

Airports Commission

Discussion Paper 01: Aviation Demand Forecasting

Response from Kent County Council and Medway Council

Q1: To what extent do you consider that the DfT forecasts support or challenge the argument that additional capacity is needed?

The DfT forecasts support the argument that additional capacity is needed. It is clear that with limited and finite capacity at the London airports, a sustained increase in demand (which all forecasts scenarios predict, albeit with varying rates of growth) will eventually result in the airports being full. There is uncertainty over whether this will be by 2025 or 2040 depending on the range of the demand forecast, but ultimately extra capacity will be needed by around 2030. Indeed, Heathrow is effectively already at full capacity in the present day.

In general terms, it is good practise to use the forecasts from a model as evidence to support or challenge arguments. The main question is how realistic and robust is the model that is being used as the evidence base? The next aspect to consider is whether the model is fit for purpose? The DfT model was developed to forecast certain elements of aviation capacity and the model itself has some limitations. It is therefore essential to remember how far the DfT model meets the purpose of the study for which the forecasts and evidence are needed.

Q2: What impact do you consider capacity constraints will have on the frequency and number of destinations served by the UK?

It is likely that as capacity is constrained, airlines will use the limited slots that they have to increase the frequency of flights on the highest yielding routes at the expense of 'thinner' routes in order to maximise their profit. This will result in a route network from the UK with high frequencies on the highest traffic routes with reduced frequencies on lower traffic routes and no direct connections to the less popular destinations, resulting in a net reduction in the number of destinations served by the UK. This has significant implications for establishing connections to emerging markets as initially these routes will not be high yielding, therefore airlines will not use slots to initiate services on new commercially risky routes in place of services on the most profitable routes that they currently use the slots to serve. UK travellers wishing to access these destinations will have to do so by indirect flights through an overseas hub airport. This makes the journey less appealing; and for inbound

passengers makes the UK less attractive as it becomes merely a spoke served by another country's hub airport. This will have a negative effect on the UK's ability to do business with emerging markets and reduces inward investment and inbound tourism potential. The net result is that the UK's global connectivity is diminished with a limited route network from our own hub airport and reduced destinations served by direct flights from the UK. These constraints will also benefit our overseas competitors who have no such constraints and the UK will increasingly lose business to other hubs such as Amsterdam, Paris and Frankfurt.

However, increased connectivity will not be guaranteed by the UK increasing its airport capacity. The opening of Terminal 5 at Heathrow increased the capacity of the airport to 480,000 Air Traffic Movements (ATMs) per year, yet there has been a corresponding decrease in the number of destinations served both worldwide and domestic. Airlines have chosen to use the extra capacity to operate more profitable routes at a higher frequency, demonstrating that airline economics and the natural desire to increase profitability, influences airline route networks irrespective of capacity. Therefore some form of slot regulation is required in order to ensure that the additional capacity that may be created, in order to cater for the forecast increase in demand, is used by airlines in the most beneficial way to the UK economy.

Q3: How effectively do the DfT forecasts capture the effect on UK aviation demand of trends in international aviation?

A detailed analysis, based on surveys and data to establish international transfer passengers' behaviour, needs to be undertaken to examine the impact of international aviation on UK aviation demand. The detailed analysis is needed due to the complex nature of aviation movement in international market, policies and air travellers' response to various variables that influence aviation demand, i.e. what influences international transfer passengers' choice of transfer hub airport? The effectiveness of the DfT forecasts, especially in capturing the UK aviation demand in the international market, requires substantial improvements due to the complexity involved in understanding air travellers' behaviours.

Q4: How could the DfT model be strengthened, for example to improve its handling of the international passenger transfer market?

We think that the following tasks should be undertaken to strengthen the DfT model:

- Perform revealed and stated preference surveys to better understand the existing and potential new air travellers' present behaviour and their

intention in the future. All market sectors should be represented in these surveys ranging from domestic leisure to international business.

- Understand in more detail the air travellers' origin and destination movements along with their intermediate stops to better reflect in the model.
- Revise the modelling approach to effectively incorporate the existing and newly collected data.
- Acquire air passengers fare information from airlines by working closely with airlines to ensure that their commercial sensitive information is treated with great care.
- Check the validity of the model by back casting the aviation demand and comparing it with the available information.
- Improve the representation of the market in the model by including various sectors of the market explicitly in the model. For example, the number and location of multi-national companies, fleet mix by aircraft type and capacity of aircraft.

Q5: What approach should the Commission take to forecasting the UK's share of the international aviation market and how this may change in different scenarios?

The approach to forecast the UK's share of the international aviation market should include better representation of variables that influence the UK's share, the impact of foreign policies and incidents, the level of competition, the number of multi-national companies, sport and education events, international migration, and the need to travel keeping in view the use of advanced technologies.

The above mentioned variables do not present a complete list of variables. These variables may change in any direction by any magnitude so it is really difficult to define how these will change. However, the use of historical data would be beneficial to understand the likely change.

Q6: How well do you consider that the DfT's aviation model replicates current patterns of demand? How could it be improved?

Our response to the three previous questions includes various suggestions to improve the validity of the DfT's aviation model.

In general terms, for the UK as a whole, the DfT model did replicate long term patterns of demand fairly accurately until the recent global economic crisis. The 2009 forecasts over estimated demand and the two subsequent

downward revisions in 2011 and 2013 have exposed the model's weakness for forecasting during times of economic recession. This has brought a high degree of uncertainty into the forecasts for both the short and medium term, as well as long term predictions of the level of aviation demand growth.

Q7: Do you agree with the source of the input data and assumptions underpinning the DfT model?

In our view, the input data and assumptions made for the DfT model are sufficient to meet the minimum requirements to forecast aviation demand. The modelling methodology is based on elasticity parameters. There is a need to investigate differences in price elasticities between different income segments of the population. The low income population responds to prices differently than the high income population. In addition, the model needs to understand an increase in airport capacity (in terms of new runways built). The effect of congestion at the UK airports should be considered in the model for travellers transferring in Europe for a long haul destination. This aspect should be considered as a possibility for European airports, in competition with the UK airports, to attract air demand and this may influence the DfT model's ability to forecast realistically.

Q8: Do you agree with the choice of outputs modelled?

Yes, it provides a sufficient level of information on air passenger and Air Traffic Movements (ATM) forecasts. However, there is a need to include journey reliability and delays in the outputs to understand which routes and/or airports are unreliable and experience greater delays.

Q9: Do you consider that the DfT modelling approach presents an accurate picture of current and future demand for air travel? If not, how could it be improved?

Based on our knowledge, we think that the DfT modelling approach can be further improved in the following areas to provide robust forecasts:

- Consider variables of Air Traffic Movements (ATMs) and Air Navigation Service Provider related operation in the model to reflect air travellers experiencing delays at the airports.
- Include variable replicating air travellers' late arrival and early arrival at the airport.
- Improve air travellers' choice behaviour in the model by undertaking new surveys and update the relevant parameters.
- Define different elasticity parameters for national and regional airports.

- Include the impact of behavioural change on the leisure market.
- Understand the level of uncertainty in the model by back casting and comparing the results with the available data.
- Consider the role of HS1 and HS2 in travellers' mode choice decisions.
- Reflect better the technological and efficiency gains in the model from operation and carbon emission view points.

Q10: Is the DfT model suitable to underpin an assessment of the UK's aviation connectivity and capacity needs?

The model forecasts the number of passengers by airport and Air Traffic Movements (ATMs) by route and aircraft type. These outputs can be used to assess the UK's aviation capacity needs. However, the model should provide the level of airport's utilisation with respect to its capacity.

Q11: What alternative or complementary approaches could be used to assess the impact of international competition?

In our view, the competition of the UK airports with other European airports needs to be explicitly included in the model. This factor greatly influences air passengers to choose the UK airports as a transfer hub. It is mentioned earlier in our response that the model needs to understand their choice behaviour in detail so that a realistic reflection of their demand can be made in the model. In addition, the impact of international migration and the number of multi-national companies in the UK needs to be considered in the model.

It is sometimes very difficult to devise an approach when the relationship between various variables is weak or unknown. For example, if a competitor European airport decides to expand its airport capacity, it is difficult to know how much impact this will have on UK aviation demand. In this regards, the historical data can be valuable and some high level analysis can be completed to feed into the DfT aviation model.

Q12: What factors, if any, are missing from the DfT's modelling approach? How can these be more effectively analysed?

We have provided a list of factors in our response to earlier questions that we think should be considered in the DfT's modelling approach. A list of factors is summarised below:

- How good is the model if we back cast the model and compare the results with historical data? This exercise will provide an indication on model validation.
- How well the model is validated using the existing data from airlines?
- Are the price elasticities different between different income segments of the population?
- Is the effect of airport crowding considered in the analysis?
- How is competition between UK airports and continental European airports reflected in the model?
- Does the approach consider travellers' behavioural change and their response to inefficiencies in airport and airline operations?

Q13: Is the DfT model granular enough to underpin the Commission's assessment of future demand?

The model seems appropriate to estimate future domestic aviation demand and it requires more work to understand travel behaviours of local and foreign air travellers. The model considers air passengers travelling on low cost carrier services and full-service scheduled flights. However, the model does not differentiate the price elasticities for different income segments of the population. The model does not present enough segregation in air fares in the form of discounts to air fares such as air miles and incentives through other loyalty schemes.

Q14: Does the DfT approach to demand uncertainty capture a reasonable range of uncertainty? Could the approach be improved?

Yes, the approach provides an indication of the reasonable range of uncertainty in the model forecasts. However, there is further need to improve uncertainty in the model inputs and assumptions.

Q15: Would a probability based approach to dealing with uncertainty help the Commission to test the robustness of the model's outputs?

Yes, the probability based approach is a popular approach in academic research and traditional traffic micro-simulation models. This approach is well known and provides quantification of uncertainties associated with the model forecasts.

Q16: We have reviewed four alternative forecasts. Do you consider that there are others we should be looking at and why?

The four alternative forecasts are sufficient.

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