

1. Although we think the methodology used by InterVISTAS to study determinants of air fares is fairly robust and in line with the literature, the study may give the impression that the results and recommendations following from the study are applicable for all air services, both

- short-haul and long-haul. However, the InterVISTAS results concern *short-haul routes* only and economy class fares only. These are important limitations to the study.
2. Submissions from several stakeholders challenge the assumption that LCCs are not willing to add services from Heathrow, which is currently predominantly served by network carriers. An example is EasyJet¹⁴, which claims it would expand at Heathrow rather than Gatwick given the choice. EasyJet typically provides fares 40% below those of the legacy network airlines when it enters an airport with limited existing low-cost airline presence. On the other hand, Gatwick already has high levels of low-cost airline penetration, with 70% of short-haul flights offered by low-cost airlines. Depending on the extent to whether these new LCC services from Heathrow will complement or substitute existing parallel or v-route low-cost competition from LCCs at other airports in London, the Airports Commission should not exclude the possibility that significant LCC competition benefits arise from an additional runway at Heathrow.
 3. In sum, we acknowledge the impact of LCC competition on fares (which is also included in the ITF/SEO study for the Commission¹⁵). However, given EasyJet's explicit interest in entering an expanded Heathrow and the broader trend of LCC's increasing their network portfolio at primary airports, we the proposition that significant LCC entry will only take place following Gatwick expansion. It could well be that LCC entry also takes place after Heathrow expansion. Moreover, the extent to which new capacity at Gatwick will be taken up by LCCs – in particular because of the expected rise in aero-charges - is uncertain.

1.3 Frontier Economics on the impact of airport expansion options on competition and choice (Report prepared for Heathrow Airport)

Summary of scope of the study

On behalf of Heathrow Airport, Frontier Economics (April 2014)¹⁶ considers the relationship between airport capacity constraints and ticket prices at a single airport. Frontier states that airports relate to each other in a complex structure of differentiated competition, with location and mix of traffic explaining most of the differences in the levels of competition. By using a theoretical model the study puts forward the hypothesis that airport capacity constraints will lead to excess demand, which can be expected to lead to higher fares. An empirical analysis is used to test this hypothesis and to understand and estimate the size of the airport capacity scarcity effect. This section will focus on the empirical analysis, which is most relevant to the scarcity and competition discussion.

Summary of methodology and data

Frontier has carried out an econometric analysis to demonstrate the cost of the capacity scarcity¹⁷ to passengers departing from Heathrow or Gatwick. By testing a wide range of variables for

¹⁴ easyJet (2014). Response to the Airports Commission consultation.

¹⁵ ITF (2014). Impacts of expanding airport capacity on competition and connectivity: the case of Gatwick and Heathrow. Report prepared for the Airports Commission, December 2014. <http://www.internationaltransportforum.org/Pub/pdf/14Impacts-Airport-Capacity.pdf>

¹⁶ Frontier Economics (2014). Impact of airport expansion options on competition and choice. A report prepared for Heathrow Airport Ltd, April 2014.

¹⁷ his part of the scarcity rent that is paid for by passengers and thus earned by airlines, see discussion in note on scarcity rents.

inclusion in the model Frontier estimates an econometric model that explains fares from the departure airports in the dataset. By trying to control for all these variables and including an airport dummy variable (for Heathrow/Gatwick), Frontier attempts to capture the average fare difference between flights from these airports and flights from other airports considered. Frontier considers this fare difference as the price premium for flying out of a certain airport.

The analysis is repeated for three different samples. The first one is based on 2010 fare data for the five London airports (sample 1), the second one is based on 2012 fare data for the five London airports (sample 2) and the third is based on 2012 fare data for five European hub airports in 2012 (Heathrow, Paris CDG, Frankfurt, Amsterdam and Madrid (sample 3).

The following model specification were used for the regression analysis:

$$\begin{aligned}
 (1) \ln(\text{Fare})_i &= \beta_0 + \beta_1 \text{Distance}_i + \beta_2 \text{Long haul}_i + \beta_3 \ln(\text{Frequency_Own})_i + \\
 &\quad \beta_4 \ln(\text{Frequency_Other})_i + \beta_5 \text{Business}_i + \beta_6 \text{VFR}_i + \\
 &\quad \beta_7 \text{Transfer}_i + \beta_8 \text{LCC}_i + \beta_9 \text{LHR}_i + u_i \\
 (2) \ln(\text{Fare})_i &= \beta_0 + \beta_1 \text{Distance}_i + \beta_2 \text{Long haul}_i + \beta_3 \ln(\text{Frequency_Own})_i + \\
 &\quad \beta_4 \ln(\text{Frequency_Other})_i + \beta_7 \text{Transfer}_i + \beta_8 \text{LCC}_i + \beta_9 \text{LHR}_i + \\
 &\quad u_i
 \end{aligned}$$

Regression (1) is used to estimate the price fare difference between Heathrow and the other London airports and between Gatwick and the other London airports, while (2) is used to estimate the price difference between Heathrow and the other European hub airports. The variables reflecting the shares of business passengers and VFR have been dropped for the second model, as no data on this variable are available for airports outside of London¹⁸.

Summary of findings

Frontier found that in 2012 ticket fares at Heathrow were on average 18.0% higher than other London airports and 23.8% higher than other European hub airports after controlling for the variables included in the model. Based on this Frontier concluded that in 2012 the capacity constraint implied a mark-up on one-way fares of about £50. A similar analysis for Gatwick, which is constrained at peak times, is provided for 2012. This gives rise to the conclusion that average fares at Gatwick are 6.9% higher than at other London airports, which for Gatwick is equal to a £7 mark-up on average on 2012 one-way fares. Frontier repeats the analysis for Heathrow for 2010 data and concludes that no significant price premium for Heathrow existed during this year. Furthermore, a negative price premium is found for short-haul flights departing from Heathrow (compared to the other London airports). These findings are explained as being the result of much smaller excess demand due to the economic recession in 2010.

¹⁸ As the systematic passenger surveys are only (publicly) available for the UK, Frontier was not able to control for trip purpose in the analysis of the European hub airports. Moreover, in 2010 trip purpose was not available for London City Airport.

Review of findings, methodology and recommendations

1. In general, the Frontier Economics (2014) study is robust, and supported by extensive sensitivity analyses. A major advantage is that the study is London-specific, which increases its usefulness for the Airports Commission. Its contribution to the current body of knowledge is significant, as few studies have empirically addressed the scarcity rents/ fare premium issue in Europe.
2. Frontier concludes – based on the results - that the expected decrease in ticket prices will be larger for Heathrow than for Gatwick, given the larger excess demand. Not expanding will increase excess demand and thus fares at both airports, but more at Heathrow than at Gatwick. Frontier also concludes that the reduction in air fares is much larger than the increase in charges, if airlines fully pass through these charges to the passengers.
3. We think that the reduction in scarcity rents and ticket prices indeed form an important part of the consumer benefits of airport expansion. We refer to the ITF/SEO scarcity rents report for a further discussion on excess demand, aero-charges and scarcity. Yet, we note that a reduction in scarcity rents can still be substantial following Gatwick expansion, as the ITF/SEO study shows¹⁹, as the Heathrow and Gatwick markets are partly overlapping.
4. The airport dummy variable reflects the fare premium for flying out of a specific airport that cannot be explained by the other variables that are included in the model. This means that the parameter for this dummy reflects all the effects of variables that are not included in the model. Examples of such omitted variables are the level of airport capacity scarcity as well the level of airline competition at the different airports. In the second model (the one with the EU hub dataset) the variables ‘share of business passengers’ and ‘share of VFR passengers’ (visiting friends and relatives) have also been omitted, because of the lack of data on business and VFR passengers at the other European airports. The omitted variables could bias the estimated parameters. When some of these variables have rather different values for Heathrow than for the other airports within the dataset their affect will largely be assigned to the Heathrow dummy. This is likely to be the case for airport capacity scarcity as this is much higher at Heathrow than at other airports.
5. It is unclear to what extent the fare premium solely reflects scarcity rents. Although, it is indeed likely that scarcity rents mainly determine the coefficient for Heathrow, it may also reflect other factors, such as the ‘share of business passengers’ in the second model, competition levels and the willingness to pay of passengers to use a high quality network (Starkie 2007)²⁰. For example, it is likely that the share of business passengers at Heathrow is higher than at the competing airports (especially compared to Madrid, Paris and Amsterdam), which might partly explain why fares at Heathrow are higher than at other European hub airport. Consequently the coefficient of the Heathrow dummy will mostly be the result of both Heathrow’s high scarcity rents and Heathrow’s high share of business traffic, and possibly of other factors (such as proximity, loyalty programmes) as well.
6. In our opinion, the justification for use of the frequency variables and the choice of not including market concentration variables is not clear. It is not clear to us why Frontier includes a variable that represents the number of annual flights on the route at the same

¹⁹ ITF (2014). Impacts of expanding airport capacity on competition and connectivity: the case of Gatwick and Heathrow. Report prepared for the Airports Commission, December 2014. <http://www.internationaltransportforum.org/Pub/pdf/14Impacts-Airport-Capacity.pdf>

²⁰ Starkie, D. (2007). “The dilemma of slot concentration at network hubs”. In Neimeier et al. How to make slots work. Aldershot: Ashgate. Downloaded from <https://www.iata.org/whatwedo/Documents/economics/Starkie_Slot_Concentration.pdf>

airport (frequency_own) as well as the number of annual flights on the route at the other airports in the same sample (frequency_other). Frontier claims that it expected that increased frequency of flights would have a negative effect on prices, but they do not control for airline competition. This makes the interpretation of the effect of the frequency variables on fares rather ambiguous. For example, a high number of flights offered from a certain airport could also be a result of one airline (or airline alliance) providing very high frequencies on certain routes as a service for time-sensitive passengers for which it charges a premium. The latter could have a fare increasing effect if competition on this route is relatively low and the airline (or alliance) has market power. If market concentration/number of airlines does not matter, the study should demonstrate this.

Review of the findings in comparison with the InterVISTAS and ITF/SEO studies

1. The absence of an observed price premium for Heathrow in 2010 may be in line with the fact that the Airports Commission chooses 2011 as the first year in which Heathrow can be considered capacity constrained. However several studies, including Frontier Economics (2014)²¹ have argued that Heathrow could be considered capacity constrained well before 2011. The economic recession may indeed explain the absence of scarcity rents in 2010 but the analysis does not discuss to what extent scarcity rents could already be observed before 2010 in line with its earlier conclusions.
2. InterVISTAS (April 2014) concluded that the presence of competition of a low-cost carrier in a city-pair market is the single most important driver of low fares for consumers, without taking into account scarcity rents as a potential determinant of air fares. Frontier also identified low-cost carrier competition as having a large negative impact on fares. But we note that InterVISTAS uses a dummy variable for the presence of low-cost carrier competition on a route, while Frontier uses the ‘percentage of passengers on the route on flights operated by low-cost carriers’. The first study is solely focused on short-haul markets while the latter analysed both short- and long-haul markets. Therefore, results are not directly comparable. Nevertheless, it can be concluded that the presence of competition from low-cost carriers is a very important determinant of air fares.
3. This conclusion is acknowledged in SEO’s fare model, which incorporates a dummy to account for low-cost competition like InterVISTAS (April 2014). One difference in ITF/SEO’s price model is that it takes into account the market concentration level to control for airline competition while both InterVISTAS (2014) and Frontier Economics (2014) do not.
4. The SEO air fare model has been estimated on an airline OD airport-pair basis, excluding the impact of adjacent competition but in the ITF/SEO analysis competition from airlines at different London airports to the same destination was included by considering these flights as close substitutes. The other two studies try to take into account airport competition as a direct fare determinant to some extent. InterVISTAS assesses how fares for short-haul flights from an airport within a specific city are affected by competing airlines operating from or to another airport within the same origin or destination city. They find that a pure airport competition effect that is negative and separate from the low-cost carrier effect. On the other hand, Frontier Economics (2014) tries to take into account how fares for a flight departing from an airport in London are affected by the number of services that are offered from this airport as well as from other airports in London to the same destination. Regarding

²¹ Frontier Economics (2014). The cost savings to UK businesses from a Heathrow expansion.

their London 2010 and 2012 dataset, they find a positive effect that is statically significant at a 1% significance level for short-haul flights. For long-haul flights they find also find a positive but not statistically significant effect. Frontier notes that ‘We had expected the coefficients on frequencies to be negative, as a greater supply of flights might be expected to bring down prices.’ It may be that Frontier Economics find a positive effect simply because their methodology did not encompass the full range of airline competition effects. For example, if a greater supply of flights is offered by just one airline, this actually means that this airline is expanding its market share and thus potentially its ability to raise prices.

The main difference between the methodologies is how the competition level is taken into account. The SEO methodology uses the HH-index (on top of a LCC-dummy) which is one of the most detailed approaches to the measurement of competition available. InterVISTAS uses the number of airlines that are competing (on top of a LCC-dummy). This is a significantly less accurate measurement of the competition level than the HH-index. Frontier does not account for the competition level other than including the percentage of passengers on the route on flights operated by low-cost carriers.

1.4 Gatwick Airport Ltd. – Supporting Traffic & competition analysis

Scope of the study

In its ‘Supporting traffic & competition analysis’, Gatwick Airport Ltd. reviews the Airports Commission traffic forecasts, airline supply side analysis, cargo, air fares & charges analysis and the ITF/SEO study²². Here, we address the main finding/comments as far as related to competition impacts.

Review of submission

1. Gatwick Airport Ltd. (p. 11) notes that “the Commission has stated that ‘Air fares have not been found to be a significant driving factor of airport choice....an extensive exercise. ...failed to find a statistically significant relationship between fares for particular routes and passengers’ choice of airport’”. The report acknowledges that collecting data is difficult but considers it “inconceivable that fare levels have no impact on passenger choice”. Based on the available passenger choice literature and according to our own analyses, we think this is a valid comment. Air fares do have an impact on passenger choice, in particular for the price elastic segments.
2. However, in the specific case of the London market, none of the empirical studies undertaken have been able to quantify a price effect from the data available. It is not surprising therefore that the forecasts used by the Airports Commission do not model prices directly and instead reflect prices indirectly in other variables. The validity of the Commission’s use of forecasts is confirmed in a separate report (ITF 2015).
3. The report (p. 13) states that Heathrow is fundamentally incompatible with a genuine low-cost carrier model and that ‘the type of capacity provided will not be suitable for this market segment, which has been delivering UK short haul traffic growth over the last decade’. Given the explicit interest in Heathrow expressed by EasyJet, the broader trend towards

²² ITF (2014). Impacts of expanding airport capacity on competition and connectivity: the case of Gatwick and Heathrow. Report prepared for the Airports Commission, December 2014.<http://www.internationaltransportforum.org/Pub/pdf/14Impacts-Airport-Capacity.pdf>

LCC entry at primary airports, the expected rise in charges at Gatwick and the blurring of LCC and FSC business models, we do not think that low-cost carrier development should be completely discarded. We do think that examining the implications for consumer welfare of LCCs entering Heathrow or not is a valid question for the Commission, as the future development of the LCC business model is to some extent uncertain.

4. The study believes that the Commission's conclusion that yields at Heathrow are higher than at Gatwick is incorrect (p.47). Gatwick states that this result is due to the use of only a small and unrepresentative proportion of the traffic base at Gatwick and Stansted, as a database such as Sabre ADI only has a limited coverage of the low-cost carrier segment. In addition, Gatwick states that there has been no attempt to compare yields or fares on a like for like basis (correcting for sector length). Gatwick provides its own analysis of passenger survey data (IPS) for 2013 and concludes that there is a fare differential but that this differential is smaller than previously suggested.
5. We think these are valid points. Fare data from Sabre ADI do indeed not fully cover the LCC segment, which may result in biased results. The same holds true for traffic mix and sector length. However, Frontier²³ does correct for traffic mix in part of its analysis and makes a distinction between sector length and still finds a fare premium for Heathrow: a premium of 18% (£50 one-way) compared to other London airports in 2012. This seems to be more or less in line with Gatwick's own findings based on IPS data (p. 48). Yet, it is unclear to what extent its IATA fare data source is able to cover the LCC segment.
6. The report states that it is incorrect that Gatwick fares are lower than at Stansted. Although we do not have their fare data at our disposal, this may be a valid point given the study by Frontier Economics²⁴. Frontier finds a fare premium of Gatwick over the other London airports of about 7% (£7 one-way).
7. Gatwick Airport disagrees with the findings of the ITF/SEO-study that low-cost carriers account for over 30% of the short-haul scheduled market from and to the UK within Europe. CAA data indicates that LCCs take account of 61% of the short-haul market. This depends on how LCCs are categorized. Using a narrow definition, we find a 30% share, which may very well be higher when additional carriers are added to the low-cost segment. However, definition of LCCs is to some extent arbitrary as the lines between the FSC, LCC and leisure business models are becoming increasingly blurred.
8. Gatwick Airport disputes the fact that the low-cost market in the UK is becoming saturated given the growth figures of LCCs in recent years. ITF/SEO does not conclude that the LCC segment is not growing anymore, but that 1) growth levels are not as high as in the past and 2) that LCCs are searching for new market opportunities (longer routes, lower frequency routes, primary airports) in response to saturation of the markets they traditionally operate in.
9. Gatwick states that ITF/SEO²⁵ competition benefits merely relate to concentration levels and not carrier types and airport competition (p.59). We agree that different types of carriers should be taken into account. Hence, we do take into account the additional fare effect of

²³ Frontier Economics (2014). Impact of airport expansion options on competition and choice. A report prepared for Heathrow Airport Ltd, April 2014.

²⁴ Frontier Economics (2014). Impact of airport expansion options on competition and choice. A report prepared for Heathrow Airport Ltd, April 2014.

²⁵ ITF (2014). Impacts of expanding airport capacity on competition and connectivity: the case of Gatwick and Heathrow. Report prepared for the Airports Commission, December 2014. <http://www.internationaltransportforum.org/Pub/pdf/14Impacts-Airport-Capacity.pdf>

LCCs, which is confirmed by our own econometric analyses. We think that the comment on airport competition is a valid one, given the recent evidence in relation to V-route and parallel competition²⁶ in Europe. This effect has not been separately modelled. However, the ITF/SEO model does consider routes from other London airports as close substitutes for the primary route.

10. Gatwick questions the airline response of low-cost carriers establishing a significant operation base at Heathrow, which impacts competition levels and fares. We refer to our earlier comments in this note that this scenario should not be excluded, in particular because the LCC model is quickly evolving and the fact that Gatwick charges are also expected to rise significantly after expansion (to a level comparable to Heathrow today)²⁷ ²⁸. The fact that Gatwick's charges are expected to rise substantially is not mentioned in Gatwick's response but is a relevant issue to consider in relation to consumer welfare impacts.
11. Gatwick Airport disputes the way ITF/SEO handle the calculation of scarcity rents: the analysis does not consider that excess demand can be largely accommodated by alternative airports. It is not realistic to assume that passengers squeezed from one airport will not fly instead of using an alternative airport. We do not think this comment is valid. ITF/SEO uses the constrained and unconstrained Airports Commission scenarios as a basis for its analysis. The Airports Commission scenarios already take into account the fact that passengers that cannot be accommodated at one airport, may travel from another airport, use alternative modes or may not travel at all. So redistribution of demand is taken into account.
12. The report states that the reduction of airline economic rents at Heathrow and downward pressure on Heathrow fares has not been adequately considered in the ITF/SEO quantitative analysis. We think this comment is not valid. Capacity expansion at Gatwick does affect economic rents, as in the modeling framework fares have to increase less to equate airport capacity and passenger demand, compared to a future situation without capacity expansion. In addition, the impact of additional competition from Gatwick on fares has been taken into in the modeling procedure. As discussed earlier, the model does not include the additional impact of V-route and parallel airport competition, but does consider the fact that services to the same destination from other London airports are substitutes for the services from the primary airport.
13. According to the report, the assumption that airlines will absorb most of the charge increases is not valid. We do think there is quite some evidence that supports the existence of scarcity rents. There are different views and assumptions as to how airlines react to increases in aero-charges at airports with excess demand. As far as we know, there is no systematic empirical evidence regarding the level of pass-through at airports with excess demand as far as increases in aero-charges are concerned. It is likely that scarcity rents - and thus the ability of airlines to absorb higher charges - will differ strongly between airlines with different cost levels/structures, with times of the day and by route in practice. For the Airports Commission, this means that the consumer benefits calculated by Airports Commission/DfT, ITF/SEO and Frontier represent the upper limit of consumer benefits. In case of a partial pass-through to passengers, calculated benefits will be lower (due to

²⁶ InterVISTAS (2014). The Importance of Airport Competition on Air Fares Paid by Consumers. November 2014

²⁷ See PwC analysis for the Airports Commission: PwC (2014). Cost and commercial viability: funding and financing. Study commissioned by the Airports Commission, November 2014.

²⁸ British Airways (2015). British Airways response to the Airports Commission Public Consultation on new runway capacity in the South East. 3 February 2015, p.3.

higher air fares and lower demand). As the relative rise in charges is expected to be higher for Gatwick than for Heathrow, partial pass-through may affect consumer welfare more in case of Gatwick expansion. In case of no pass through and airlines already competing at marginal costs, aero-charges increases may lead to network deterioration/ slower network growth, with implications for passenger demand and thus impacts on consumer welfare. We refer to our separate report on scarcity rents for an extensive discussion.

14. Gatwick Airport Ltd. casts doubt on the extent to which expansion of Heathrow will generate hub carrier growth, which could enhance connectivity. Gatwick argues that BA's fleet expansion would need to be much higher than historical rates and that the carrier would need to grow significantly in the highly competitive European traffic segment. This would be a major change from the carrier's current strategy. Gatwick therefore believes that traffic forecasts for an expanded Heathrow contain significant risk in relation to hub traffic development. We think this is a valid issue for the Commission to consider in relation to the feasibility of its scenarios and potential airline responses. At the same time, we note that the historical fleet expansion levels and share in the European market are partly the result of the capacity restrictions at Heathrow. Additional capacity may very well change the hub carrier's strategy in the direction of those of other European hub carriers.

1.5 British Airways response to the Airports Commission Public Consultation on new runway capacity in the South East²⁹

In its main response, British Airways (BA) summarizes its position regarding the shortlisted schemes. We will review BA's comments as far as competition impacts are concerned.

Review of submission

1. BA states that under the current slot guidelines, BA could be paying for 50% of the costs of the scheme of Heathrow expansion, but only receiving 25% of the new capacity. In our opinion, this is a valid point to consider for the Airports Commission. Are there any opportunities for flexing of the slot regime to strike a better balance in terms of the additional slots allocated? We refer to our report on slots for the options that may exist to flex the slot regime. We also refer to the review of the Virgin Atlantic below.
2. BA concludes that the competition benefits of Gatwick expansion are overstated. One reason is the fact that there is already healthy competition between airlines at Heathrow, both in local markets and transfer markets. We think BA's point regarding competition in transfer markets is a valid one. In fact, our own research shows that BA at Heathrow is among the hub carrier that faces the most competitive constraints of all European hub carriers³⁰. With respect to the local market, we have not studied market concentration levels of Heathrow in comparison to other large European airports and cannot therefore draw conclusions. It could be important for the Airports Commission to gain insight on this point,

²⁹ British Airways (2015). British Airways response to the Airports Commission Public Consultation on new runway capacity in the South East. 3 February 2015

³⁰ Lieshout, R. and G. Burghouwt (2013). Airline competition in connecting markets. In: P. Forsyth et al. (eds). Liberalization in aviation: competition, cooperation and public policy, 73-90. Aldershot: Ashgate.

in particular because Virgin Atlantic's submission³¹ stresses a similar point: 'Having two home-based long-haul carriers at the hub is a unique feature of the UK aviation market and has demonstrably provided significant benefits to passengers'.

3. BA states that it will be unable to pass on higher charges to its consumers (p.16) and that there are no scarcity rents. Hence, a rise in charges as a result of Heathrow expansion poses a significant risk for the connectivity of London, as in particular short-haul services may not be viable. We refer to our report on scarcity rents for an extensive discussion.

1.6 CAA (2015). CAA response to the Airports Commission consultation: increasing the UK's long-term capacity³²

Scope of the submission

In its response, the UK Civil Aviation Authority (CAA) outlines its views on the consultation paper of the Airports Commission and the questions asked to the stakeholders. We review CAA's comments as far as competition impacts are concerned.

Review of submission

1. The CAA supports the Airports Commission's conclusions that expansion of airport capacity will generate considerable consumer benefits compared to no expansion of capacity, but that the differences between the capacity expansion options are smaller than the costs of doing nothing. Hence, the CAA does not express a preference of any scheme over the others.
2. The CAA states that the assumption in the ITF/SEO study that airport charges will be absorbed by the airlines through a reduction of scarcity rents may be true for the year 2030, but the commission should verify if it also holds for the period up to 2030. If not, this may have an effect on the business case for airport expansion. We think this is a valid comment and we refer to our note on scarcity rents and aero-charges for an extensive discussion.
3. The CAA also states that whilst all 'scarcity rents' are experienced in terms of higher fares in the ITF/SEO analysis this may not necessarily be the case, as they can also be experienced as (for example) poor reliability or resilience at the airport. We think this is a valid point. This means that the reduction in generalized costs may also reflect a reduction in (for example) delay costs, besides reduction in scarcity rents, competition impacts and connectivity impacts.

³¹ Virgin Atlantic (2015). Virgin Atlantic Response: Airports Commission final consultation on shortlisted options for new capacity, p.4.

³² CAA (2015). CAA response to the Airports Commission consultation: increasing the UK's long-term capacity. CAP 1263.

1.7 Boosting capacity where it matters most - the nub is the hub. The CBI's position on future aviation capacity³³.

Review of submission

1. CBI states that strong hub airports are important as a catalyst for new routes, for example to emerging markets. Hubs that are constrained 'tend to draw fewer transfer passengers, thus limiting the catalytic effect that make them a national asset'. Hubs make new routes viable much earlier, because demand is drawn from an 'extended catchment area'. Additional hub capacity should be therefore the goal, according to CBI.
2. As far as competition impacts are concerned, airport competition is important as it provides choice and reduces air fares. Hence, 'to provide optimal connectivity, upgrades to hub capacity must be complemented by a thriving network of competing airports to maximise the UK's connections'.
3. The CBI does not recommend a specific capacity expansion option, but leaves this up to the Commission.
4. In our view, CBI rightly underlines both the impact that additional hub capacity may have on connectivity as well as the value of sufficient competition for choice and fares. However, CBI seems to implicitly assume that the net economic benefits are largest when additional hub capacity is added instead of point-to-point capacity. No evidence is provided to show this should be the case. In our view, this cannot be concluded without analysis.

1.8 Virgin Atlantic Response to the Airports Commission final consultation³⁴

Review of submission

1. Virgin Atlantic (VAA) concludes that it is the UK's chronic hub capacity shortage that needs to be addressed and therefore expansion at Heathrow is likely to offer the greatest economic benefits. It states that this conclusion is backed by the analysis of the Airports Commission.
2. It also states that new capacity should enhance competition and choice for passengers, not lock in historical dominance. VAA stresses the fact that Heathrow expansion will strengthen IAG's dominance at the airport under the current slot allocation rules. Hence, VAA believes it is necessary to review slot allocation rules in order to encourage effective competition. We think this is a valid point and therefore encourage the Commission to look into the slot allocation regime. However, we also remark that there may be incompatible objectives when flexing the slot regime: BA³⁵ states in its submission that an un-level playing field is created when the airline that pays 50% of the capacity expansion costs gets 25% of the additional capacity and that therefore slot allocation needs to be reconsidered. In contrast, Virgin

³³ CBI (2015). Boosting capacity where it matters most- the nub is the hub. The CBI's position on future aviation capacity.

³⁴ Virgin Atlantic (2015). Virgin Atlantic Response: Airports Commission final consultation on shortlisted options for new capacity

³⁵ British Airways (2015). British Airways response to the Airports Commission Public Consultation on new runway capacity in the South East. 3 February 2015

Atlantic states than under the current slot regime, IAG will become more dominant to the detriment of the consumer.

3. VAA disagrees strongly with the label 'legacy carrier' in the ITF/SEO study and states that it is not a 'home-based legacy point-to-point carrier'³⁶ as it was never a nationalised carrier and has brought competition to the London market. The ITF/SEO report used the label 'legacy carrier' to distinguish VAA from the low-cost carrier, without aiming to categorize VAA as a former 'flag carrier'.
4. VAA (p. 20) states that expansion of airport capacity will lead to an increase in airport charges and therefore the average cost of supply. This means that the impact on moderating fares 'could be lower than outlined'. We think this is a valid point. The Airports Commission and ITF/SEO calculations are likely to represent the upper bound of consumer benefits. We refer to our report on airline scarcity rents for an extensive discussion.

1.9 EasyJet response to the Airports Commission consultation³⁷

Review of submission

1. EasyJet supports the case for an additional runway at Heathrow stating that Heathrow expansion ensures that a runway is built where there is greatest passenger demand for one. Heathrow expansion will lead to an increase in choice and competition, and thus lower fares and more routes. Furthermore, it ensures growth of the long-haul network and maximises economic and consumer benefits.
2. The limited capacity at Heathrow currently results in very limited low-cost services from Heathrow. Lack of LCCs limits competition at the airport and the number of (short-haul) routes. EasyJet states that it would operate from Heathrow if a runway is built. Currently, there are simply not the slots available to make an EasyJet operation viable.
3. EasyJet therefore disagrees with the earlier conclusions from the Airports Commission and ITF/SEO that low-cost entry at Heathrow is relatively unlikely. We agree with EasyJet that LCC entry at Heathrow is possible, which is also acknowledged in ITF/SEO's airline responses³⁸, which assumes strong low-cost growth at Heathrow in the Low Cost is King scenario. The question is how feasible large-scale low-cost entry is in other Airports Commission scenarios.
4. EasyJet expects fares at Heathrow to decrease because of increased competition and a relatively low increase in charges in proportion to current charges, whereas it expects its own fares at Gatwick would have to rise in case of expansion of Gatwick airport because of the substantial increase in aero-charges (+100%) and the already high share of low-cost at the airport. In our view, this is an important notion. The net effect of extra capacity, higher charges and more competition at Heathrow is a reduced average fare level, whereas at Gatwick the net effect would be a rise in average fare levels.
5. EasyJet casts considerable doubt on the feasibility of the long-haul low-cost model, which could add competition and connectivity in the long-haul segment after Gatwick expansion.

³⁶ ITF (2014). Expanding airport capacity: competition and connectivity. The case of Gatwick and Heathrow. <http://www.internationaltransportforum.org/Pub/pdf/14Airports.pdf>

³⁷ easyJet (2015). easyJet response to the Airports Commission consultation.

³⁸ ITF (2014). Expanding airport capacity: competition and connectivity. The case of Gatwick and Heathrow. <http://www.internationaltransportforum.org/Pub/pdf/14Airports.pdf>

The long-haul low-cost model is unproven. Amongst other things, the potential cost advantage compared to network carriers is much narrower and there are few successful examples to date. Moreover, EasyJet concludes that even if long-haul low-cost becomes successful, it is not clear why it could not use Heathrow instead of Gatwick.

6. We think that EasyJet's point is valid and should be taken into account by the Airports Commission. The same point was made by several other stakeholders³⁹: there is at least considerable uncertainty with respect to the development of long-haul low-cost and its associated increase in long-haul connectivity.

1.10 Heathrow Airport Main submission

Review of submission

1. Heathrow Airport Limited casts considerable doubt on the feasibility of the long-haul low-cost model and low-cost feeding, which could add competition and connectivity in the long-haul segment after Gatwick expansion. This comment is in line with other stakeholder's comments (see e.g. EasyJet, but also the ITF/SEO study). There is considerable uncertainty over whether low-cost hubbing and long-haul low-cost will actually take a major share of the market.
2. Heathrow Airport Limited stresses the impact of capacity expansion on fares, as outlined in the ITF/ SEO report.

1.11 Conclusions from the review of submissions

From the reviewed submissions, it follows that all stakeholders see the necessity of expansion of airport capacity. HAL, HHL, BA, Virgin Atlantic and EasyJet all favour an expansion option at Heathrow, backed by their consultancy reports. However, BA concludes that while Heathrow is the right location to deliver hub capacity, the proposal as it stands does not provide a sufficiently strong business case to win the full support of BA. Gatwick Airport Ltd. favours expansion of Gatwick Airport. CBI and CAA do not explicitly favour a certain capacity expansion option, but acknowledge the need for expansion.

Our review of competition impacts connectivity and scarcity finds that there are divergent views for credible reasons on the following topics, and this reflects in our view genuine elements of uncertainty over the expected impact of each scheme.

- The extent to which new capacity at Heathrow will be used by the hub carrier and the potential for development of the network carrier business model and the competitive position of European network carriers (and in particular BA) in relation to other network carriers. The potential for Heathrow expansion to significantly increase connectivity in the London airports system depends to large extent on the development of network carrier markets.
- The extent to which competition can only increase by expanding Gatwick or will also be increased by expanding Heathrow. The further development of the low-cost carrier business

³⁹ See for example HAL's main submission

model and its preference for Gatwick or Heathrow after expansion is an important factor. The feasibility of the long-haul low-cost model carries an important question mark.

- The extent to which airlines benefit from scarcity rents, now and in the future.
- The extent to which airlines can absorb higher aero-charges through a reduction in scarcity rent or will need to (partly) pass-through higher aero-charges to the consumer. The latter will negatively affect consumer welfare benefits and/or connectivity growth.

In all these respects the Airports Commission's scenarios cover a reasonable range of outcomes even if sensitivity to these uncertain factors is not always fully tested.



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