

Disruption Dilemmas:

Navigating Uncertainty in Airport Business Plans

By Kata Cserep, ICF

Forecasting used to be a relatively simple task. You would plot history on graph paper, get your favourite ruler out, draw a trend line and keep going.

If you were a bit more sophisticated, or when I started working in this field, you would establish a hypothesis for what might explain growth, collect as much historical data as you could, feed this into an econometric model, estimate your coefficients, input some independent variables and produce a set of outputs. You would feel relatively confident about the forecast, subject to the usual caveats about the independent variables.

For the last five plus years, however, the majority of airport business plans that we have advised on have involved structural change, capacity issues, policy change or external shocks, which do not lend themselves as well to econometric approaches. This is not to suggest that there is no longer value in using econometrics in long term forecasting; there is.

However, some typical questions we are asked include:

- What happens if my main airline collapses or leaves?
- What if Heathrow gets another runway?
- What if bilaterals with China are relaxed?
- How will high speed rail impact my domestic passengers?
- What will the lifting of the 5/20 rule mean for my airport?

These are not the type of questions that can be answered by backward-looking modelling, as these events have generally never happened at the airport in question so they will not be embodied in historically established

correlations (although other shocks may be contained in the historical numbers which may or may not be comparable with those future shocks that are troubling our clients).

But investors and operators are certainly right to ask these questions because they can have a huge impact on an airport, often in a short space of time, often with relatively little notice. Investors, particularly in the private equity community, may be seeking an exit within a five-ten year horizon and therefore be very much focussed on the short term—they do not take kindly to an econometric forecaster telling them it will all come out in the wash over a fifty year horizon assuming a constant traffic elasticity to GDP. For example, Malev had limped along for some time, and then very quickly disappeared in the winter of 2012. The subsequent back-filling by Ryanair and Wizzair can certainly be considered a success, and an ex-ante analysis of the traffic base at the airport would have provided some reassurance that much of the traffic was resilient, but what of the aero and non-aero revenue mix following the dramatic decline in long-haul? The changing demand on infrastructure? These have a very real impact on the financial performance of an airport asset.

So, what have we learned, and what would we advise airport owners and investors, in this ever more unpredictable and volatile world?

A brief overview of the five general approaches that are used in airport business planning follow.

1. Monte Carlo Techniques

These can be useful in cases where the relationship with independent variables is strong and data are of a good quality. Monte Carlo simulation generates a large number of possible forecasts based on the historical variances in the independent variables, and applies them to the future assumptions. The results can be quite informative and provide a good indication of the range of possible outcomes. It is however only useful when your input variables can be described by a continuous distribution and is thus less useful for modelling discrete shocks.

2. 'P50' Cases versus 'P80'

As forecasters we are often asked to produce a forecast which has a certain level of probability of delivery (P80 = 80% probability of achieving at least the forecast value [i.e. a P50 has an equal chance of being lower as higher, and so generally equivalent to base]). What 'P80' generally comes down to is removing upsides from our base analysis—that new route to Beijing that we project for 2018 probably goes missing in a P80 case. This may be considered analogous to the band produced by Monte Carlo along a continuous range of inputs, but instead modelled with more discrete inputs and guided by judgement at the time of the forecast.

3. Scenarios and Sensitivities

Scenarios and sensitivities are often used inter-changeably although technically speaking a scenario is a set of assumptions, while a sensitivity is the varying of one assumption. For example, we may run a scenario where a new entrant sets up a hub at an airport, tourists from China double and airport



charges fall 5%. A sensitivity may be to vary local GDP by half a percent over the forecast period. These can also be informative, provided the right questions are asked. Sensitivities generally lend themselves better to econometrical models, while scenarios often require a greater degree of judgement, the use of benchmarks, comparators or case studies. An interesting question to consider is how these sensitivities/scenarios are used to inform decision making. For example, when an investor is bidding to acquire an airport asset, what is the appropriate value or weight to be placed on each scenario? How do you decide what to bid on when you are faced with 40+ scenarios that give a range of +/- 50% around a base case? Interestingly in our experience this call is not one that the forecaster is often consulted on. This is where the user or audience of the forecast can be a major determinant.

4. Debt versus Equity Cases

We are often asked to deliver a different forecast to potential debt providers on a deal to the one delivered for equity. Sometimes but not always 'debt' will commission a separate piece of work from a different technical advisor (TA) which is either done from first principles, or is a critique of the equity providers TA's work. This comes down to the production of a 'P80+' case that is shorn of upsides and in which cash flow to debt is safe. Further stress tests on a debt case can involve a variety of shock scenarios including collapse of a major airline, a major recession, WW3, etc.

5. Dealing with Uncertainty Through the Discount Rate

The principle is often that specific risk, such as the route to Beijing not arising, is dealt within the business plan whereas more systemic risks (risks arising from the country where the investment being made, or the premium demanded by equity) are dealt within the discount rate. We note that advisers and their clients are not always consistent in identifying where systemic and specific risks are to be addressed (e.g. shading a traffic growth forecast in a particular country because it is regarded as risky whilst simultaneously adding a country risk premium to the discount rate). This can of course have a meaningful impact on the business plan.

Some Recent Examples

Three recent examples help to illustrate the type of business plan shock that airport investors and operators may be facing, and the different considerations for exploring and managing the uncertainty in each case.

Brexit

In one of the many political surprises of 2016, the UK electorate voted to leave the EU in June 2016. The impact on airports can be traced to several pathways, including:

- **Uncertainty**—This can lead to delays to holidays and business investment decisions, as potential travellers adopt a 'wait and see' attitude.
- **GDP impact**—Any expected and actual change in GDP, which is generally expected to be negative relative to pre-Brexit, is likely to have a correlated impact on total air travel demand.

List of selected airlines that have disappeared in the last decade:

- Eos (2008)
- XL Airways (2008)
- Zoom (2008)
- Mexicana (2010)
- Kingfisher (2012)
- Spanair (2012)
- Malev (2012)
- Cyprus Airways (2015)
- Transaero (2015)
- VLM (2016)
- TranAsia Airways (2016)

- **Foreign exchange impact**—The devaluation of the pound (15% against the USD, 10% against the EUR, as of November 2016 relative to June 2016) has had an immediate impact on the purchasing power on both outbound and inbound visitors. The former are generally worse off, the latter better off, *ceteris paribus*, as the pound has become weaker against these major currencies.
- **Aeropolitical impact**—Brexit has raised several aeropolitical scenario options, including the UK leaving the European Common Aviation Area, depending on the terms of the exit that are eventually negotiated. This could have significant impacts on both UK and European airports, as airlines adjust to new licencing and bilateral arrangements. The freedom to carry passengers from any EU country to any other EU country could for example not be available to UK airlines; nor could Ryanair, an Irish registered airline, potentially be allowed to transport passengers between the UK and third countries. This would inevitably results in winners and losers.

When modelling the possible impacts of Brexit, it is important to be clear on the scenario in question. What exactly do you assume about each of the above pathways and the exact political process that is yet to be defined?

Furthermore, one must reflect airport specific differences, since not all airports will be affected in equal measure (or even the same direction). For example, Heathrow has a relatively balanced mix of inbound and outbound passengers, which provides some counter to the UK GDP impact through foreign exchange benefit. In contrast, a largely outbound UK airport such as Manchester or Newcastle, could have more to lose from the foreign exchange impact (unless of course there are other factors such as airline deals that provide some certainty).

Therefore, when modelling Brexit impacts, ICF recommends developing clear scenarios that are tied to airport specific bottom-up and long-term forecasts.

National Planning Decisions

Planning decisions impact the total volume and distribution of capacity in an aviation market and can impact passenger choice by altering the availability and relative attractiveness of different options. A recent well-known example is the London runway debate, but others include night noise restrictions in Frankfurt and other cities, plans for further extensions to China's high speed rail network or the construction of a new airport in any major city.

When forecasting, investors and management need to consider the market for the airport in question and identify if any planning decisions are likely to impact the airport or one of the competitor airports. If so, they also consider which traffic segments are likely to be most affected.

For example, when modelling the likely impact of a third runway decision on the rest of the London system, we considered each traffic segment in turn to assess that long haul was more likely to switch or prefer Heathrow, than for example short haul LCC due to significant difference in future charges. Of course this is just one element of the decision, and other factors we considered included passenger distribution by district, surface access, overall cost of travel and price elasticity of demand.

Other examples we have worked on include the impact of rail links such as Edinburgh or Barcelona, high speed rail competition in France (Toulouse and Lyon), local planning permissions at London City airport or the impact of new competing greenfield airports such as Navi Mumbai or the new Goa airport. In the face of national or local planning decisions, ICF recommends scenarios that clearly define opening date of new capacity (remember these WILL change), segment-by-segment consideration of competition and appropriate case studies or benchmarks.

Airline Collapse

Airline collapse is a relatively common concern for investors, as airlines have a habit of collapsing.

From a business plan perspective some of the main questions to consider are:

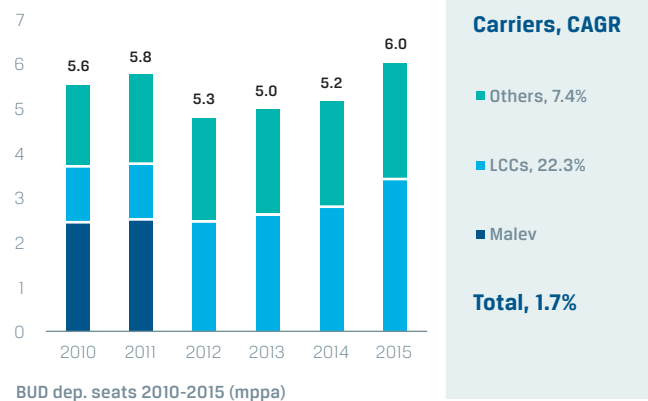
1. How dependent is your airport on transfer traffic?
2. What is the health of your current airlines overall and how does your airport fit into their network?
3. What routes might be at risk (either through low traffic base or overcapacity) and which are likely to get replaced if the current operator pulls out?

In the Malev collapse of 2012, Ryanair and Wizzair stepped in quickly to fill the short-haul O&D market, but not the long-haul or transfer segments that were a core of the Malev network. By 2015, seat capacity exceeded the previous peak of 2011, before Malev's collapse, but aircraft movements remain below those levels.

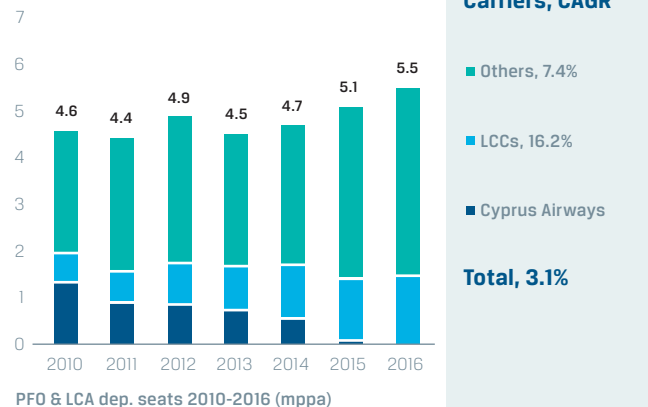
Similarly in Cyprus, total capacity has increased 17% since the collapse of Cyprus Airways in early 2015, with both LCC and full service carriers stepping in to take advantage of the vacancy.

ICF recommends route level airline forecasts supported by analysis of O&D and transfer, as well

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as load factors if possible. This can help to provide a much more reliable picture of what current and future airlines are likely to do in the face of a supply side shock.

Key Issues for Considering Uncertainty in Airport Business Planning

For an investor or operator facing the challenge of making decisions in the face of considerable unpredictability, the following main areas are worth considering.

1) Demand and supply fundamentals of the airport

- Why does the airport exist? Why are airlines operating here and how are they thinking about my airport? How much of my customer base is 'solid'? How much is more 'flighty'?

2) Industry trends and their likely impacts

- Are new aircraft going to open up my airport to new markets or are they going to enable my competitors to bypass my hub?
- Is distribution technology going to bring a swathe of self-connecting travelers to my airport who will put pressure on my terminal facilities?

3) The uses and users of the business plan

- What are my near term versus long term objectives, and what is my risk stance?
- When should forecasts be produced and updated? There is unlikely to be much value from updating an entire airport business plan model every time CAPA shows a press release about a possible new route. This is just noise. However, for protracted bid processes, it is appropriate to keep updating forecasts if significant new information becomes available (e.g. policy change announced, major supply side development, etc.). It may be inconvenient for the master planners but it will ultimately result in a better plan—one which is less likely to be 'wrong' from day 1.
- Similarly, following the acquisition of an airport it is more than just advisable to refresh forecasts and plans. A bid case is unlikely to be the best ongoing management tool for the first two years of ownership in such a fast moving industry.

ICF has been producing aviation forecasts globally for over 50 years. Each forecast is unique and is developed for a clear purpose. Some forecasts include over 50 scenarios, some just one. We have compiled extensive databases of benchmark and case study data to support our forecasts and to help convey the rationale to both technical and non-technical audiences. With our airline and aerospace colleagues, we produce an independent global forecast of demand and have an approach that combines deep analytical rigour with practical airline and airport insight.

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About the Author



Kata Cserep leads ICF's airports practice and regularly advises airports with longer term strategic advice relating to traffic, pricing, regulations, incentives and transactions. She is an expert at communicating the key demand and supply issues facing airports and the implications for business planning.

Ms. Cserep has been involved in a wide variety of aviation projects, including airline diagnostics and business planning; detailed market studies, including socioeconomics and tourism; and due diligence of airline and airport transactions. She regularly models the impact of network changes for airlines and airports, and she has produced several top-down (econometric) and bottom-up (route-by-route) traffic forecasts in mature and developing markets.

Ms. Cserep is an experienced project manager and a qualified Prince2 Practitioner.

Ms. Cserep has both a master's degree and a bachelor's degree in Economics from the University of Cambridge, Trinity College in the United Kingdom.

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