HM Revenue & Customs

Modelling the Effects of Price Differentials at UK Airports: Frequently Asked Questions

HM Revenue and Customs Research Report 188

Introduction

As with all research, HMRC welcomes any external views on the content of this report and its methodology. This FAQ paper responds to questions received from stakeholders about the aforementioned research report, since its publication in October 2012. It is intended to assist readers in understanding the report in more detail.

For ease of reference, the FAQs are divided into sections depending upon the subject matter of the question. HMRC will not be releasing the source of any of the questions answered below.

Queries regarding tax policy should be directed to HMT and queries regarding aviation policy more generally should be directed to DfT.

General Questions

1. What are the key findings of this research?
    - There are three key findings from the research:
        i. Small localised price changes are unlikely to cause significant changes in total aviation demand.
        ii. Any redistribution in demand is only likely to be large if the price changes are fairly large.
        iii. Where there are large demand redistributions, it is likely to be predominantly between airports that are in close proximity to one another.

2. Why has HMRC undertaken this research?
    - HMRC has undertaken this research in order to better understand how localised price changes may impact passenger demand patterns.
    - This research will be helpful when considering the recommendations in the Calman Commission report and the recently published Silk Commission report.
    - The research is intended to provide evidence and improve understanding; it does not make policy recommendations.

3. What is HMRC planning to do as a result of this research?
    - The Government will use the findings when undertaking any future analysis that involves passengers responding to differential prices at UK airports.

4. Is this report looking at changes in APD?
    - This research examined the impact of changes in price on a passenger's choice of departing airport. A range of price changes were modelled to help HMRC consider the sensitivity of passenger behaviour to the scale of the change in price.
    - The results of the research are useful in considering the impact of changes in a range of factors that make up the total cost of a flight. By simulating price changes, the results are more useful than if they focussed specifically on variations in APD.
    - No estimates have been made of the impact upon APD revenues using the scenarios modelled.

Access Costs, Routes and Hubs

5. Does the DfT model consider the impacts of price increases at Heathrow on the distribution of traffic across European hubs? For example lower relative operating costs at Frankfurt, Amsterdam and Paris might be expected to stimulate indirect long haul traffic from regional airports which interlines through these hubs.
    - Yes. Assuming that demand is sufficient to support the necessary routes, passengers in the model have the choice between flying directly from a local airport, travelling by land to an alternative airport in the UK, flying from a local airport to a UK hub in order to transfer or travelling to Amsterdam, Schiphol, Paris Charles de Gaulle or Dubai to transfer.

6. Does the DfT model include the cost of the Severn Crossing toll as a factor influencing the cost of travel and airport choice?
    - The surface access cost inputs to the model are taken from the Department for Transport's "Long-Distance Model". The information received from this model does not include road tolls. The impact that this would have on the results is unclear but is unlikely to change the broad pattern of behaviour, which is the focus of the research.

7. Does the DfT model take into account the business models of low cost carriers and the likely unattractiveness of Heathrow for these airlines when allocating short haul passengers?
    - Yes. The model differentiates between passengers travelling on low cost carrier services and full-service scheduled flights and furthermore, specifically accounts for the reduced likelihood of low cost carriers utilising Heathrow airport.

Congestion Premiums and Price Change methodology

8. What is the mechanism by which passengers are priced out within the model?
    - The extent to which an increase in airport specific charges reduces demand in this study is driven by the price elasticities identified in work analysing national demand (see Table A4 in DfT's UK Aviation Forecasts, August 2011) applied to the percentage change in generalised cost before and after the charge is applied.

9. How have the changes in APD been applied at constrained airports?
    - The congestion premium at a constrained airport is not a fixed assumption; the model will identify an appropriate level of the premium to ensure that demand does not exceed capacity at any airport for the given model run.
    - Once the price change being modelled is applied to a constrained airport, a lower congestion premium could then be required to displace any remaining excess demand.

10. The report describes the generalised cost function of the allocation model as including two components: surface access cost and frequency cost. Would layering the increase in APD on to a generalised cost function that does not include the ticket price be likely to skew results?
    - As with any analytical model there is uncertainty when using the model to analyse changes at an airport level. The aim of the report was therefore to identify patterns of results that were relatively robust across the different model runs.
    - We are confident that the DfT Aviation Model is the best analytical tool available for developing our understanding of how the demand for different airports interacts under these kinds of scenarios.

Regional Airports

11. Why does the report not look at the impact of these price changes on other smaller airports?
    - Due to data availability, the Department for Transport's aviation model focuses on 30 of the UK's largest airports.
    - Whilst results for some of the UK's smaller airports are not discussed in the report, Annex B contains details of the number of passengers at each of the 30 airports within the model for each of the modelled price changes.

12. How does the model deal with passengers switching away from the London airports to use hub services from regional airports? Is this effect limited to a defined set of hubs?

- The number of designated hubs in the UK is limited to help manage the computational demands of running the model. The list of designated hubs is provided on page 4 of the report.
- The model does allow domestic routes between any pair of airports in the UK, where there is sufficient demand to support this.

13. How does the model reflect the differences in the relative affluence of different parts of the UK?
    - Different price elasticities are used for different segments of the market. For example, a leisure passenger travelling on a Low Cost Carrier service will be more sensitive to price in the modelling than a business passenger travelling on a full service scheduled flight. This means that the characteristics of local demand are reflected in the model.
    - We are not aware of evidence that quantifies differentials in price elasticities between different income segments of the population.

Other modelling questions

14. Why does the DfT model assume that no new runways are built?
    - As with any analytical model, the DfT aviation model is a simplification of reality, and cannot realistically capture the full complexity of the aviation sector.
    - However the model is designed to incorporate the key inter-relationships between demand at different airports so results are a good indication of the possible impacts of localised price changes, and have greatly improved HMRC's understanding in this area.

15. Is the model able to reflect an airport's ability to serve its own catchment area as well as being a recipient of spillover traffic?
    - The model incorporates a good understanding of the local characteristics of airport demand based on data from Civil Aviation Authority passenger surveys. The cost of accessing an airport in the model is an important driver of passenger choices and means that airports tend to attract passengers from their local "catchment areas". However, as surface access costs are relatively fixed over time whilst frequency changes, the report focuses on the implications of changing frequency.

Other scenarios

16. The research has considered the effects of an increase in APD at Heathrow and Gatwick. If the same relative price differential with regional airports was achieved instead by a reduction in APD at regional airports, these airports would become more attractive to airlines compared with European competitor airports and a different outcome might result. Has this scenario been modelled?

- No. A range of price changes were modelled to help HMRC consider the sensitivity of passenger behaviour to the scale of the change in price. This particular scenario has not been modelled.

17. Has any attempt been made to assess the impact on passenger demand from changes in APD rates applied uniformly across UK airports?
    - All the scenarios considered as part of this research are included in the published research report.
    - Separately, when advising HMT of the impact upon Exchequer receipts of uniform changes in APD rates, HMRC estimate the overall impact upon passenger demand. This is an overall effect and does not consider the impact at specific airports.

Detailed Questions about Results

18. Are HMRC able to release detailed (unrounded) model results to airports?
    - There is a high degree of uncertainty around results at airport-by-airport level and this research has primarily focussed on finding consistent patterns across a range of price changes in each scenario. The degree of uncertainty at an airport level has not been quantified.
    - As such, whilst unrounded results are now available on request, HMRC only utilises the findings at the level of detail presented in the report. Those requesting unrounded results should note that the lack of rounding does not reflect the true level of uncertainty around the numbers.

19. The baseline passenger numbers for Bristol on page 29 appear to suggest that around 10% of Bristol's passengers are not liable for APD (2014 base is 2.7m pax out of a total two way pax of 6m). What is the explanation for this?
    - The baseline forecast for terminal passenger numbers at Bristol in 2014 is 5.33 million, based upon the August 2011 passenger forecasts used in the research. The baseline number of APD passenger is 2.66m meaning that effectively 100% of passengers at Bristol are liable for APD.