

Evolution of the trans-Atlantic has shown how other long-haul markets may develop with liberalisation, traffic growth and optimal aircraft types. With the prospect of more long-haul city-pairs being opened, how should airlines minimise the risk of opening new routes?

# Planning for new long-haul routes

**L**ong-haul markets around the world have been liberalised to varying degrees. Traffic growth and liberalisation have seen new airlines enter the long-haul market and a corresponding increase in the number of non-stop routes over the past 25 years. The trans-Atlantic has seen a higher degree of proliferation in new routes and airlines than any other region. Entering a new route is a high-risk venture for an airline, so how do some of the world's carriers assess and minimise the risks?

## Long-haul markets

The world's largest long-haul markets, in terms of revenue-passenger-miles (RPMs), are the trans-Atlantic, trans-Pacific and Europe-Asia Pacific/Oceania. These are followed by Latin America-North America, Europe-Middle East/Africa and other minor markets.

On most long-haul routes just one or two national carriers operates the A340 or larger aircraft with one or two daily frequencies. Total daily seat capacity on many city-pairs is therefore 300-1,200 in each direction.

The liberalisation across the trans-Atlantic has been well documented, and the proliferation of new routes that followed has led to new entrants and the most used aircraft reducing in size from the 747 down to the 767-200 or -300. The 767's market arrival was well timed. Its 170 to 220-seat size (depending on model and configuration) and long-range performance allowed airlines, which had previously been limited to the DC-10-30 and 747-200, to enter routes where they could only expect to gain a small number of daily passengers between secondary

airports either side of the Atlantic. US carriers, in particular, entered the market for the first time or increased their routes, while exposing themselves to less risk than they would have faced with the larger aircraft. These included USAirways, Delta Airlines, Continental, American Airlines and United Airlines. These were joined by a few Europeans, such as SAS, Air France and Alitalia.

The 767 also opened new long-range opportunities for many other carriers that did not have the traffic volumes on which European and US carriers could depend. Examples included Ethiopian Airlines, Air Zimbabwe, Egyptair, Kuwait Airways, Gulf Air, Varig and Lan Chile.

Other carriers, such as Virgin Atlantic and Emirates, have been opening new long-haul sectors over the past 20-25 years with larger types, like the A330-200, A340, MD-11, 777-200 and even 747. Types larger than a 767 expose an airline to higher risk. So how do carriers assess and minimise the risk of opening new long-haul routes?

## Service level

With the pressure to gain revenues from premium passengers, most airlines aim to start long-haul routes with a minimum of daily frequencies, unless limited by bilateral and political constraints. "If you are entering a business market then you should start a new service with daily flights scheduled at the same time each day," says Karsten Benz, vice president of network planning at Lufthansa. "If a leisure route is being opened a minimum frequency of three per week is required, otherwise the crew is on layover for a whole week and this is expensive. If you are confident of high

traffic volumes you can increase this to five or seven daily flights."

If operating conditions permit, the smallest appropriate type available is the 220-seat 767-300. With typical airline load factors, a new entrant would have to be sure of attracting at least 150 passengers a day in each direction. This is relatively easy on markets such as the trans-Atlantic, and partially explains the proliferation of new routes.

"You should start with the smallest type available, which in our case is the 767-300," says Dick Wyatt, general manager fleet planning at BA. "The 767, however, does not have the range capability for San Diego, so we used the 777. We have, however, used the 767 on our African routes in a similar way Delta has on the trans-Atlantic."

Longer distance markets, in particular the trans-Pacific and Europe-Asia, require aircraft with longer range performance, which means that the 295/305-seat A340 and 777-200 are the smallest types that can provide a non-stop service. This raises the minimum daily passenger volume to about 220 in each direction, thereby increasing the risk of opening a new route.

Although the smallest possible aircraft offers the lowest risk on a new sector, unit cost compared to unit revenue per seat in the initial period is also a consideration. "We opened most of our new routes with the A340-300, which is configured with 247 seats," says Benz. "Although it is larger than some long-haul aircraft, such as the 767, the A340-300 will have a lower cost per seat because of its size. Yields are always low in the first few months after a route is opened, and they have to be to stimulate the market. This favours larger aircraft."



*Delta has used the 767-300 extensively to open new long-haul routes. This aircraft is low risk for the carrier, since it is configured with only 195 seats, and so initial passenger volumes do not have to be high.*

## New services

Delta is a prime example of a carrier that has opened many new routes in recent years. It has started several services from Atlanta to Latin America, including Rio de Janeiro, Santiago de Chile, Buenos Aires and Milan, all with a 195-seat 767-300ER. It has also opened Cincinnati-Rome, Paris-Bombay, New York-Tel Aviv, and Boston-London Gatwick with the MD-11. All these routes have been started with a daily frequency, with the exception of Atlanta-Rio, which is limited to three weekly flights.

Lufthansa has also started several new long-haul routes in recent years. These include several trans-Atlantic services from Frankfurt to Denver and Phoenix, Munich to Boston, Berlin to Washington Dulles, and Munich to Sao Paolo. All, except Sao Paolo, were started with daily flights.

It has also added to its African and Asian Pacific services, in particular, Munich to Hong Kong, Shanghai and Singapore. These were begun with lower frequencies of three flights per week.

Virgin Atlantic has opened several trans-Atlantic routes and other services to Delhi and Lagos from London Heathrow or Gatwick in the past two years. These were all started with the 747-200, but in many cases with low weekly frequencies. The A340-300 is Virgin's smallest type. "We began operations to Las Vegas with two flights per week, London Gatwick to San Francisco at four times a week, and Gatwick to Toronto with daily flights. We also started operations to Lagos four times a week with a 747-200, but changed this to five per week with an

A340-300," says Michael Burke, commercial planning manager at Virgin Atlantic.

British Airways (BA) has taken a steady approach to opening new long-haul routes in recent years. In most cases this has been by splitting a route serving two cities in a chain into two separate direct flights. "One example is London-Phoenix-San Diego," says Wyatt. "We now have direct flights to both Phoenix and San Diego. This has been done by changing from a 747 for the stopping flight to a 777 on each non-stop route. We have followed a similar approach and started non-stop services to Dar es Salaam, Mauritius, Entebbe, Melbourne and the Turks and Caicos Islands. We started the trans-Atlantic operations with weekly flights, since this is the minimum required by the market, but began the new African routes with three weekly flights."

## Existing service level

While initial service is important in order to attract a sufficient level of premium traffic, a new entrant's prime concern will be the potential traffic on a new route. Many city-pairs do not have non-stop flights. This is due mainly either to political restrictions of bilaterals, or there being insufficient traffic to justify a service. Where services are provided a new entrant will have to consider the service level offered by incumbents.

With the exception of the busiest trans-Atlantic routes and a few other major long-haul routes, most city-pairs are operated by one or two national carriers.

A new entrant therefore has to be confident of taking a sizeable portion of traffic from the total market, since in many cases their entrance will increase capacity on a route by up to 35%.

In cases where city-pairs are being opened for the first time, airlines will need to be confident of diverting enough traffic from existing routes and airlines on to their new sector. This will be done in the expectation that there is a large enough volume of traffic connecting via hubs, which would benefit from a direct service between the two cities on their planned route.

"In some of the new routes we opened there were no incumbents," says John Wickson, director of international network analysis at Delta Airlines. "These were the new routes to Rio de Janeiro, Santiago, Milan and Rome. In most other cases there was only one, except for Boston-London Gatwick, Los Angeles-Nagoya and New York-Tokyo."

Virgin had tougher conditions. "In most cases we have faced at least British Airways and another national carrier on the new routes we have opened," says Michael Burke, commercial planning manager at Virgin Atlantic. "The only exception was Las Vegas, where there were no other direct services from London."

Benz explains that there were no incumbent airlines on some of the routes opened by Lufthansa in the past two years, including some trans-Atlantic city-pairs. On several others its only competition was United, which is one of Lufthansa's Star Alliance partners. This is also the case with routes to Sao Paolo, where the other operator was Varig, another Star Alliance member. On the new routes to the Asia Pacific Lufthansa had to compete with one incumbent, but in one case this was also a Star Alliance carrier, Singapore Airlines, which minimised Lufthansa's risk in opening these new routes. "It is always best to be the first new carrier on a long-haul route," comments Benz.

Like Lufthansa and other carriers BA had little incumbent competition when it opened new routes. "There were no other carriers operating between London and either San Diego or Phoenix, and the situation remains unchanged," says Wyatt. "The same is true with other new

routes to Melbourne and various African destinations. We follow a very cautious approach, and focus on providing new non-stop services without having to contend with a competitor, making the overall risk lower. It can be advantageous to be the first airline to provide non-stop services. These still carry a high risk, and we will hesitate to start routes if it could be difficult to get out of them. This is because we have to deploy an aircraft on a new service at high cost, which incurs a huge investment."

## Traffic & yields

In all cases, the opening of a new route will incur the costs of operation plus the overheads of setting up a new outstation. The provision of capacity for the service will mean that carriers will have to make fleet additions. The high capital cost of aircraft is one of the highest risks.

Aircraft are not the only risk, since other cost elements will be incurred over the long-term. "It can be difficult to leave a new long-haul route, since employment laws in many countries can stipulate long-term commitments to staff," says Wickson.

The main initial consideration is traffic volumes providing revenue streams

high enough to cover operational costs and long-term overheads and outstation charges. This requires sophisticated analysis of the traffic volumes a new route might generate, but several software packages have been developed to predict this, such as Planet, APM and Delta's own in-house package Roadmap.

"These packages use similar parameters for predicting the traffic volumes or market share an airline might be expected to gain on a new route," explains Wickson. "The packages compare service levels offered by each carrier on the route, and measure several service level characteristics. These include the number of non-stop connections the carrier can offer at either end of the route, the total elapsed time on the route as well as connecting routes, each airline's market strength at its hub and the time-of-day preference of passengers compared to the time-of-day service being offered. They also take into account traffic flows, connecting times to other routes, and the type of aircraft being offered. There also needs to be an analysis of the strength of the local economies around the two cities and their catchment areas at either end of a new route."

Route traffic volumes are rarely limited to origin and destination (O&D) traffic, and connections with other routes

and networks will affect passenger numbers. The mix of O&D and connecting traffic varies by carrier, and the mix depends on their geographical location, strength of surrounding economy and catchment area. Some carriers, such as SAS and KLM, are at a natural disadvantage and rely heavily on connecting traffic. The majority of KLM's long-haul traffic is passengers connecting via Amsterdam between Scandinavia and North America. KLM must therefore establish whether there is a natural flow of connecting traffic when it considers a new route.

Connecting traffic usually provides lower yields than O&D passengers, so airlines have to make careful analysis of their long-term costs and yields. Some carriers are prepared to accept low yields, since their traffic volumes and route viability depend on it. Some of BA's trans-Atlantic traffic at London Heathrow included connecting short-haul European traffic, so the airline operated a mix of 757s and 747s to carry the volumes. Analysis revealed yields of connecting passengers were not high enough to cover long-term costs. BA therefore changed its strategy to carrying only O&D passengers, and consequently reduced its aircraft size on its transatlantic services to the 777.



Analysis is also required in yield expectations, since airlines will incur long-term costs when opening new routes. “We use software packages to estimate our market share, and analyse yields in all three classes. We also analyse which airlines we expect to take market share from,” says Benz. “We also analyse the traffic connectivities we have with our own network in Europe and with our alliance partner’s, United, US network with our own in-house system.”

## Costs

In addition to aircraft-related costs, airlines also have to consider non-aircraft related costs, some of which are incurred over the long-term, and certain sub-contracted items like line maintenance.

A basic analysis of aircraft operating costs can be made, but fuel will vary with oil price, and will also be dependent on currency exchange rates. The schedule will have an impact on crew costs, since lower frequencies can increase layover times. The local cost of hotels will also determine trip costs for the route. An airline will also have to consider how catering, handling and line maintenance are done, what their costs will be, and

how they can vary with currency fluctuations.

There may also be operational constraints, since some routes may be forced to navigate through longer routings, either because of political or operational constraints. Etops and mountain ranges are examples of operational limitations. In other cases there may be limitations to airspace capacity, for example on trans-Siberian routings. This will increase sector lengths and elapsed times, consequently increasing costs and making scheduled and arrival times less attractive.

## Minimising risks

The risk of opening new routes can be minimised by maximising possible traffic flows. The evolution of airline alliances in recent years has increased the reliability of opening new routes. Traffic flows into both cities at either end of a route increase passenger numbers due to code-shares between alliance partners. Lufthansa, for example, benefits from traffic flows at US cities where its alliance partner United has a hub or strong presence. “We combine forces with airports and alliance partners when we

*Virgin opened several new long-haul routes in the two years prior to 11th September 2001, and used almost fully depreciated 747-200s on most sectors. The cutting of many of these routes was made easier by the low finance costs of these aircraft.*

open new routes, and implement extensive marketing campaigns,” says Benz. “We had the benefit of United’s hub at Denver when we started operations there, but took a bigger risk when we opened the route to Phoenix. Alliance partners and code-shares in the reservation systems with them not only improve traffic volumes, but also increase yields, and this is because of traffic connectivities.”

Lower costs are another benefit of alliance partnerships, since partners can provide handling, catering and line maintenance services to the new entrant, rather than the new entrant having to organise these activities itself, probably at higher cost.

The cost benefits can reach even further, with alliance partners providing the aircraft for service if the new entrant does not have the appropriate gauge. This makes no difference to marketing issues, since the flight number will carry the codes of both partners. KLM, for example operates certain flights to the US with Northwest DC-10s, rather than KLM aircraft, which has both KLM and Northwest flight numbers. This was because the DC-10 was considered to be the best size of aircraft.

Alliance partnerships are one way of increasing traffic, but careful market analysis and recognition of the strengths of incumbents and competitors are also important. “We overlooked the Latin American market for a long time,” says Wickson. “We assumed the majority of traffic would originate at Miami, and American had good connections to the rest of the US for remaining traffic. In fact, two-thirds of the traffic between the US and Latin America comes from outside Miami. We serve more than 100 connections from Atlanta, while American has only about 30 from Miami. Routes from Atlanta also mean passengers only have to connect once going through Atlanta to Latin America, while they may have to connect twice going through Miami.”

Despite these factors, opening new routes carries the fundamental risk of entering a market controlled by other carriers. A sufficient level of traffic has to

*British Airways has developed its long-haul route network by splitting a route serving two cities with a 747 into separate routes, each being served with a 777. This illustrates how the new generation of long-haul aircraft have added flexibility into fleet planning and route development.*

be gained to cover the costs of providing the smallest amount of capacity and frequencies required by the market to ensure a satisfactory service. “We enter new markets cautiously, and use the smallest aircraft possible and increase capacity and frequencies slowly,” says Wyatt. “The minimum starting frequency affects the risk, and is easier if this is low. This is the case with Africa where three weekly flights are acceptable, while it is daily in the US.”

## Fleet planning

Aircraft selection is partially down to total seat numbers, but different markets have different mixes of demand levels of first, business and economy passengers. This presents airlines with problems, because aircraft in a fleet or sub-fleet have the same configuration of first, business and economy seats.

“We start new long-haul routes with a daily flight using an A340-300, but are forced to increase in size to a 747 because of our fleet,” says Benz. “This is a 50% jump in capacity. Because of this large jump we are considering an aircraft that is sized halfway between the two, making fleet planning more flexible. We have also ordered A340-600s, which will be configured with business and economy class seats totalling 380. These will be used on routes where first class traffic is minimal, such as Frankfurt-Vancouver. Our 747-400s have 16 first-class seats, but these are virtually empty in the summer on the Vancouver route. This is why we will have the A380 in a two-class configuration on some sectors.”

Providing capacity and using an aircraft is one of the highest risks and costs. If a new route is a failure the aircraft has to be sold or re-deployed elsewhere on the network. Trading used aircraft is itself a high-risk business, and the ability to re-deploy an aircraft or lay down a fully depreciated one is a preferable exit strategy.

“We take a five-year approach to fleet planning and analyse how we want to grow our market share, but if we have to pull out of a new route we can always re-deploy an aircraft elsewhere on the



network,” says Benz.

A variation in age and financing techniques, terms and return conditions provides flexibility in fleet planning. “We have aircraft financed by a variety of terms, which in some cases makes it easier to dispose of excess capacity,” says Wyatt. “Prior to 11th September 2001 we had aircraft with ages ranging from less than a year to more than 25 years in our long-haul fleet. This meant some were fully depreciated and so we could stand these down at zero cost. The sudden requirement to reduce capacity after 11th September meant we parked all our oldest 747s, so now less of our long-haul fleet is fully depreciated.”

Virgin Atlantic followed a similar policy after 11th September 2001, and retired its 747-200s which had low lease costs. Part of Virgin’s drive to cut capacity came from the cancellation of some of its new routes and switch to smaller types on others. It was also able to shift capacity across its network, re-deploying 747s from the trans-Atlantic to its Asia Pacific network, and its A340-300s from its Asia Pacific network to its trans-Atlantic routes. Virgin’s 747-200 leases still have several years to run, so it needs to put these aircraft back into operation. While traffic is recovering well, it is still too early to re-deploy them. The parking of older aircraft is one illustration of the flexibility airlines like to have in fleet planning when embarking on new services.

## Summary

The main risks in opening new routes lie with providing capacity and incurring long-term costs of aircraft, outstations and additional staff.

While airlines have developed sophisticated techniques over several decades to make accurate predictions of traffic volumes and yields that can be generated from new routes, airline alliances have no doubt both increased the ability to win traffic and reduce operating costs.

The advent of smaller long-haul aircraft types has also made it easier for more airlines to open a larger number of new long-haul routes. Moreover, long-haul aircraft from both Airbus and Boeing that provide incremental increases in aircraft size allow capacity and service frequency to be gradually increased as traffic grows. This is illustrated now in fleets of many major airlines.

While these reduce the risk, older types which are fully depreciated or have low lease rates provide airlines flexibility in fleet planning that also allow new routes to be opened with low risk. Older types can be parked at short notice, and as Wyatt points out, they also have the highest cash operating costs so are the most logical aircraft to step down during a recession or period of consolidation. They can also allow capacity and routes to be added back, as is the situation Virgin has with its 747-200 fleet. 