AIR PASSENGER GROWTH AND AIRPORT CAPACITY

ADVICE TO THE DEPARTMENT FOR TRANSPORT ON THE FUTURE NATURE AND DISTRIBUTION OF DEMAND FOR AIR TRAVEL

Civil Aviation Authority
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1 - INTRODUCTION

1.1 The Department for Transport (DfT) has sought advice from the CAA on the conclusions of a technical paper assessing the future distribution of demand for air travel in the UK, with special reference to the recent rise of the no frills sector and its effects, if any, on traditional air services.

1.2 The DfT paper makes clear that the fundamental drivers of demand for air transport remain constant, but it considers whether recent developments in aviation and the wider world may have altered the future shape of that demand and considers what form that demand might take over the longer term.

1.3 To help formulate its advice to the DfT, the CAA has held meetings with representatives of the following:

- Air2000;
- BAA;
- British Airways (BA);
- bmi british midland;
- easyJet;
- London Luton Airport;
- Manchester Airport Group (MAG);
- MyTravelLite;
- Ryanair;
- Thomas Cook Airlines UK; and
- Virgin Atlantic.

1.4 Section 2 summarises the industry's views and sets out the CAA's advice. A more detailed description of the industry's views on the questions raised by the DfT's paper and on related issues is given in Sections 3, 4 and 5. Section 6 contains the views of the CAA itself. Where possible given the limited time available for its work, the CAA has sought to analyse empirical data to test both the views of the DfT and those of the industry. Annexes A and B contain summaries of the research into two particular issues: the effect of external shocks on aviation demand and the possibility of saturation in the air market between the UK and the Irish Republic.

2 – SUMMARY

2.1 In broad terms, there are many points on which there is general industry agreement but there are a number of issues where views differ greatly. These disagreements are not about the overall volume of demand but rather about the nature of demand and about which business models will be successful in the future. The views of the industry which are summarised below are set out in more detail in Sections 3, 4 and 5.

The Industry's Views

Demand

- There was a general agreement that the DfT's forecast of the volume of unconstrained demand in the long term is robust, given the inevitable uncertainty in forecasting over such a long period. The industry stressed that shocks have happened before and will happen again but traffic has always returned to a long-term growth, albeit with a maturing trend.

- In the industry's view, there is no reason to suppose that the fundamental drivers of demand – economic growth and people's desire for travel – have changed and the long-term prospects for these drivers remains optimistic, partly as a result of continuing globalisation and, in particular, the integration and expansion of the European internal market.

- There is also agreement that demand is changing with more leisure passengers wanting flexibility and being prepared to use the Internet to make their own travel arrangements and with business passengers becoming more price sensitive. However, there is a clear distinction between those who see these changes as part of the evolution of the market and those who regard it as a revolution.

- The industry is therefore split as to whether these demand changes will apply to all passengers or whether some leisure passengers will still want package holidays and some business passengers will still be prepared to pay for quality.

- The other fundamental driver is price. The industry sees liberalisation and the consequent increase in the intensity of competition as the key positive factor but is concerned about the possibility of heavy, perhaps punitive, taxes and charges on UK aviation for environmental or revenue-raising purposes. These will lower demand, particularly of the more price-sensitive passengers and possibly drive some airline bases away from the UK.

- The industry agrees that there will always be passengers who will need to connect and that international-international connecting journeys will tend to involve at least one long-haul leg.

Supply

- On the supply side, there are clear operational and philosophical differences between the network model, the no frills carrier (NFC) model and the charter model and there are intrinsic cost differences between these models, although

these differences may be exaggerated temporarily at least by differences in efficiency.

- The FSSs[1] recognise that they need to reduce costs in order to compete successfully with the NFCs and some progress has already been made as regards distribution costs. The majority of the industry thinks that offshoots are unlikely to be successful unless they are completely separate from their parents. Even if an offshoot does succeed, it does not solve the principal problem, i.e. the parent's excessive cost levels.

- However, the FSSs' ability to reduce costs is limited by the network model which incurs the extra cost of the transfer infrastructure. BA views this cost as necessary to support long-haul routes; easyJet views this cost as unsustainable in a more competitive world and that airlines like BA will need to scrap this infrastructure and move to sector-based pricing to survive.

- There is therefore a difference of views as to how connecting needs will be met in the future, i.e. by the network model or by the passenger having to make the arrangements and bearing the risk of missed connections etc.

- There is agreement that interlining adds cost and complexity. While easyJet and Ryanair are adamant that they will not become involved in interlining or intralining, some would not rule out the possibility, at some stage, of arrangements between NFCs and FSSs regarding transfer traffic. Luton, amongst others, saw the potential for third parties to offer a service to facilitate connections.

- There is a consensus view that the scope for NFC entry onto long-haul routes is less than on short-haul routes but easyJet and BAA believe that there will eventually be NFC entrants into the long haul markets.

Airport capacity

- There is a split between those who see long-haul services as likely to concentrate at major airports even in a liberalised environment because they are relatively thin and need feed and those who see a greater spread of direct long-haul routes as feasible because of NFC entry and the development of small but economical long-haul aircraft.

- There is, however, general agreement that hubs will still be necessary as airports where passengers connect, that the only UK airport that can be considered as a hub is Heathrow, and that this is likely to remain the case. No regional airport is likely to develop into a hub and attempts to develop another hub in the South East would require the closure of Heathrow.

[1] One of the aspects that recurred during our discussions with the industry concerned the quality of the charter product compared with the no frills product. Accordingly, we have segmented airlines into FSS (full service scheduled airlines), FSC (full service charter airlines) and NFCs.

- NFCs may enter hubs depending on the particular NFC model but congestion and the complexity of operating at large airports is as much a deterrent as high airport charges. Ryanair and MyTravelLite stressed that the South East has a stronger potential for NFC growth than the regions because routes to South East airports attract much higher levels of inbound traffic.

- Both FSSs and NFCs consider the main influences on a passenger's choice of airport to be price, service availability and surface access. NFC services can draw from a wide catchment area if there are no low fare alternatives but passengers will not bypass a local low fare service to travel to one further away. Similarly, FSSs regard the greater use of Stansted and Luton not as a sign that Heathrow is less popular, more that the services available at Stansted and Luton are better than they were.

- If Heathrow is not expanded, connecting traffic will be lost to the large competing hubs in mainland Europe and there will be further displacement of short haul and domestic traffic by more profitable long haul routes.

- The industry regards the future as bleak for those mini-hubs in Europe such as Zurich and Vienna which do not have strong catchment areas.

The CAA's Views

2.2 Following the meetings with industry representatives which are summarised above, the CAA has conducted research into some of the issues that were raised and has concluded:

<u>Demand and supply</u>

- The demand for air travel historically has in overall terms been robust to external shocks. The 1974 shock was an exception but apparently not so much because of an impact on demand but more because there was a permanent increase in fuel prices and hence airline costs. Air transport is both a catalyst for and a beneficiary of globalisation and further globalisation should, as the industry believes, spur air travel demand;

- Passenger preferences do appear to have changed not only as a result of aviation liberalisation in Europe but also as a result of greater access to information technology;

- There would also seem to be a plausible case that aviation has developed under institutional arrangements and government interventions that have prevented its natural development and that liberalisation is necessary to allow the industry to be shaped instead by its underlying economic characteristics;

- Liberalisation has given rise to new airline business models which challenge the dominance in the scheduled field of the network carriers and in the leisure field of the package tour product;

- However, it is unclear whether these changes in passenger preferences are so wide reaching as to permanently favour one particular airline business model over all others;

- Given the heterogeneity of the demand for air travel, it may be more reasonable to conclude that there will in the future continue to be a diverse spectrum of passenger preferences;

- Liberalisation and competition seem likely to produce a much wider range of price/quality options for the passenger and there are substantial benefits when consumers can find products that better match their preferences;

- This suggests that although there is some evidence of a convergence of styles at present between the FSSs and the NFCs, this may be illusory given the radical difference in philosophy between the two sets of airlines;

- Competition is likely to lower the cost base of the industry by creating pressures for more efficient operations and, in the extreme, driving out inefficient capacity. It seems doubtful that offshoots, whether successful or not, will significantly affect the overall cost profile of the industry;

Airport Capacity

- The key question is whether the outcome will affect the demand for airport capacity. Whatever the result of competition between the different business models, the attractiveness of an airport will mainly depend on the size and strength of its catchment area;

- There is, however, a difference between short-haul and long-haul markets. Long-haul markets are generally thinner and long-haul services more reliant on feed so there will be a tendency for these services to cluster at major airports. Long-haul airlines currently show a strong preference for Heathrow whereas the development of the NFC model has caused the short-haul market to be much more dispersed;

- It would seem therefore that the recent developments have not affected the basics of airport demand but that the NFCs with their low costs have enabled the short-haul potential of airport catchment areas to be realised much earlier than would otherwise have been the case. This may mean that short-term traffic developments at smaller, less mature, airports are difficult to predict;

- However, it is much more difficult to crystallise the long-haul potential of an airport's catchment areas in the form of direct services even if NFCs enter long-haul routes because they are unlikely to have the same dramatic effect as on short-haul routes for the reasons given by the industry;

- So, despite the development of smaller long-haul aircraft, the direct services from the regions which liberalisation is likely to generate will tend to be to short-haul destinations and the tendency of long-haul services to concentrate will continue;

- Given the UK's geographical position, the connecting traffic through the UK is likely to continue to have a long-haul flight on at least one leg of its journey so the future of this traffic depends on how long-haul services develop and it will concentrate at the long-haul hub airports;

- Whether the network model will be superseded by the point-to-point model as easyJet predicts is unclear. However, the logic of the point-to-point approach in an unconstrained world is not only that the network at an airport reflects the strength of its catchment area but also that the volume of connecting traffic reflects the strength of the network;

- London has perhaps the strongest local catchment area for international travel in the world. In the absence of constraints, London and, in particular Heathrow, with their immense catchment areas would therefore appear likely to be even more attractive in a "point-to-point world" than they are now.

3 - THE INDUSTRY'S VIEWS OF LONG-TERM DEMAND

Overall Forecast

3.1 There is general agreement in the industry that the DfT's overall forecasts of unconstrained growth (e.g. a central forecast of an unconstrained demand of 500m passengers at UK airports in 2030) were sound despite recent events, given the inevitable uncertainty in forecasting over such a long time scale. Air 2000 noted that the DfT forecasts have a good track record although they tend to err on the side of caution. BAA said that its own recent long-term forecasts for BAA airports are broadly similar to what is implied by the DfT's overall forecasts although it feels that the composition of the traffic in 2030 may differ somewhat from that forecast by the DfT.

Short-term shocks

3.2 BAA feels that there is a danger of placing too much emphasis on short-term market developments when passenger growth over the long term will depend on three key drivers: economic growth, whether people want to fly, and price. Virgin made a similar point and believes that the outlook for these fundamental drivers is positive. BA also thinks that short term changes in demand and supply should not to be extrapolated into the future. In BA's view, the airline industry is highly cyclical and demand can stay above, or below, its long term trend for considerable periods of time. Both Luton and Manchester believe that there have always been short term shocks to air transport but demand has soon bounced back to the underlying trend and that should happen again. Thomas Cook had observed that the Anthrax scare in the US had had a particularly strong, but apparently very short-term, effect on outbound traffic levels to Florida.

Factors for growth

<u>Liberalisation and competition</u>

3.3 There is also a consensus that further liberalisation and the consequent increase in the intensity of competition will be major contributors to growth. BAA noted that liberalisation may produce unpredictable outcomes but pointed to a number of ways in which liberalisation can boost the future traffic at UK airports:

- by facilitating low cost entry into long haul markets;
- by making markets more competitive and, through the competition between FSSs and NFCs in particular, driving down fares until the industry attains the most cost-efficient mode of operation;
- by boosting international-to-international transfer traffic.

3.4 In BAA's view, liberalisation would not increase the global total number of international-international transfers but would affect where they connect. For example, the UK-US bilateral is relatively restrictive and liberalisation would allow more US carriers into Heathrow and hence increase its attractiveness as a connecting centre compared with its main European competitors. Virgin agreed that liberalisation would have unforeseen consequences, particularly the removal of ownership and control rules which could come quickly, perhaps inside five years. bmi and Manchester are more cautious about the rate of progress in liberalising long haul markets with the EU

Commission in charge of negotiations. easyJet regards liberalisation as having created opportunities and a business environment that is conducive to NFCs.

Social change and technology

3.5 BAA believes that there has been a change in social trends across the continent which will bolster traffic growth. An example is an increase in cross border migration between Member States, which stimulates the VFR component of the short-haul leisure traffic. BAA emphasises the role played by technology in opening up the distribution of air tickets, making the process transparent, and giving consumers the confidence to buy through this channel.

Business demand

The volume of business demand

3.6 According to BA, business demand in general tends to lead into recession and lag behind recovery in business activity and the volume of business traffic is more cyclical than that of leisure traffic. So, it is not surprising that demand for business travel is recovering slowly. Virgin is reasonably confident that business demand will bounce back but is uncertain to what level. BAA also sees the current downturn in demand for business travel as largely a cyclical phenomenon and that there is no long-term aversion towards business travel. The long-term growth in demand for business travel will in part depend on the continuation of the current trend towards globalisation of economic activity. While this trend may eventually reach saturation, BAA believes that the need for corporations to expand overseas will continue to provide stimulus to demand for business travel.

3.7 MAG sees the propensity of business passengers to fly as likely to increase despite technological advances. Globalisation, team building, and the value of face-to-face meetings mean that videoconferencing is no substitute for air travel. BAA also believes that videoconferencing is largely a complement to rather than substitute for business travel while Thomas Cook feels that videoconferencing has a positive overall effect on business travel because it stimulates cross-border business activity.

The nature of business demand

3.8 Virgin, MAG, bmi and MyTravelLite believe that the switch in the purchasing behaviour of business passengers on short-haul routes is non-cyclical and that business yields are likely to be permanently depressed; businesses, SMEs in particular, are not willing to tolerate the high business fares of the past when far cheaper alternatives are available. The differentials are too large and the FSSs need to be more competitive and lower-cost to regain/retain business. Virgin and BAA see business traffic as now more likely to downgrade than before.

3.9 Nevertheless, BA feels that there is a future for a product with frills in the short haul market. The frills are likely to provide more by way of frequency, flexibility and back up services (e.g. a guarantee of being looked after if things go wrong) and less in terms of on-board services (e.g. sandwiches rather than meals). BA expects the Business Class share of short-haul traffic to stabilise and eventually to start rising again, but it may well fall further in the short term.

Leisure demand

The volume of leisure demand

3.10 BAA noted that its own forecasts and those of the DfT both imply about a threefold increase in foreign leisure travel by 2030. BAA believes that much of this traffic will be absorbed in the London area by spreading evenly across the year, taking shorter breaks in the UK and squeezing out domestic tourists. According to BA, the downturn in foreign inbound traffic in recent years is a short-term phenomenon, reflecting security rather than economic issues, particularly in the case of the traffic from the US (US tourist numbers are 20% down). BA expects this traffic to rebound to its long-term trend.

3.11 MAG believes that the prospects for long haul are very good in the long term. Economies such as China and India are growing steadily and both countries have enormous potential, particularly perhaps as regards generating tourism into the UK. Although inbound tourism has recently been depressed because of the foot and mouth outbreak and terrorism, it has strong growth prospects, more so perhaps than UK outbound. MAG and Thomas Cook see ethnic traffic flows as a very important segment of demand.

3.12 Air 2000 feels that the long haul charter market is relatively undeveloped and that it could be stimulated by diversifying the charter product to include, for example, exclusive five stars spa holidays and "soft adventure" holidays. Air 2000 used to serve Thailand and Britannia used to go to Australia. These services may come back, particularly if First Choice acquires specialist long-haul operators. Thomas Cook noted that there are a number of long-haul destinations which are more suitable for charter than scheduled services such as Cuba, Goa and the Maldives.

The nature of leisure demand

3.13 Thomas Cook sees the leisure market as having changed in recent years with independent travel and city breaks gaining in share. Virgin sees the demand for short-break holidays as additional to, rather than a substitute for, the main holiday and that there was already a substantial short-break holiday demand on its East Coast US services.

3.14 In easyJet's view there has been a structural change in the market which was accelerated, but not caused, by the events of September 11. The market now expects and will continue to expect low fares. easyJet also believes that passengers are increasingly seeking to put together the components of their trip and that "do it yourself" will be the way of the future. It is unclear whether BA would go this far but, in terms of some segments of the leisure market, BA drew the analogy between self-service petrol stations and service stations; once customers had worked out what to do, the service stations were driven out of business. However, Thomas Cook believes that it is difficult for families to discuss and choose their annual holiday purely through the Internet at least until broadband penetration of homes rose above its current level.

3.15 MAG believes that the leisure propensity to fly has increased with people taking shorter holidays. Air travel is now more of a commodity and people make the trade-off between short-break holidays and other consumer goods like jeans. In MAG's view, many passengers are now prepared to switch destinations so that they may now be

choosing between Faro and Florida. Indeed, in Germany a market has developed in "last minute" deals sold at the airport and there are apparently 200 agents at Munich airport. Lufthansa releases seats for sale if they are spare when the flight closes. There is an agent at Manchester offering such deals; in the past Avro also offered such a service and passengers were prepared to wait overnight to get a good deal. easyJet also sees passengers who are willing to switch destinations as a source of growth and intends to introduce a product by which people will say how much they want to spend and easyJet will show them what is available on different flights to different destinations.

Connecting demand

3.16 A number of airlines, including easyJet, made the point that Edinburgh-Tokyo passengers exist and will still need to connect in the future. BA stressed that connecting in the UK is about short-haul to long-haul connections, not about short-haul to short-haul. BA believes that long-haul services are the driving force for the transfer market at airports like Heathrow and BA thinks that transfer traffic would continue to grow in an unconstrained world.

3.17 bmi thinks that transfer traffic would grow at Heathrow if sufficient capacity were made available. Although Heathrow is not built as a conventional hub airport, its geographical position makes it attractive to the Star Alliance, which could offer competitive alternatives to Oneworld Alliance given enough infrastructure.

3.18 Virgin is often described as a point-to-point airline but the point-to-point choice has been forced on it because with a limited number of slots, it cannot feed itself and become an intra-lining network carrier. However, where it enters thin markets, it needs connecting traffic to support the service. Virgin gave the example of Port Harcourt, which it originally intended to serve from Heathrow. However, it found that a substantial proportion of its potential demand was oil-related, often wanting connections to the oil centres in the USA, such as Houston. Virgin therefore decided to operate from Gatwick where the services to the southern US operate because of Bermuda II restrictions. The benefits of the greater volume of connecting traffic outweigh the cost of positioning an aircraft to Gatwick for the twice-weekly service. So, there are long-haul routes on which connecting flows are crucial.

Forecasts at individual airports

3.19 Some in the industry feel that the part played by individual airports in the overall total could be different to the DfT's more detailed forecasts, which were produced in November 2001. In particular, MAG believes that the DfT forecasts understate the potential of East Midlands where the throughput has risen sharply because of NFC expansion. Ryanair instanced Prestwick where the current traffic has already exceeded the DfT's forecast for 2015 as an example of the ability of NFCs to create new markets.

Forecasting methodology

3.20 Points were also made by some in the industry about the forecasting methodology. BAA suggests that the DfT's forecasts would benefit from more modelling of supply and in particular the key parameter of airline costs, both for NFCs and for other airlines. BA's forecasting methodology differs from the DfT's in that it assumes that global real revenue growth will overall be in line with GDP growth; volume forecasts cannot be viewed

independently of yield forecasts. Ryanair thinks that econometric models which rely on macroeconomic variables to forecast demand for air travel at individual airports are less relevant now, at least for a carrier like Ryanair. Ryanair can generate considerable demand to places where there was none before by offering low fares.

Interpretation of forecasts

3.21 BAA thinks that presenting forecasts in form of mid, low and high scenarios, does not provide an entirely appropriate framework for analysing the questions posed in the consultation document. A more useful way of presenting the forecasts, especially in terms of assessing the uncertainties involved, would be to consider the various traffic segments in terms of their relative potential for diversion and suppression. For example, the probability attached to forecasts of business passengers with ODs close to Heathrow should be considerably higher than the one attached to international-international transfers. There is a need to develop a policy that is robust enough to respond to the possible range of outcomes.

Taxes and charges

3.22 There is a general concern in the industry about the possible level of such charges and other taxes. BAA believes that the position of taxes/charges needs to be clearer in terms of both levels and purpose: whether it is to raise revenue or to curtail demand in the face of environmental effects.

3.23 MAG believes that the future level of demand will depend heavily on what level of taxes and environmental charges are applied to air transport and Thomas Cook said that this particularly applies to inbound tourism where the UK is in competition with other receiving countries.

3.24 bmi feels that the burden on airlines is already heavy with landing charges accounting for about 30% of a ticket price on some shorter routes. Adding further charges, including an environmental tax, could push this up to 60%, which bmi would find difficult to sustain. If additional charges were imposed, bmi would need to consider the viability of some of its regional routes.

3.25 Thomas Cook feels that the charter carriers would also be disproportionately affected if environmental charges were to be introduced on a per capita “poll tax” basis. bmi also noted that the environmental tax might disproportionately affect FSCs and, therefore, people on lower incomes. Luton noted that the cost of air travel in real terms has declined substantially since the 1960s. This had brought air travel to the masses and Luton thinks that to try to take that away through high taxes may be politically unacceptable.

3.26 Thomas Cook does not believe that the UK should take the lead on environmental issues. Rather there should be concerted action otherwise the UK airlines would be put at a disadvantage. Unfavourable changes in the regulatory regime or high regulatory charges might force charters to consider transferring their bases abroad.

Other transport modes

3.27 Some in the industry are sceptical as to whether other transport modes can capture a significant share of aviation demand. bmi believes that point-to-point passengers prefer air to rail over a certain distance, say, Teesside-London and, for connecting passengers, rail will only work if there are rail links into Heathrow. It feels that the choice of a transport mode should be left for markets to decide.

3.28 Luton is unconvinced that rail offers a good substitute for air. For example, easyJet has only recently introduced a Luton-Paris service. Luton had been concerned about the route's viability because of the presence of Eurostar in addition to the frequent services from other London airports. In fact this service has proved a dramatic success. Rail is suitable for dense European capital city-to-capital city routes, but would not give sufficient access to the new countries soon to enter the EU.

4 - THE INDUSTRY'S VIEWS ON THE STRUCTURE OF SUPPLY

What is the future of the network model?

4.1 This is the issue on which the industry is most divided. easyJet believes that it will be difficult for the traditional network model to survive; network carriers bear a heavy cost in terms of the infrastructure needed to support interlining and intralining and it is irrational for airlines to gear up their whole operation to cater for a small proportion of demand. The cost falls most heavily on the short-haul routes on which BA, for example, has been losing substantial sums. easyJet sees one reason for these losses as the very low utilisation of BA's short-haul aircraft with aircraft sitting on the ground waiting for long haul connections. Luton made a similar point about US hubs. At Atlanta, arrivals and departures are arranged in waves, which is not an efficient use of airport capacity. Nor is it is an efficient use of aircraft because the aircraft travelling to a nearby spoke has to wait at the spoke so that its arrival back at the hub coincides with the arrival of aircraft from more distant spokes, a practice known as ‘'pacing".

4.2 In easyJet's view, the network carriers are effectively saying that all consumers must pay for this transfer cost but consumers who make simple journeys are asking why they should cross-subsidise the minority who want this infrastructure. In the future the passengers, rather than the airline, will need to do the work.

4.3 easyJet regards the key features of its product as simplicity, transparency, and non-discrimination. At any one time on a given route it offers just one price and it does not have the costs of the complex revenue management systems operated by the FSSs which discriminate between passengers with the carriers selling a multiplicity of through and point-to-point fares with capacity buckets for different fares.

4.4 easyJet believes that in future carriers will have to price more simply using sector-based pricing and that the old network model is defunct.

4.5 Even if the FSSs knew the cost of the transfer infrastructure, easyJet believes they do not know how to charge passengers for it. Indeed, MAG believes that they do not generally know how to apportion it between different sectors. NFCs can look at profit on route-by-route basis whereas network carriers have looked at profit on a network basis. A network approach can lead to poor management decisions and seemingly irrational behaviour. Passengers between London and New York can be attracted over Amsterdam but because it is a more inconvenient routeing, the airline has to offer a discount. So, the yield on both the London-Amsterdam and the Amsterdam-New York sectors will tend to be lower than the point-to-point yield but the costs are the same. In easyJet's view, the passenger who wants a complex product should face the cost of complexity.

4.6 It is unclear whether MAG would fully accept the easyJet argument, as it noted that Emirates is one long-haul airline which has tried to tackle this problem. The FSSs believe that there continues to be a role for the network carriers. However, bmi speculated that in the future some network carriers might convert the short-haul part of their capacity to some variant of the low cost format to provide feed for their long haul routes.

Will the NFCs offer a connecting product?

4.7 Both easyJet and Ryanair are adamant that they will not become involved in interlining or intralining. For Ryanair this is essentially a cost issue. If it interlined, it would be responsible for delays and possibly having to accommodate passengers who missed their flights. For easyJet, the rejection of interlining is a crucial part of its philosophy and its reason why the network model cannot be sustained.

4.8 Thomas Cook summed up the general view of the rest of the industry; the main competitive advantage of the NFCs is the simplicity of their products and of the proposition they offer customers and that the complexities of hubbing could be the kiss of death, certainly the death of KISS[2].

4.9 There is agreement that interlining adds cost and complexity. easyJet sees part of its strength as the ability to schedule aircraft individually. At present no factors inhibit easyJet's ability to get the most out of the aircraft, but waiting for connecting flights increase turnaround times and reduce aircraft utilisation.

4.10 BA thinks that there will always be some transfer traffic at larger airports used by NFCs such as Stansted, but this is likely to be on a do-it-yourself basis. BAA noted that there has been a recent increase in transfer traffic at Stansted, from about 5- 6% to about 9%. Luton thinks that there is maybe 5% to 10% of connecting traffic at Luton and it has observed some "do-it-yourself" interlining from Ireland. Ryanair thinks that about 20% of its passengers on the Dublin-Stansted route travel to connect onwards from one of the London airports. Some MyTravelLite passengers from Belfast fly to Birmingham and then from there to Malaga and Palma in Spain.

4.11 MAG said that Southwest has a hubbing system of a kind with high frequency flights to a number of destinations but without the flights to different destinations being co-ordinated into waves. MAG believes that Southwest facilitates intra-line connecting by synchronising schedules where it can, but no more than that.

4.12 Although BA feels that the NFCs would not want to set up a complex intralining structure, BA would not totally rule out the possibility at some stage of contractual arrangements between NFCs and FSSs regarding transfer traffic. easyJet can also foresee a situation in which short-haul NFCs feed long-haul FSSs but in a point-to-point world in which passengers have to arrange their own connecting journeys and the airline merely provides single-sector flights from A to B. So, this feed would be on a two-ticket basis and not with through fares and all the paraphernalia of interlining. It would be a "symbiotic" relationship, not a contractual relationship, with each type of carrier playing to its strengths. Virgin gave the example of an interlining deal between the NFC Virgin Blue and United in Australia under which all the extra cost of transfer passengers was borne by United.

4.13 easyJet envisages that there may be opportunities for third party travel arrangers to arrange connections, transfer bags etc. BAA sees the possibility of NFCs offer services to facilitate transfers, at a price while Luton pointed out that there are precedents for a "third party" to arrange transfers.

[2] Acronym of the "Keep It Simple, Stupid!" principle.

What is the future of the charter package product?

4.14 Thomas Cook noted that charter is all point-to-point and that many charter routes are thin. Thomas Cook offers services from a wide range of UK airports and, in total, serves around 60 overseas destinations. Most of the major charter carriers are vertically integrated as part of a group with a related tour-operator and travel agency and as such they are better insulated from demand downturn than the traditional scheduled carriers (a point also made by bmi).

4.15 Neither Thomas Cook nor Air 2000 shares the view that charters are in decline. Thomas Cook describes the full service charter market as being mature and capable of growing by between 2% to 3% per annum, a rate which is sustainable, unlike the NFCs' 25% a year increases. Air 2000 stressed the significance of charters in terms both of their share of UK airline output and of passengers at UK airports. Thomas Cook believes that certain segments of the population will continue to value the convenience and security that the package holiday provides. bmi and MAG agree with this view. bmi believes that not every passenger will want to make his or her own arrangements. MAG notes that although demographic shifts are taking place, there will always be a place for family holidays.

NFCs versus charters

4.16 BAA and Thomas Cook expect the NFCs to penetrate the FSC seat-only and villa-owning segments but not to make significant inroads into the package business. According to Luton, East Midlands suffered a decrease in charter traffic when there was a price war between bmibaby and easyJet. Luton also feels that the growth of NFCs may account for the flat charter market at South East airports in recent years. Ryanair thinks that there has been some dilution of charter traffic as a consequence of NFC operations even though they do not tend to compete head-to-head. easyJet also thinks that it must have taken some traffic from the FSCs. BA notes that FSCs still have a dominant role in leisure travel from the regions but the FSC share is likely to shrink when the NFCs' international routes from regional airports develop to the extent they have done it from the South East.

4.17 On the other hand, Luton pointed out that charter passengers make up over 70% of the 1.5 million passenger total at Cardiff despite NFCs operating from there to "sun holiday" destinations in Spain. Thomas Cook's traffic volume to "sun holiday" destinations has not been affected much by the competition from the NFCs, although yields have fallen.

Convergence of styles

4.18 Air 2000 views itself as "high frills" compared with the NFC's since it offers hot meals and a two-class service (Premium and Premium Economy). Air 2000 sees convergence between the charter and scheduled modes already happening: there is a move to increase the flexibility of the charter product by offering more flexibility than the standard 7-night or 14-night holiday. It is introducing in summer 2003 daily charter services from Manchester to a number of holiday destinations. Tickets offering flexible duration stays will be sold through the Internet. Reservation systems are much more flexible now and the main problem with flexible duration is the difficulty in contracting for bed nights with hoteliers. A carrier could not offer flexibility without frequency and so the

plan was to try and build up frequency and to get to daily on suitably dense routes. Despite these changes, Air 2000 expects that the bulk of charter passengers in the future will still be on package holidays.

4.19 Thomas Cook noted that other charter airlines/tour operators were making some changes to their product: Monarch was increasing its scheduled services with the "Crown" premium product but with capacity also being offered to tour operators; TUI was experimenting in the NFC area with Hapag-Lloyd Express in Germany. But Thomas Cook also made the point that to offer passengers flexibility, a carrier needs frequency and this is difficult to provide with large aircraft. It would entail an increase in frequency, probably to double daily in peak season, and the use of aircraft smaller than the 757-200, which is the current choice on the majority of these routes. The increase in frequency from the airports in the South East though might be difficult to achieve if congestion worsened. Thomas Cook contrasted charter frequencies with the relatively high frequency offered by NFCs.

4.20 In easyJet's view, the problem for the FSCs is that passengers' preferences have changed and they now prefer flexibility. FSCs have a big cost advantage over FSSs but they have focused too long on vertical integration. They ignored the Internet, the growing need for transparency, and the growth of foreign property ownership. They have always distributed *en masse* and through intermediaries and may find it difficult to change to individual sales and master the Internet. They have perhaps been too late in recognising that they need to change.

Comparative costs

4.21 According to Thomas Cook, Ryanair avoids competing head-to-head with charters because it does not have the kind of cost advantage over the charters that it has over the FSSs. The FSCs achieve better aircraft utilisation because they operate flights all throughout the night in peak season. However, this gap appears to be narrowing as the NFCs themselves are increasing their late night and early morning operations. Even though FSCs operate larger aircraft and make empty legs at the beginning and the end of the season, they still obtain a much higher seat factor than the NFCs, about 90% compared to 70%, and the FSCs and the NFCs offer similar seat pitch on their aircraft. The large charter aircraft also have lower unit costs brought about by economies of aircraft size.

4.22 The areas where FSCs and FSSs incur higher expenses than the NFCs are in distribution and customer services. By taking much of their bookings via the Internet, the NFCs are able to save on CRS charges and agents' commission. Also, although tour operators had generally less overhead than the NFCs, they had to support outlets in the High Street, the cost of brochures, and extensive advertising. Thomas Cook is also looking for the ways to reduce its distribution costs and these include transferring its call centre from Scotland to India.

4.23 Thomas Cook foresees charter costs reducing as a result of liberalisation. The creation of a pan-European leisure airline will help to reduce costs as it will allow for downsizing of various components of the business (e.g. one IT and accounts department etc) and would allow effective management of the aircraft as one fleet, although they remain on national registers. It is also likely to strengthen the company's position when negotiating purchase of new aircraft.

NFCs versus FSSs

4.24 BAA expects the NFCs will increase their market share at the expense of the traditional scheduled carriers. BA notes that there is a fair degree of overlap between BA's short haul network and routes served by NFCs. The NFCs are adopting two different models. easyJet is much more of a competitor to BA than Ryanair, as the latter offers entirely different product from BA's. Ryanair thinks that FSSs are increasingly less and less relevant as competitors and questions whether the low fares the FSSs have introduced are sustainable. easyJet admitted that the restructuring and reduction of fares by FSSs, notably BA and bmi, had increased competition but easyJet queried whether these fares were sustainable.

Convergence of styles

4.25 Virgin has observed that the full service product is changing with BA and others introducing an "NFC" type of leisure fare structure and with BA having switched to smaller aircraft. bmi also sees the potential for a convergence of styles but only with the easyjet-type of NFC model, not the Ryanair-type model. BAA believes that some FSSs, although skilled in the use of their yield management systems with the historic fare structure, may be overreacting by reducing fares to the levels that are not sustainable over the longer term, particularly perhaps on domestic routes. Such carriers could charge a premium on the basis that they take care of the passenger. Despite its views about possible convergence, bmi mainline itself is responding to the challenges posed by NFCs by changing its fares structure as well as reducing fares, giving more publicity to its products and stressing the benefits of Heathrow as compared with Luton and Stansted.

Comparative costs

4.26 The FSSs realise the need to reduce their costs and Virgin thinks that the FSSs may emerge leaner and more efficient from the current difficulties, and capable of supporting the expected higher growth in the future. bmi believes that there will be a convergence between FSSs and the NFCs of the easyJet type in terms of cost levels. However, BA pointed out that there is a limit to how close it could come to NFC cost levels. The operation of a network does create extra costs but the network is needed to support long-haul services. Also, cutting costs by cutting frills may not work when passengers value those frills.

4.27 easyJet thinks that there are many barriers to the FSSs reducing costs such as labour issues and the replacement of their IT legacy systems. easyJet itself is looking to take out 10% to 20% of its current cost base so that, by the time the FSSs have reduced their costs, the NFCs will have moved on.

4.28 MAG noted that the Internet provided 37% of BA's bookings in the last reported quarter but wondered whether the FSSs can reduce their costs enough. If a passenger wishes to change a ticket with an FSS it apparently requires 72 separate actions to effect that change.

4.29 Although the traditional scheduled carriers are responding to the challenges posed by the NFCs, Thomas Cook does not think that they will be able to match NFC's seat factors.

Network effects

4.30 Ryanair questions whether the current FSS networks are sustainable. For example, it expects further route and capacity retrenchment on the part of BA and does not believe BA's strategy of introducing smaller Embraer RJ145 aircraft at Manchester in order to focus on high-yield business passengers will work. Aer Lingus has adapted successfully to the changes in market environment brought about by the advent of NFCs but to do so it had been obliged to prune many of its Dublin – UK services, which it could not sustain because of the competition from Ryanair.

4.31 Luton thinks that short-haul could possibly all become no frills and that airports would need to adapt to this change.

4.32 easyJet believes that it is possible FSSs might have to pull out of short-haul altogether; even a cost-conscious franchisee like GB Airways is still at a cost disadvantage compared with easyJet. In contrast, Virgin is of the view that although NFCs clearly compete with the FSSs on short haul routes and BA's European operations are making heavy losses, the FSSs will not withdraw from short haul routes because their corporate customers want to go to Paris as well as to New York and Tokyo and they are prepared to pay for some frills. Heathrow is still the most convenient airport for business travellers although it is possible that some short-haul services might be franchised out. bmi agreed that FSSs would not withdraw from short-haul services at Heathrow.

Offshoots

4.33 There is a general agreement that, to be successful, an NFC offshoot of an FSS has to be completely separate from its parent. Virgin and MAG feel that this separation is necessary in order to establish new working practices and employment contracts and avoid the parent imposing unsuitable aircraft or routes on the offshoot. bmibaby has separate crew and pilot contracts from bmi mainline which offer lower standard rates but higher incentives. This was not easy to achieve but the staff was made aware that FSS services were no longer sustainable at East Midlands. The bmi group's operation at East Midlands is now totally bmibaby. In Thomas Cook's view, an NFC-style offshoot would be at disadvantage if its operations were constrained by the parent. The community of stakeholders has to believe in the model and it is difficult to get this kind of "buy in" in an offshoot by giving it the worst routes in the network and paying its staff less.

4.34 One difficulty which BA had experienced with Go was the confusion on part of its customers, especially business travellers, as to whether BA would continue to provide the kind of service they were used to, particularly where there was market overlap between BA and Go. Ryanair thinks NFC offshoots, like SAS's Snowflake, will not be successful because they compete with their "parents". For example, according to Ryanair, Tango competes more with its parent Air Canada than with West Jet.

4.35 On the other hand, bmi thinks that parallel operations of full service and low cost products is possible. Although there is some degree of overlap between bmi mainline and bmibaby operations at Manchester, bmibaby's services are being developed to be complementary rather then to compete with ("cannibalise") bmi mainline. At present, bmibaby operates services on a stand-alone basis. For example, bmi does not offer

arrangements which would involve the use of bmibaby's services at Manchester to connect to bmi mainline services to the US. However, MyTravelLite sees potential problems. In its view, bmibaby seems to be overly influenced by its parent. For example, bmibaby was given 13 aircraft in the first year, which it found difficult to utilise and which perhaps caused it to start services from Cardiff International Airport, which do not seem to be profitable.

4.36 Separateness and independence also seem key features for an FSC offshoot. MyTravelLite is happy to work with MyTravel tour operators but on MyTravelLite's terms. For example, if the tour operator wants to purchase block seats it has to pay a non-refundable deposit.

4.37 BAA also thinks that the traditional scheduled carriers will not be successful in running NFC offshoots but made the important point that this, however, should not have implications for the long term market prospects; the main point is how close aviation can come to its most efficient operating mode irrespective of the identity and structure of the carriers involved. In a similar vein, BA also feels that the creation of an offshoot can allow mainline management to avoid the real challenge of making the mainline product competitive.

How much of NFC traffic is stimulated?

4.38 BAA believes that much of the NFCs' growth is stimulated with low fares attracting new passengers rather than simply diverting passengers from existing services. BAA thinks that the proportion which new passengers form of total NFC carryings varies by route from 33% to possibly 66% and perhaps averaging 50% overall. Some of the growth on domestic routes has been opportunistic, as it benefited from disruptions in rail and road transport. Air 2000, Luton and MAG believe that NFCs primarily stimulate the market rather than substitute for other carriers but MAG finds it difficult to provide any quantitative backing because of the destination switching by people who simply want a holiday and who do not mind where they go.

Are the NFCs approaching saturation in the UK short haul market?

4.39 Virgin, Air 2000, BA, bmi, Luton, MyTravelLite and MAG all feel that the NFC market is beginning to stabilise. There are a variety of reasons:

- Ryanair and easyJet now appear to be much more in conflict as evidenced by the recent advertising campaigns;

- Consolidation in the NFC market is a sign of market maturity;

- Ryanair and easyJet between them now have more short-haul slots in London than BA. The NFCs have succeeded in penetrating about 25% - 30% of the short-haul market in the UK, which is broadly equivalent to the share of NFCs in the US domestic market. Since NFCs favour routes with shorter length because they provide better aircraft utilisation, the NFC presence is strongest in Western Europe. Their share of the London-Western Europe market is perhaps 40% which may be an overshoot of the long-run equilibrium position;

- The UK is just about covered in terms of NFCs at airports. It is a sign of saturation when an airport like Teeside gets an NFC;

- An NFC growth rate of 25% p.a. is not sustainable;

- easyJet's recent profit reduction is more a sign of saturation than being related to the take-over of GO;

- There are fewer viable opportunities for expansion in the EU. Ryanair, for example, already serves about 125 routes within the EU. Although the airline has done well this year, there are no real "winners" amongst the new destinations, as happened in previous years with places such as Pisa.

4.40 Although the NFCs in the UK may be starting to approach saturation there are still opportunities for growth in Eastern Europe, particularly after 2004. Ryanair does not think that sector length would be a problem as most of the new entrant countries, including Poland, Slovakia, Hungary, Slovenia and the Czech Republic, could be reached within 2.5 hours. Luton observed that the NFC ski-holiday market has been developing over recent years with some passengers now travelling two or three times a year. BAA believes that there are further increases of 50% to 100% in NFC's traffic before they return to more normal rates of growth and a stable market share.

4.41 The NFCs themselves expect to expand in the UK, albeit at a lower rate than before. easyJet will add incremental capacity in the UK but sees that there are now bigger opportunities elsewhere. Ryanair notes that the share which NFCs have of the UK short-haul market (30% or so) is slightly higher than that of NFCs in the US (20% to 25%) but is much higher than the NFC in mainland Europe. However, it sees scope for expanding at both at London and at airports such as Newcastle to points such as Altenburg (Leipzig), Niederrhein (Dusseldorf) and Berlin. It may also expand into Spain where it has relatively few services from the UK and Portugal where it has none.

4.42 However, although the NFC share in the UK is close to that in the US, the US level should not be seen as a ceiling. There is a fundamental restructuring going on in the US with the financial difficulties of the majors and commentators are now talking about the NFC share in the US increasing to 50%. MAG believes that the current NFC share in the US is constrained because of the fortress hubs of the US majors at most of the larger cities. These hubs are difficult to penetrate and this means that a high share of US domestics has been ring-fenced for the FSSs. But the collapse of a US major could allow for substantial NFC expansion into its hubs. In Europe, congestion can act as a way of ring-fencing hubs.

Expansion in Europe

4.43 Much of Ryanair's expansion is now in the creation of new bases in Europe at Charleroi, Hahn etc. However, this could give a new surge to the UK market as routes linking UK points into these hubs come on stream.

4.44 BA and bmi see much of traffic generation is likely to come from the Continent although bmi warns that the NFCs may find more difficult to expand in the rest of Europe as the operating environment there is less liberal than in the UK. Further, it is often

difficult for NFCs to obtain desired slots. Thomas Cook believes that France and Germany will be tougher for the NFCs to penetrate than the UK because the expansion of the NFCs relies in part on Internet penetration, which is very high in the UK, but low in Germany and, as bmi pointed out, in most new EU entrants.

Traffic seasonality

4.45 Thomas Cook believes that the NFCs may be limited in their ability to penetrate "sun holiday" destinations market because of the slack in demand in the winter months; high aircraft utilisation can only be achieved year-round by good winter utilisation. According to Thomas Cook, NFCs prefer year-round destinations and routes where they can operate multiple daily frequencies. A well structured, vertically integrated, tour operator can make sure its airline had a reasonable utilisation in winter but this may be more difficult for an NFC. For this reason the NFCs prefer routes with VFR traffic, ethnic traffic, and business traffic rather than seasonal "sun holiday" destinations. Greece and Turkey are particularly seasonal. MyTravelLite noted that Spain was far less seasonal than Italy because UK owners of Spanish villas take breaks in the winter.

4.46 However, Ryanair does not regard seasonality as a problem. Its portfolio includes "ski-holiday" destinations such as Turin and Salzburg, and destinations with a considerable portion of VFR traffic such as Stansted-Dublin, which is less susceptible to seasonal variation. Even on a route such as Alghero in Sardinia, Ryanair is able to generate a sizeable inbound flow in winter with passengers who have never flown to, say, Florence because it is too expensive.

Competition between NFCs

4.47 BAA notes that there is no single NFC model. easyJet, Ryanair and, now, Flybe have different models and, over time, the NFCs themselves will evolve further, but attempts to monopolise markets will fail because of new entrants.

4.48 Ryanair and easyJet both have similar views of the competition between them. There is little route overlap and the business models are very different but there is a fierce competition for the segment of demand whose choice of a travel destination is primarily guided by availability of low fares. That apart, easyJet regards airlines such as BA and KLM as its competitors.

4.49 Ryanair feels that its brand name is one of its key assets. Ryanair feels that easyJet is the only serious contender among the NFCs. Some of the other NFCs such as bmibaby and MyTravelLite are constrained by their parents and operate only from the regions; in order to grow, NFCs need access to the South East market. Luton also made the latter point. Other NFCs such as Jet2 based at Leeds/Bradford with only two or three aircraft are simply too small to be able to offer a viable alternative to Ryanair's services. The key question, according to Ryanair, is which NFC will be known as <u>the</u> low fares airline.

Will the NFCs enter long-haul routes?

4.50 The industry gave a number of reasons why NFC entry onto long-haul routes would be more difficult than entry onto short-haul routes:

- comfort is more important on long haul, the seat pitch in FSS Economy already averages 31 inches, and it may be difficult to market a smaller seat pitch;
- given operating windows, maintenance requirements, and the current high utilisation of FSS long-haul aircraft, the scope for increasing aircraft utilisation is limited;
- long-haul seat factors are already high;
- there are less risky opportunities for NFCs to expand in short haul;
- FSSs are catching up as regards Internet use;
- connecting traffic is more important to sustain long-haul routes than it is for short-haul routes;
- passengers would need to be fed and would resent buying food on a long flight;
- the commercialisation of airport operations, in which the UK is leading the way, has stimulated the short-haul NFC traffic. However, NFCs may not be able to negotiate low landing charges at long-haul destinations where the environment is less liberal;
- On long-haul holiday routes there are already charters;
- FSSs, like BA, have excellent yield management that are difficult to beat and there is a lot of cheap capacity at the back of long-haul FSS aircraft;
- Spare cabin crew have to be carried to allow rest breaks;
- Passengers on long haul don't necessarily want a point-to-point product; they may need to connect or they may want to stop-over;
- It is difficult to arrange complicated journeys on-line so there are services a travel agent can provide;
- long-haul routes are thinner and involve high capital investment;
- it is not possible to achieve rapid turnarounds of large long-haul aircraft.

4.51 Air 2000 noted that Southwest has the opportunity to operate long-haul services for a number of years but hasn't taken it. However, BAA feels that there is perhaps a 50:50 chance of an NFC entrant into the long haul markets within the next five years or so. easyJet also believes an NFC-type model could be developed for long-haul. It notes that on long haul it might only be able to improve current aircraft utilisation but only by 10% or so (rather than 100% as on short-haul routes) but there are possibilities for low-cost entry: passengers could buy food and services on board; long-haul distribution costs which can account for 25% of revenue can be cut. However, easyJet expects low-cost on long haul may be more of a niche product than an "across-the-board" product.

What new products might emerge?

4.52 Thomas Cook thinks that the market for business travel is changing, and that the traditional carriers will need to adapt by changing the products aimed at that market segment. Many traditional scheduled carriers are reducing the space allocated to First Class or eliminating it altogether following improvements to Business Class. But this is not new; this kind of change has happened constantly as air transport has developed over the years with new cabins (such as Premium Economy) being invented and others being removed.

4.53 Luton feels that product differentiation may be the way traditional carriers will go with business passengers given special treatment through the airport as regards to both boarding and disembarking. In terms of product changes on long-haul routes, Virgin believes that there are likely to be innovations in terms of new types of cabin as airlines

try to match their products to what passengers want. So there will be differentiation within aircraft. There may also be differentiation across aircraft given concepts such as the dedicated business jet.

5 - THE INDUSTRY'S VIEWS ON THE DEMAND FOR AIRPORT CAPACITY

What is the future for hubs?

5.1 Virgin believes that the hub concept is still valid and that US carriers are not dismantling their hubs, but are modifying them to provide a more efficient and stable network. What had changed recently was the notion that a connecting hub would be created anywhere; hubs need a large base of local traffic. In this context, Virgin believes that the attractiveness of Heathrow as an airport should not be underestimated. It has an established name and is known throughout the world; the high frequency on many routes offers good connecting opportunities; and the markets there are competitive and offer low fares. It would be impossible to try to create a new London hub without closing Heathrow.

5.2 In slight contrast, Luton feels that the importance of London as an economic entity and its attractiveness as a tourist destination means that there would be high demand for its airports even if there were constraints on the level of transfer traffic. Luton questioned the value of transfer passengers from the perspective of an airport operator. Airport capacity is a scarce resource that is best used by terminating passengers, i.e. UK residents or incoming tourists. Transfer passengers provide little or no revenue to the airport (e.g. no car parking fees) but transfer infrastructure such as a new baggage system is required to cope with their needs.

5.3 BA's network at Heathrow does not have the same characteristics as a US hub with waves. As Luton put it, Heathrow is a hub only in the sense of being a big and busy airport; it is not a classic hub like Atlanta. BA also noted that US connecting is mainly domestic whereas at Heathrow it is mainly international, again limiting the analogies that can be drawn. BAA also noted that the UK has never had hubs in the US sense. The de-peaking of hubs in the US should lead to a more efficient use of airports and it may be related to the more stringent security arrangements that are now in place. BA believes that the US carriers had perhaps taken the hubbing concept too far and BA feels that hub bypassing and the de-peaking of hubs in the U.S. are kinds of self-correction aimed to address this problem. However, the US system is still primarily based on a hub-and-spoke model and the kind of hubbing which is prevalent in the UK and Europe and which is based on long-haul services is still a viable concept. In BA's view, the DfT paper does not sufficiently recognise that for airlines like BA and airports like Heathrow long-haul services are the driving force.

5.4 bmi believes that hubs will survive, as there will always be demand for connecting services. Part of the reason for this is spatial distribution of population and the need for a sufficient critical mass of passengers for viable long-haul services. BA clearly sees the way in which capacity for long haul is provided as key to the development of the UK's airport capacity. Long-haul services do not drive the development of airport capacity in aggregate; they are a relatively small proportion of the total throughput at airports. But whereas spreading airport capacity around may be appropriate for short-haul services, it is not in BA's view appropriate for long-haul services because they are thinner and more dependent on feed.

5.5 BA believes that for a hub to be competitive over the next 20 years it will need at least three runways operating in conjunction with each other. Again, the key will be which airports can sustain a range of long-haul services; some airports may be capable

of supporting a few routes to very dense destinations such as New York but not a whole network. Brussels, Vienna and Zurich are examples of airports which may be difficult to sustain as a hub. Abandoning its hub ambitions might be part of the entry fee a smaller airline may have to pay to join an alliance.

5.6 easyJet feels that traditional carriers are increasingly focusing on long haul. Like BA, it sees the long term outcome of this may be a disappearance of mini-hubs and emergence of mega-hubs although easyJet would see the "natural" feed from short haul to long haul being provided by airlines like itself. Hubs the size of Heathrow may survive but small hubs will not be sustainable. Ryanair also questions whether airports such as Brussels, Zurich and Copenhagen have a long-term role as European hubs.

Could regional airports become hubs?

5.7 BAA sees no real scope for regional airports to develop as hubs and that 80%-90% of connectors would be lost to the UK if they could not connect at London. bmi thinks that there is a little scope for hubbing at regional airports, even at Manchester, as there is not enough critical mass to build up an attractive level of frequency compared with that offered by the major airports. Thomas Cook feels that there is only really one hub airport in the UK, Heathrow, and that attempts to develop hubs elsewhere had so far failed, even at Manchester. Both Ryanair and Thomas Cook believe that may continue to be the case and even MAG acknowledged that Manchester is not a hub and that it needs to attract a large airline and for that airline to create a base at Manchester.

Will the NFCs enter hubs?

5.8 In Virgin's view, NFCs would want to enter large hubs if they could because of the size of the potential market offered by the airport's catchment area. Thomas Cook believes that NFCs' presence at hubs is likely to vary in the future according to the particular NFC model; the easyJet model is more likely at hubs than the Ryanair model. Luton agrees and notes that unless the Slot Regulation is changed half the 200,000 ATMs a year created by a new runway could be operated by new entrants.

5.9 The industry advanced several reasons why NFCs might not enter hubs:

- the higher charges/cost of slots (Even with a third runway, BA sees NFC entry as unlikely because NFCs would then need to start paying the full costs of infrastructure use.);
- the complexity of operations and congestion (BA has estimated its costs arising from delays at Heathrow at about £100 million a year);
- the critical mass of slots needed to base aircraft viably at an airport. MAG believes that the minimum viable base for an NFC needs 2 or 3 aircraft and each of those needs slots for 3 or 4 rotations a day, i.e. up to 24 slots a day.

5.10 In BAA's view, easyJet entered Gatwick not only because it gives access to new catchment areas in and to the south of London but also because Gatwick's southerly position shortens the stage length to many of easyJet's destinations and because it could obtain gates close to the runway, which enable quick turnarounds. For Ryanair, Gatwick compares favourably with Heathrow in operational terms, especially with the quick access from the runway to the South Terminal. The terminals at Heathrow are not sufficiently close to the runways to allow for efficient aircraft operations and because of

the time it takes to get through the airport. According to Ryanair, BA can only operate two round trips a day per aircraft between Heathrow and Stockholm Arlanda mainly because of the long taxiing time at Heathrow. In contrast, Ryanair can do three round trips between Stansted and Skavsta.

5.11 In contrast, MyTravelLite thinks Heathrow is not necessarily as inefficient an airport as is often thought; taxiing times can be quite short for some runway/terminal combinations. It would therefore not rule out the possibility of entry by a carrier like easyJet.

Will there be more direct services from regional airports?

5.12 BA emphasised that long-haul markets are thin and there are very few long haul routes that do not have a hub at one end. MAG noted that the latter point applies even at Manchester. Because of this, hub bypassing is not as significant as in the US where connecting is essentially short-haul to short-haul.

5.13 At present easyJet foresees smaller aircraft being viable on long haul routes and hence the possibility of more direct services. However, the A380 may in the near future bring a step change in airline economics with much lower unit costs.

5.14 According to Luton, technology is now allowing long-haul services to be operated from relatively short runways. It gave as an example a recent A330 flight from Luton's 2,200m runway to Orlando with a full (300 passenger) load and 15 tonnes of cargo. This type of development could lead to increasing specialisation and product differentiation. Although Luton in the near term is likely to remain a short/medium haul airport, further into the future it could develop long-haul services using these types of aircraft.

5.15 MAG feels that the concept of a small dedicated long-haul business aircraft (like Lufthansa's BBJ service) will succeed but that this type of dedicated business service is applicable only to specific markets, normally the densest. Dusseldorf-New York may not appear particularly thick but 40 of the top German companies are located in the Rhineland/Westphalia area. Lufthansa was now extending the experiment to Munich. BA also believes the Lufthansa BBJ model might be viable but it requires a strong presence to make inroads into business markets so it is unclear how many routes could be profitable.

5.16 easyJet believes that regional jets (RJs) can only fulfil a niche role. They are expensive and costly to operate and are useful in serving very thin markets and operating "hub bypass" routes. Thomas Cook also sees RJs as niche aircraft enabling feeder services to survive but being vulnerable to the entry of an NFC with larger, more economical aircraft.

5.17 BAA noted that although the regional traffic has grown faster than the London traffic in recent years, the current as well as previous downturns suggest that this traffic is more susceptible to adverse changes in economic growth and thus riskier for the airlines. However, MAG noted that congestion at London might mean that point-to-point services from regional airports become more viable.

What will happen if Heathrow is not expanded?

5.18 BA feels that provision of additional runway capacity at Heathrow would curb the tendency for long haul traffic to displace short haul traffic.

5.19 MAG noted that both BA and bmi have only a limited portfolio of slots at Heathrow. Regional services are being dropped not because they are unprofitable but because they are less profitable than some international routes. If Heathrow is not expanded, some regional services may be retained as feeders but there will be a tendency to reduce the number of destinations served at Heathrow and BA will become more like BOAC.

5.20 There is general agreement that if no additional runway capacity is provided at Heathrow there will be a leakage of some transfer traffic to other European hubs, notably Paris and Amsterdam. BAA said that the current increase in the share of the transfer traffic at Heathrow is to some extent attributable to the problems faced by some continental carriers (e.g. bankruptcy of Sabena). Until T5 comes on stream, Heathrow's competitive position will inevitably worsen. BA believes that without additional capacity there will be a throttling of the short-haul network to provide slots for long-haul services. The result would be a reduced range of destinations served from Heathrow, not only short-haul but also long-haul, as some long-haul routes from Heathrow are only viable if augmented with transfer traffic. Thomas Cook said that domestic-international transfer traffic would be particularly vulnerable to congestion at Heathrow as the domestic leg contributes less then proportionately towards the costs of the whole journey.

5.21 bmi foresees the loss of feed traffic as limiting the long-haul routes which are feasible at Heathrow with a consequent loss to firms based in West London and the South East generally. bmi sees Heathrow as remaining a viable hub although it will never be a huge connecting complex like Chicago.

5.22 Virgin notes that the networks at each hub are not the same and have developed particular strengths, often for historical reasons. Heathrow not only has advantages in the US market but also to Commonwealth destinations whereas continental hubs have their own strong points.

The NFC impact on airports

5.23 According to Luton, NFCs provide airports with only half the yields of charters. Charter passengers spend more time in terminals and spend more on car parking than NFC passengers. They are more likely to be families with children and belong to social classes C1/C2/D/E. The NFC passengers at Luton tend to be A/B1s business-type passengers or independent travellers making on average five domestic and three international trips a year. NFC passengers who fly from Luton on business are quite likely to also use Luton for leisure trips.

5.24 The throughput at Luton has changed from being 75% charter to only 16% charter. The change in the social classes using Luton means that the airport has had to upgrade its bars and shops. These new passengers have high expectations and feel entitled to business lounges and air bridges and when these are not provided tend to blame the airport, not the airline.

Why do passengers choose an airport?

5.25 BA thinks that the main driver of airport choice is service availability. The growth of passenger traffic at Stansted, Gatwick and Luton is not an evidence of a change in consumer preferences away from Heathrow, but simply the result of the fact that decent frequencies and networks are now available from these airports. Heathrow benefits from its range and density of services and from the dense population surrounding it.

5.26 bmi cautioned that although Heathrow is becoming more attractive to passengers because fares have in general gone down, airport facilities also affect the choice of passengers and overcrowding at Heathrow and adverse publicity discourage some passengers. Improvements to road and rail access are crucial to obtaining the benefits which can be derived from any expansion in capacity there.

5.27 easyJet made a similar point to BA's. In the beginning passengers came to Luton from Southampton and Humberside but NFCs services are rather like supermarkets. No one drives past five supermarkets to use the sixth; people use the closest airport if they can. Similarly, as NFC services began at regional airports it was necessary for easyJet also to develop regional services. Luton believes that the development of regional NFCs has narrowed Luton's catchment area but it has not depressed Luton's traffic levels.

5.28 Ryanair thinks that both Stansted and Luton have a very large catchment area. It finds that people are prepared to travel a considerable distance to an airport if the fare is "right". However, Ryanair stressed the importance of surface access. It gave the example of Liverpool as an airport where a good road network facilitates passenger growth. In contrast, poor road links to Leeds/Bradford airport are one of the main impediments to its growth. According to Ryanair, most travellers living south of Leeds/Bradford Airport, for example in Huddersfield, choose to fly from Manchester, not because it is closer but because it offers easier road access. Another example of an airport with poor road access is Bristol Airport. However, Bristol Airport does not face as much competition as Leeds/Bradford and so poor road access is a less of a problem.

How do NFCs choose an airport?

5.29 MyTravelLite and Ryanair believe that, as far as NFC operations are concerned, the South East has a stronger potential for growth than the regions because there is far more inbound traffic on services from, say, Pisa to London than to Birmingham-Pisa.

5.30 bmi thinks that there is a "first mover advantage" in the low cost market. Hence, the NFCs are keen to set up bases at airports before the competition. For example, bmibaby moved into Manchester and Teesside partly because it was growing ahead of forecasts at the time, but also partly to pre-empt other NFCs from setting up operations at these two airports.

5.31 Luton said that the removal of duty free has completely changed the economics for airport operators and that in Europe the NFCs strike a hard bargain with airports, particularly those owned by local interests who see air links as generating local economic benefits.

5.32 Ryanair again emphasised the importance of good airport access and stated that it would consider operating from airports such as Manston in Kent if a high-speed rail service was available.

How settled are NFCs at regional airports?

5.33 BAA believes that NFCs are perhaps more settled in particular regions than at particular airports although there are exceptions such as Flybe at Southampton where it has a long history because of its Channel Islands services. MAG believes that although NFCs potentially have a lot of flexibility, bmibaby is likely to be committed to East Midlands because bmi's headquarters are there, the NFCs are likely to stay in Stansted if only because of the value of their slots, and easyJet is well established at Liverpool.

5.34 MAG, easyJet, Ryanair and Luton said that NFCs often enter long-term contracts at base airports. MAG speculated that there might be more volatility when two or more NFCs tried to use the same airport but easyJet believes that regional airports could accommodate two NFCs, but not on the same route. MyTravelLite agrees that regional routes are unlikely to be able to support more than one NFC over the long term, as margins are very tight.

5.35 easyJet noted that it has only abandoned one route so far, Liverpool-Luton, and Ryanair made a similar claim saying that the only route that it has dropped is Stansted-Rimini and this was because of a dispute with Rimini airport. Ryanair avoids pulling out of existing routes because it wants to preserve its credibility.

5.36 Ryanair thinks that airport operators should pay more attention to the needs of NFCs for an efficient airport infrastructure and that privately owned airports are more responsive to NFCs' needs. These airports have realised that there is a huge potential for revenue generation from commercial activities, and an airport such as Prestwick is prepared to cross-subsidise its aeronautical charges in order to attract more traffic.

Night Flights

5.37 Thomas Cook believes that the current regulatory restrictions are less of a problem for charters than they are for the traditional scheduled carriers. This would change if the night flights restrictions were imposed on airports other than Heathrow. Thomas Cook stressed the importance of night flights for charter operations. Whereas airlines at Heathrow may well be prepared to forego night flights as one of the conditions for a third runway there, charters would not countenance a night ban in exchange for a second runway at Gatwick as such a ban would undermine the economics of their operation.

6 - THE CAA'S VIEWS

6.1 The principal question on which the DfT asked for the CAA's advice s whether there is any reason to believe that recent developments are likely to have a significant effect on the long-term distribution of demand for air travel in the UK. In formulating its advice, the CAA has looked at two issues – first whether the volume of traffic expected in, say, 2030 is now likely to be different and second whether the make-up of that traffic and the type and location of airport infrastructure it would need can be expected to have changed.

The drivers of growth

6.2 Long-term aviation growth is driven by a number of fundamental influences, assumptions about which are implicitly or explicitly built into the DfT's current forecasting methodology. In the light of the discussions with the industry, the fundamental drivers of unconstrained long-term air traffic levels can be split into three groups. First, there are:

- The health of the UK and the global economy;
- The UK's attractiveness as a tourist destination;
- The globalisation of industry, capital and labour;
- Liberalisation of the air transport industry and competition;
- The substitutability of alternative modes.

6.3 The industry does not appear to feel that any of the above factors looked at over the long term is likely to have changed significantly in recent years. The CAA agrees with that assessment.

6.4 The second group of drivers are:

- Whether the effect of shocks is long-lasting;
- People's desire for travel.

6.5 The general industry view is that the effect of recent shocks should not be long-lasting and that there is still a strong desire for travel, although there was some disagreement about exactly what form demand would take. The CAA has analysed these issues in detail below.

6.6 The final group of drivers are more contentious:

- The cost base of the industry;
- The pricing and operational strategies of the industry;
- The implication of these strategies for the future of connecting flows given competition from hubs in mainland Europe and elsewhere.

6.7 These issues are also analysed below. However, before doing so there were some comments by BAA and Ryanair about the DfT's methodology itself and the use of its outputs in examining airport development options.

BAA's point on the methodology

6.8 BAA is clearly correct to point out the differences between the different traffic segments in terms of their commitment to using UK airports. However, the DfT model does take this into account. It uses different elasticities for different segments so that, when constraints bite and shadow prices increase, some segments are more easily deterred than others. The outcome is conceptually the same but both approaches require a careful description of the underlying assumptions when development options are analysed.

Ryanair's point on the methodology

6.9 Ryanair and Manchester pointed to the difficulty of forecasting NFC traffic at individual airports. It is difficult to disagree with this point but the DfT has recognised this and does not, as is suggested in Section 3, apply the traditional econometric forecasting approach to NFCs. The problems of forecasting are likely to primarily affect smaller airports with spare capacity and with catchment areas that might be termed immature. Ryanair used Prestwick as an example of an airport which has experienced rapid growth; it should also be noted if, for some reason Ryanair was to withdraw from Prestwick, then the traffic level at the airport could fall sharply since there is no obvious replacement airline with Ryanair's low cost base.

The effect of shocks

6.10 The industry believes that the demand for air travel historically has in overall terms been robust to external shocks. The CAA agrees with this view. Annex A describes a short study carried out by the CAA on the passenger demand at UK airports over the period 1960 to 2001. The analysis indicates that this series is "trend reverting", i.e. that shocks to air passenger traffic are largely transitory and should not require a revision of long-term forecasts. The exception is the 1974 shock, which is found to have had a long-term impact on air passenger traffic growth, primarily because it gave rise to a long-term adverse shift fuel prices and hence airline cost structures.

6.11 However, Annex A says nothing about the make-up and nature of the demand and much of the CAA's discussions with the industry were taken up with this issue and the possible changes in the nature of supply.

The desire for travel

6.12 In terms of the potential demand for air travel, the industry made a number of points about the scope for new sources of travel demand because of liberalisation, the development and expansion of the European Internal market, the effects of globalisation and the development of the vast potential of countries such as China.

6.13 In terms of passenger preferences, there appear to have been changes not only as a result of aviation liberalisation in Europe but also as a result of greater access to information technology. Many leisure passengers are now quite prepared to put together the different components of their journey in order to obtain a lower price or to obtain a product which is closer to their requirements. Some leisure passengers are seeking flexibility in terms of when they travel out and when they return while others are prepared to be directed towards off-peak flights to cut costs.

6.14 Business passengers appear overall to be more price conscious and many now use the NFC services (see Tables 1 and 2). Business traffic forms a higher share of easyJet's traffic than of Ryanair's traffic whereas foreign residents are more significant for Ryanair than easyJet. However, it should be noted that residents of the Irish Republic will count as foreign passengers in the Ryanair data which includes a number of UK-Irish Republic services.

Table 1 – easyJet passengers in 2001

	UK Business	*UK Leisure*	*Foreign Business*	*Foreign Leisure*	*Total*	*Business %*	*Foreign %*
London	1,117	2,271	318	801	4,506	32%	25%
Regions	1,137	1,677	71	214	3,098	39%	9%
Total	2,254	3,947	389	1,015	7,605	35%	18%

Source: *CAA OD survey 2001.*
Notes: *The table contains the data from the continuous survey at London and from a sample of UK regional airports. It is not a survey of all the routes flown by the airline. However, if there is a domestic route between two of the airports surveyed then the data shows the results at both ends of the route, i.e. such routes are double counted.*

Table 2 – Ryanair passengers in 2001

	UK Business	*UK Leisure*	*Foreign Business*	*Foreign Leisure*	*Total*	*Business %*	*Foreign %*
London	689	3,428	386	2,267	6,771	16%	39%
Regions	81	178	33	206	497	23%	48%
Total	770	3,606	419	2,473	7,268	16%	40%

Source: *CAA OD survey 2001.*
Notes: *See Table 1.*

6.15 Table 3 shows the NFC share of the different market segments on routes from London airports to major UK domestic and EU destinations. The traffic is split into local (end-to-end) passengers analysed by residence and journey purpose, and connectors, i.e. passengers who connect at London, at the other end of the route or at both ends. As might be expected, the NFC share is greatest for local leisure passengers and lowest for connecting passengers. However, the share of connectors on domestic routes is surprisingly high as is the NFC share of business on these routes and on Amsterdam and Dublin.

Table 3 – NFC share of London markets

	Amsterdam	*Dublin*	*Edinburgh*	*Frankfurt*	*Glasgow*	*Milan*	*Paris*
UK business	37%	34%	43%	31%	51%	13%	21%
UK leisure	54%	60%	58%	58%	69%	36%	35%
Foreign business	34%	34%	29%	20%	16%	10%	11%
Foreign leisure	43%	49%	51%	54%	58%	43%	19%
Connectors	11%	22%	22%	3%	18%	3%	3%
Total	33%	41%	41%	25%	46%	19%	14%

Source: *CAA OD survey 2002.*

6.16 However, the industry is split as to whether in the future all passengers will want unbundled products or whether significant segments of demand will still prefer a bundled product as provided by FSSs for complex journeys and FSCs for packaged holidays. In the CAA's view, it seems too strong a conclusion to draw that all passengers will wish to "do it themselves". This is much easier for experienced individual travellers with Internet availability and expertise and much more difficult for families and infrequent travellers. Passengers on short-haul journeys may well be prepared to arrange their own connecting journeys between high-frequency flights but, as noted above, connecting journeys in the UK tend to be from short-haul to long-haul and long-haul frequencies are often low. Transactions are less transparent where different currencies are involved as compared with the relative simplicity of travel within Euro land.

6.17 Given the heterogeneity of the demand for air travel, it may be more reasonable to conclude that there will in the future continue to be a diverse spectrum of passenger preferences; some wanting frills, some wanting packages, some prepared to incur search costs and make their own arrangements, others wanting flexibility. In any case, in the context of the overall forecasts, perhaps the most important point is whether passengers in the future are more or less likely to find a product which suits their needs, whatever those needs may be. The experience of liberalisation in Europe and of deregulation in the US indicates that liberalisation and competition produce a much wider range of price/quality options for the passenger[3] and there are substantial benefits when consumers can find products that better match their preferences.

Convergence of styles

6.18 It therefore also seems reasonable to conclude as liberalisation is extended airlines will increasingly need to try to develop viable products which match these changing needs. Although there is some evidence of a convergence of styles at present between the FSSs and the NFCs, this may be illusory given the radical difference in philosophy between the two sets of airlines (see below). As indicated earlier, there is no single NFC model; easyJet and Ryanair have developed quite different strategies for much of their operations, although there is clearly some market overlap.

6.19 Frequency plays a key role in defining what is possible as regards the product that a carrier can offer. Table 4 shows the top 20 most frequent charter services in 2002. Only six such services had 730 or more flights in the whole year, the equivalent of a daily service. However, even on these denser routes the flights are often not spread throughout the week but are concentrated on certain (bed-change) days.

[3] S.Borenstein & N.Rose (1994) "Competition and Price Dispersion in the U.S. Airline Industry". *Journal of Political Economy*, Vol. 102(4) 653-83.

Table 4 – Most frequent charter services in 2002

UK Airport	*Destination*	*Airline*	*Annual Flights*
Manchester	Palma	My Travel	900
Gatwick	Tenerife	Thomas Cook	887
Gatwick	Palma	Britannia	820
Gatwick	Malaga	Thomas Cook	787
Gatwick	Malaga	Monarch	741
Manchester	Tenerife	Thomas Cook	734
Gatwick	Palma	Air 2000	715
Manchester	Tenerife	My Travel	710
Manchester	Palma	Britannia	673
Manchester	Palma	Air 2000	577
Manchester	Alicante	Air 2000	564
Gatwick	Malaga	Air 2000	551
Gatwick	Tenerife	My Travel	540
Gatwick	Tenerife	Britannia	538
Manchester	Alicante	Britannia	519
Gatwick	Palma	Thomas Cook	510
Gatwick	Tenerife	Air 2000	509
Manchester	Tenerife	Britannia	507
Manchester	Tenerife	Air 2000	492
Gatwick	Faro	Air 2000	490

Source: CAA Annual Airport Sector Statistics, 2002.

6.20 In contrast, Table 5 shows the monthly departures of the NFCs on routes from their main bases. Very few routes are operated with less than a daily (30 departures a month) service and many are far more frequent.

6.21 A further feature of the charter product is its spread across UK airports. In 2002, Thomas Cook carried 5.2m passengers to and from UK airports but these passengers were spread across 12 UK airports and 68 overseas destinations. In all, Thomas Cook served 225 airport pairs[4] with its largest market being Gatwick-Tenerife with just over 200,000 passengers. 36% of its markets had between 1,000 and 10,000 passengers a year, 66% had fewer than 20,000 passengers a year, and 80% had fewer than 30,000 passengers a year. Thomas Cook's smallest aircraft, the A320, has 180 seats so even 30,000 passengers would require no more than a three times weekly summer service. So, the charter business model has been more one of offering focused capacity across a wide range of UK airports and destinations rather than one of offering a product based on frequency. One consequence has been the high share which regional airports have of the international charter market (64% in 2002 as compared with only 30% in 1973). The volume of international charter traffic at UK regional airports still outweighs the volume of international scheduled passengers (24.4m as compared with 20.3m in 2002).

[4] This data is taken from CAA Annual Airport Statistics, 2002. In the analysis a cut-off was judgementally imposed at 1,000 passengers in the year. All airport pairs with a passenger volume below this threshold were excluded as they may represent diversions and mis-reports rather than actual services.

Table 5 – NFC monthly departures in May 2003

	Ryanair Stansted		*Ryanair Dublin*		*easyJet Luton*		*easyJet Gatwick*
Dublin	354	London (STN)	354	Edinburgh	186	Edinburgh	134
Glasgow (PIK)	284	London (LTN)	146	Glasgow (GLA)	182	Belfast (Intl)	82
Shannon	120	London (LGW)	120	Belfast (Intl)	134	Inverness	30
Cork	91	Edinburgh	116	Aberdeen	52		
Londonderry	56	Liverpool	98	Inverness	38	Barcelona	94
Connaught	30	Leeds/Bradford	94			Amsterdam	90
Kerry County	30	Manchester	87	Amsterdam	164	Geneva	90
Newquay	30	Glasgow (PIK)	87	Paris (CDG)	142	Malaga	64
		Birmingham	86	Barcelona	120	Alicante	60
Frankfurt (Hahn)	168	Bristol	82	Nice	120	Palma	60
Rome (Ciampino)	120	Newcastle	60	Geneva	116	Zurich	60
Bergamo	116	Teesside	30	Malaga	84	Athens	30
Brussels (Charleroi)	112	Cardiff	30	Zurich	82	Madrid	30
Stockholm (Skavsta)	90	Bournemouth	30	Athens	60	Nice	30
Venice (TSF)	90	Aberdeen	30	Madrid	60		
Florence (Pisa)	60			Palma	54		
Genoa	60	Brussels (Charleroi)	98	Faro	8		
Gerona	60	Paris (Beauvais)	96				
Salzburg	60	Malaga	6				
Strasbourg	60	Faro	4				
Turin	60	Perpignan	2				
Aarhus	56	Gerona	2				
Gothenburg (Saeve)	56	Toulouse	1				
Stockholm (Vasteras)	56						
Hamburg	52						
Malmo	52						
Oslo (Torp)	52						
Alghero	30						
Ancona	30						
Biarritz	30						
Brescia	30						
Carcassonne	30						
Esbjerg	30						
Forli	30						
Friedrichshafen	30						
Graz	30						
Klagenfurt	30						
Montpellier	30						
Nimes	30						
Perpignan	30						
Pescara	30						
St. Etienne	30						
Trieste	30						
Eindhoven	29						
Dinard	3						
Haugesund	1						
Maastricht	1						
Pau	1						
Reims	1						

Source: OAG database of BACK Information Services.

6.22 It will therefore be difficult for charter airlines to offer a product which allows passengers flexibility in their choice of outbound and return days of travel unless they can both increase their frequency and spread it across the days of the week. This implies either a major change to their business model or a significant extension of their seat-only activities and perhaps may only be possible on the denser routes.

The industry cost base

6.23 Historically, unit costs in air transport have fallen steadily in real terms, principally as a result of technological improvements and the increasing ability to exploit economies of density as markets have grown. In its May 2000 forecasts the DfT indicated that fares have fallen in real terms by 2% a year on average over the last 20 to 30 years. Leaving aside the issues of the taxation of aviation and the imposition of environmental charges[5], the costbase of the industry can be expected to fall in the future because of further technological gains and the effects of liberalisation and competition.

6.24 Liberalisation is likely to lower the costbase of the industry by creating pressures for more efficient operations and, in the extreme, driving out inefficient capacity. At present, the costbase on the liberalised short-haul routes is falling because NFCs are taking a larger share of the market and FSSs are being obliged to address the efficiency of their short-haul operations as a result of competition generally, of competition from NFCs in particular, and inadequate levels of overall profitability.

6.25 Set against these positive factors is the possibility that technological cost improvements may be lower in the future as a result of maturity in the manufacturing process and, possibly, of an increased emphasis on the reduction of the environmental impact of aviation. Accordingly, the DfT central case forecast assumes that the average decline in real fares even with a greater intensity of competition will be lower than the historic rate mainly as a result of a reduction in the rate of technological gains.

Short-haul markets

Are NFCs approaching saturation on short-haul routes to/from the UK?

6.26 Although there are differences of emphasis within the industry, the general impression was that the NFC growth to and from the UK may slacken off in the near future with more of their expansion taking place within mainland Europe. Annex B examines the way in which UK-Irish Republic traffic has grown in recent years. It suggests that the main changes to the overall market which were generated by NFC entry took place over a period of seven years or so, that the market is now mature, and that the long-term level of stimulation may be in the order of a 30% increase in the market size but the short-term stimulatory effect may in proportionate terms be much higher. Annex B also indicates that the NFC share of the UK-Irish Republic traffic is still increasing even though the market appears mature. So, more generally, NFC growth will, to some extent, depend on whether the FSSs and FSCs can maintain their short-haul operations. However, if they are obliged to cut back, this may lead to further NFC growth but as a result of substitution rather than stimulation, so not affecting the overall

[5] In its May 2000 forecasts these issues are treated by the DfT as adjustments to the basic unconstrained forecasts and it is the unconstrained forecasts which are considered in this paper.

level of demand. The overall demand is more likely to be influenced by the aggregate level of costs in the industry, irrespective of which carriers provide the services. This argument also suggests that the issue of whether offshoots can or cannot be successful is not of any great relevance to the overall volume of demand.

6.27 It seems likely that the downward pressure on short-haul costs from competition will be greater than the historic average, particularly over the next few years. In terms of cost per passenger as opposed to cost per seat, this effect is likely to be reinforced by an increase in the seat factors of FSSs on short-haul routes. Table 6 illustrates that FSS seat factors on short-haul routes have historically lagged far behind those of NFCs and, particularly, FSCs. They have also been much lower than FSS seat factors on long-haul routes. There has been an increase in FSS short-haul seat factors in 2002, presumably as a result of the introduction of new "NFC-type" fares in the Economy cabin. However, there is still a considerable gap in seat factor to be bridged.

Table 6 – Seat factors on UK airlines

		1996	1997	1998	1999	2000	2001	2002
BA	Domestic	65%	66%	64%	60%	64%	62%	67%
Bmi	Domestic	66%	67%	61%	60%	63%	60%	63%
EasyJet	Domestic	64%	66%	67%	76%	78%	78%	78%
BA	EEA	69%	68%	66%	65%	64%	62%	68%
Bmi	EEA	62%	66%	66%	64%	61%	56%	62%
EasyJet	EEA	64%	58%	70%	79%	81%	82%	81%
BA	Other Int.	74%	73%	72%	72%	73%	71%	74%
Virgin	Other Int.	80%	79%	79%	77%	79%	75%	81%
Charters	EEA	90%	91%	90%	90%	90%	90%	91%

Source: *CAA UK Airline Statistics.*
Notes: *"EEA" indicates all international routes within the EEA.*
"Other Int." indicates all international routes outside the EEA.

Long-haul markets

6.28 Aircraft technology may allow long-haul markets to be served with smaller aircraft that have competitive unit costs. However, the industry sees the strategy of dedicated small business jets serving long-haul business markets as only being viable in a limited number of cases. Table 7 compares the size of long-haul markets with short-haul markets and bears out BA's contention that, with the exception of a few markets such as Heathrow-JFK, long-haul markets are thinner than short-haul markets.

Table 7 – Short-haul and long-haul scheduled markets at London by size

OD pax in 000s	*Domestic*	*Short Haul*	*Long Haul*	*Total*
More than 2,000	1	2	0	3
1,000 to 2,000	2	7	1	10
750 to 1000	1	5	4	10
500 to 750	1	8	6	15
250 to 500	4	19	13	36
100 to 250	6	32	27	65
50 to 100	1	30	37	68
up to 50	14	257	602	873
Total	*30*	*360*	*690*	*1080*

Source: *CAA OD survey 2001.*

Notes: *In the table a market is defined as an OD market between London and an airport in the UK or overseas. Except for London where all the airports are treated as one, airports in the same city have been counted separately. This will cause the number of markets to be overstated slightly as compared with a city-pair market definition. Only passengers who start their air journey at London are considered. They are then classified by the airport from which they ended their air journey, whether flying directly or indirectly. For example, a passenger starting in London who flies to Amsterdam to connect with a flight to Atlanta is classified as a London-Atlanta passenger. A passenger who flies Aberdeen-Heathrow-New York is excluded.*

6.29 Thus, long-haul routes are more dependent on feed traffic, especially since long-haul aircraft are, on the whole, larger than short-haul aircraft. Table 8 shows the breakdown of traffic on US routes from Manchester in 2001 and shows that, with two exceptions, less than 40% of passengers are local and that the routes are to a US hub. The exceptions are New York, the densest long-haul market from the UK, and Orlando, a heavily UK-originating leisure destination, both of which are operated by UK airlines.

Table 8 – Traffic on Manchester-US routes

	Local	*Connecting at*			
	(End-to-End)	*Manchester*	*US airport*	*Both ends*	*Total*
Atlanta	12%	0%	88%	1%	100%
Chicago	19%	3%	70%	8%	100%
Newark	38%	0%	61%	1%	100%
Philadelphia	19%	6%	74%	1%	100%
Washington	34%	1%	63%	2%	100%
JFK	63%	31%	3%	4%	100%
Orlando	97%	2%	1%	0%	100%

Source: *CAA OD survey 2001 at Manchester.*

Will NFCs enter long haul routes?

6.30 Liberalisation on long-haul routes will allow entry by NFCs but the industry pointed out a number of (mainly supply-side) differences between long-haul operations and short-haul operations which may make profitable entry by NFCs more difficult than on short-haul routes.

6.31 There may be differences on the demand side too. With a few exceptions such as New York and Boston, people may be less inclined to want short-stay, city-break holidays. Impulse purchases may be less likely given the higher cost. Flexibility for longer stays is already catered for to some extent. Passengers may be less inclined to make speculative purchases; on short-haul routes people might buy several cheap tickets with the intention of only using one of them. Many short-haul routes are fairly evenly balanced between originating markets although some are dominated by UK-originating traffic. Long-haul routes tend to vary more; the bulk of passengers on UK-Japan routes originate in Japan and often visit the UK as one of several countries included in a European tour.

6.32 It would therefore appear:

- The NFC business model is not directly transferable to long-haul routes;
- It is, however, possible that a low cost model applicable to long-haul routes will be developed;
- But markets are thinner and the nature of demand may also make it less prone to stimulation;
- The cost advantage of a low cost long-haul product over FSSs will be less than that of NFCs over FSSs on short-haul routes.

6.33 In the CAA's view, it would seem reasonable therefore to conclude that low-cost long-haul models may well be developed but may only be viable on specific routes and the stimulatory effect is likely to be far less than on short haul.

6.34 The above analysis suggests that the entry of NFCs, dedicated business aircraft and the use of smaller aircraft are unlikely to alter significantly the overall characteristics of the long-haul market. There would therefore seem to be strength in the argument that, in an unconstrained world, long-haul services will tend to cluster at those airports which have strong catchment areas and which can provide adequate feed. The clear desire of those US carriers that are presently restricted to serve Gatwick to switch to Heathrow when the UK-US bilateral is liberalised supports this argument.

6.35 Although the analysis above suggests that the impact of NFCs on long-haul routes is likely to be much more limited than on short-haul routes, the historic data on which the long-haul forecasts are based relate to an era of tight regulation and it is therefore likely that liberalisation of long-haul routes will give a spur to a reduction in the long-haul costbase.

Connecting markets

6.36 Table 9 shows the connecting flows between different types of service at London airports in 2000. For example, the table indicates that 2.6m passengers connected from a long-haul flight to a domestic flight while 2.4m passengers flew into London on a domestic service in order to travel to a long-haul destination.

Table 9 – Connecting flows at London in 2000

From \ *To*	*Domestic*	*Long Haul*	*Short Haul*	*Total*
Domestic	96,299	2,318,246	2,000,170	4,414,715
Long Haul	2,598,682	3,035,554	7,540,594	13,174,829
Short Haul	1,761,745	6,902,453	2,330,686	10,994,885
Total	4,456,726	12,256,253	11,871,449	28,584,429

Source: *CAA OD survey 2000 at Heathrow, Gatwick, Stansted, Luton, and London City.*
Notes: *The definition of short-haul in this analysis follows as closely as possible the AEA definition.*

6.37 The table indicates that nearly 80% of the connecting flows involved a long-haul flight on either the inbound or the outbound sector or on both supporting BA's assertion that the future of connecting markets at London depends heavily on the way long-haul services develop.

6.38 The analysis of the long-haul market above suggests that passengers in smaller long-haul OD markets are unlikely to have adequate direct services available and will still need to connect. As was noted in Section 4, even the advocates of a point-to-point approach accept this and the argument is more about the way the industry copes with connecting passengers.

Price/quality options

6.39 As BA has indicated, cost reductions can only be considered in a meaningful way when they are set against changes to the quality of the product and hence changes in the value passengers attach to the product. Price and cost changes are normally viewed by examining the average yield (pence per RPK) and average costs (pence per ASK) across the industry. However, given the extent to which price differentiation or discrimination is practised in air transport, a given average yield can arise in a variety of ways, all with different associated traffic volumes. An airline which sets a fixed price for every fare will generate a far smaller traffic volume than one which sets higher fares to its more price-inelastic passengers and a lower one to its more price-elastic passengers even if the average fare is the same.

6.40 One of the effects of US deregulation in moving from very rigidly regulated prices to pricing freedom was a considerable increase in the dispersion of fares and a consequent (and broadly one-off) step-up in demand. There is less scope for such stimulation in the UK because the dispersion of fares in UK markets, both short-haul and long-haul, has historically been much higher than in the pre-deregulation US. Nevertheless, even though NFCs are likely to have exploited much of the short-haul scope already, there are still entry opportunities for NFCs in some short-haul markets as well as the potential for more competition on long-haul routes.

Pricing and operational strategies

6.41 There is a plausible case that aviation has developed under institutional arrangements and government interventions that have prevented its natural development and that liberalisation is necessary to allow the industry to be shaped instead by its underlying economic characteristics. This is certainly the view of easyJet which regards the "network approach" of what are termed "legacy" airlines as rooted in

this historic institutional framework and sees the network approach as inappropriate and irrational in a liberalised market.

The development of hub-and-spoke networks

6.42 The point which easyJet makes about network airlines is an extremely interesting one and before analysing the point in more detail, it is perhaps useful to set it in its historical context. International airlines have been broadly confined by bilateral agreements to operations to and from their home states and in some cases their home governments have imposed explicit or implicit social obligations, often reflecting colonial links, past and present. Airlines developed wide, perhaps over-extended, networks in an industry which was far from mature and where inter-airline cooperation through IATA was deemed appropriate in order to provide services on thin routes where possible and to provide convenient connections to passengers in markets where direct service was not viable. The "hub-and-spokes" system developed internationally long before its adoption by US majors in the US domestic market. However, the US carriers greatly refined the concept and, in turn, their wave system with banks of flights has been copied by international airlines such as KLM.

6.43 In addition, the IATA system of fare setting created a global mesh of fares for through-journeys involving multiple airlines. These created clear non-price benefits for the passenger such as a single transaction covering a number of fares set indifferent currencies and baggage transfers. The fare level for a though-journey is at less than sum-of-sector levels. As markets have become more competitive, single-carrier fares have undercut, often significantly, both the IATA levels and the sum-of-sectors levels.

6.44 The picture is similar in the US. Before deregulation the CAB set US domestic fares by a distance-related, cost-based formulae with the fares for short sectors above costs and those for longer sectors below cost. Many assumed that deregulation would tend to reduce long distance fares and to increase short-haul fares but that fares in different city-pairs of the same distance would start to diverge depending on the intensity of competition with fares on the denser routes falling relative to those in thinner markets. Although these expectations were broadly met the adoption of hub-and-spoke systems brought an apparently paradoxical result with the fares in small spoke cities often being below those in the dense hub markets. Where a small city is linked by different airlines to their respective hubs, the competition for feed traffic is often intense whereas the hub markets are often dominated by the hubbing airline.

6.45 Connecting flows are composed of a number of different types of passenger. Some have journeys where there is no direct service available, others could use a direct service but prefer a connection because the benefits of a higher frequency and flight timings outweigh the inconvenience of connecting, others are tempted by a lower price. For airlines, connecting flows offer the chance of wider price discrimination, perhaps to fill excess or off-peak hub capacity and of lowering their dependence on their home market.

6.46 Network airlines believe that their approach enables them to strengthen the flows on all their spoke routes, thereby reducing unit costs because of higher seat factors, larger aircraft and higher frequencies. In stark contrast, easyJet's view is essentially that these economies of scope and route density are far outweighed by the economies of simplicity offered by the NFC approach. EasyJet sees producers like itself who focus on

doing one thing well having a competitive advantage over those who try to do many things, via vertical integration on the tour operator side and by horizontal integration by network carriers.

The network and point-to-point approaches

6.47 The case against the viability of the network approach principally argued by easyJet has a number of strands. First, it raises costs. Second, it lowers revenues. Third, it weakens management's ability to make rational decisions about which routes should be operated.

6.48 The increase in costs is caused by a reduction in aircraft utilisation because of the need to synchronise inbound and outbound flights, by the costs of the infrastructure needed to support transfers, such as baggage systems, reservation systems, complex pricing systems including through-ticketing, revenue accounting systems, and by the network carrier bearing the risk when connections are missed.

6.49 Pro-ration is a device for dividing revenue between the sectors flown by the passenger whether the connecting passenger is travelling on the services of one airline or on a number of airlines. Because through fares are normally set below sum-of-sector levels, the yield from a connecting passenger pro-rated to a single sector of the journey will, all other things equal, be far less than that for a point-to-point passenger on the sector. As Virgin put it, airlines will always prefer to carry point-to-point passengers rather than connecting passengers if they can.

6.50 For a network airline much of its revenue and of its costs cannot be attributed to a specific route, i.e. they are common costs, and the normal method of calculating route profitability becomes somewhat meaningless. However, it is possible to calculate the incremental effects to the network of adding or removing a route although this calculation is fraught with difficulty because a new spoke route generally produces a small number of connectors for all the other routes in the network. There is therefore the danger of comparing all the revenue which the new spoke produces against the costs of the new spoke and not making allowance for long-run incremental cost of the capacity occupied by the passenger journeys generated on all the other spokes.

6.51 Some of these arguments appear more directly applicable to a connecting hub of the US type and to airlines which attempt to build up networks based on relatively low levels of local demand. In the first case the networks are, perhaps, overly complex and, in the second case, there are not enough local passengers prepared to pay the price of higher frequencies and a wider choice of destinations offered at the hub.

6.52 It could also be argued that the network approach is presently constrained by the present restrictions concerning ownership and control and the remaining limitations on market entry. FSSs have sought to extend their networks through alliances but full liberalisation would allow carriers to merge with potential gains both in terms of cost reductions and in creating more effective and comprehensive networks.

6.53 It is unclear whether the network philosophy is the principal cause of the large losses which FSSs such as BA have suffered on short-haul routes in recent years. It does not, for example, appear from airline schedules that BA schedules its short-haul flights around its long-haul flights. It would probably be difficult to do so in any case at

Heathrow given the congestion there and BA's relatively low share. There may be other causes such as scheduling flights for the needs of the business market and for delays at congested airports.

6.54 Nevertheless, it does seem likely that the network approach may have lead to higher, hidden, organisational costs.

The implications of a point-to-point approach

6.55 If the network model is fundamentally flawed, FSSs will need to move to a philosophy which is "sector" based rather than "journey" based. A sector is a single non-stop flight but whereas a network carrier defines its product in terms of combinations of sectors which enable the passenger to make complex journeys, a point-to-point airline sees its routes as independent and will define its product purely in terms of travel on a given sector. This would seem such a change in mindset that it is difficult to envisage efficient intermediate models.

6.56 The change would perhaps be most obviously seen in the FSS pricing systems and would result in an enormous simplification. Currently a large network carrier's system will contain millions of fares, the size of the database reflecting the number of possible journeys that can be made by combining not only its sectors but those of alliance partners and, through the IATA system, those of non-aligned airlines. Some of these fares may be used by one passenger a year or never whereas others are used by thousands of passengers.

6.57 In a point-to-point world the price of a connecting journey would become the sum of the prices for the sectors flown and the airline would only be concerned about the fares on each of the sectors which it operates. The passenger would buy two tickets and would be responsible for the transfer arrangements.[6] If there are substantial costs to be saved by abandoning the network approach, then sector fares should fall. Nevertheless, it is likely that the price of connecting journeys will rise and certainly the perceived cost to the connecting passenger as regards the convenience and risk of the journey will increase because the airline will no longer take responsibility for transfer arrangements. It may be, as some have suggested, that third parties will step in to provide a service to facilitate connecting journeys although that would only seem possible at airports where there is a sufficient density of connecting traffic.

6.58 An increase in the cost and inconvenience of connecting journeys should make direct services on thinner routes more viable. Regional airports have in the past complained that business passengers prefer to travel via London rather than support their local direct services. However, there are many city-pair OD markets which are, for the foreseeable future, unlikely to be able to sustain direct services of a meaningful frequency. This applies particularly to long-haul markets. So the global volume of passengers needing a connection may decline relative to the volume of passengers for

[6] As noted by the industry, there is evidence that passengers are prepared to connect on this basis. According to the CAA OD survey, the connecting proportion at Stansted and Luton, airports dominated by NFCS, has risen substantially. In 2000 the proportion was only 5% at both airports (and indeed, as is shown in Table 10, had been even lower in earlier years) but by 2002 the proportion had increased to 10% at Stansted and 9% at Luton.

whom a direct service is available, partly because some demand is suppressed by higher costs and partly because more direct services are viable. But the demand for connections is unlikely to disappear although it may become even more oriented to journeys involving a long-haul component.

6.59 On the other hand, local demand around hubs will be stimulated as the reduced costs of the network carriers flow through into lower fares.

6.60 So, the point-to-point logic advocated by easyJet implies a world where the air services at an airport essentially reflect the strength of its underlying catchment area for local travel and where connections are chosen by the frequency and strength of competition at the alternative connecting airports. Globally this implies that hubs based on low local demand will tend to decline in importance while those with strong local demand will grow.

6.61 London has a strong catchment area compared with its main European rivals as is illustrated in Table 10 which shows the estimated throughput in 1997 of local traffic at each city's airports, i.e. the passengers who travel to and from the airport by surface. Local traffic at London totalled about 80 million passengers, 60% or so higher than the 50 million local passengers at Paris while Paris is about twice the size of Frankfurt and Amsterdam. The traffic totals at each airport include domestic as well as international passengers and the breakdown of the local traffic into these two categories is not available. However, if only passengers travelling on international flights could be considered, Amsterdam would be appear somewhat stronger but the clear dominance of London would remain.

Table 10 – Catchment area size of major EU cities in 1997

	Total Terminal Passengers (m)	*Connecting Proportion*	*Local Passengers (m)*
Heathrow	62.3	32%	42.4
Gatwick	30.6	20%	24.5
Stansted	9.4	4%	9.0
Luton	3.2	2%	3.1
London Total			*79.0*
Paris CDG	43.6	38%	27.0
Orly	25.3	16%	21.3
Paris Total			*48.3*
Frankfurt	45.9	47%	24.3
Amsterdam	37.1	42%	21.5

Sources: COFAR report on "Airport City and Regional Embeddedness", 2001, CAA OD survey 1996, and UK Airport Statistics 1997. Although some data is available for later years, it is not complete.

Notes: The connecting proportions for Stansted and Luton in 1997 are not available and figures for 1996 are used in the table. Frankfurt does not include data for Hahn airport.

6.62 Indeed, in terms of international travel, London as a city may have the strongest local catchment area in the world. Table 10, CAA survey evidence, and the preferences of long-haul airlines also indicate that, of the London airports, Heathrow has by far the

strongest catchment area, in particular with regard to long-haul demand. So, in an unconstrained and point-to-point world, London should be able to capture a much larger share of the, albeit smaller, global connecting market. Arguably, there is therefore a stronger economic case for London being a global hub in a point-to-point world serving many long-haul and short-haul destinations at high frequency than in a network world where the size of hubs is derived more from the strategy of the airlines based there.

The CAA's conclusions

6.63 Traffic through UK airports can be split into two categories: local passengers who start or end their air journey in the UK; and transfer passengers who use UK airports, primarily, Heathrow as a connecting point.

6.64 The general feeling in the industry is that despite the severe problems which it has recently faced that the local demand for air travel to and from the UK will resume its long-term upward trend. Indeed, they have pointed new sources of demand. The CAA agrees with this assessment.

6.65 Naturally, the industry has different views as to which airline business models will prove most successful in the longer term and who will meet this demand. How these issues will resolve themselves is unknown but, from the viewpoint of overall demand, the competition between the different airlines is more likely to stimulate demand than to suppress it. These structural changes are, in part at least, a result of liberalisation and there is general agreement that further liberalisation is likely to act as a further spur to growth. Again, the CAA would agree with this assessment.

6.66 To the extent that demand for airport capacity is affected by changes to the structure of the industry, it would seem likely that such changes will impact particularly on smaller, less mature, airports so there needs to be caution in interpreting the overall forecasts at these airports. However, moves towards a point-to-point approach should mean generally that the network at an airport more closely reflects the strength of the local catchment area, a concept which is a central building block of the DfT's model.

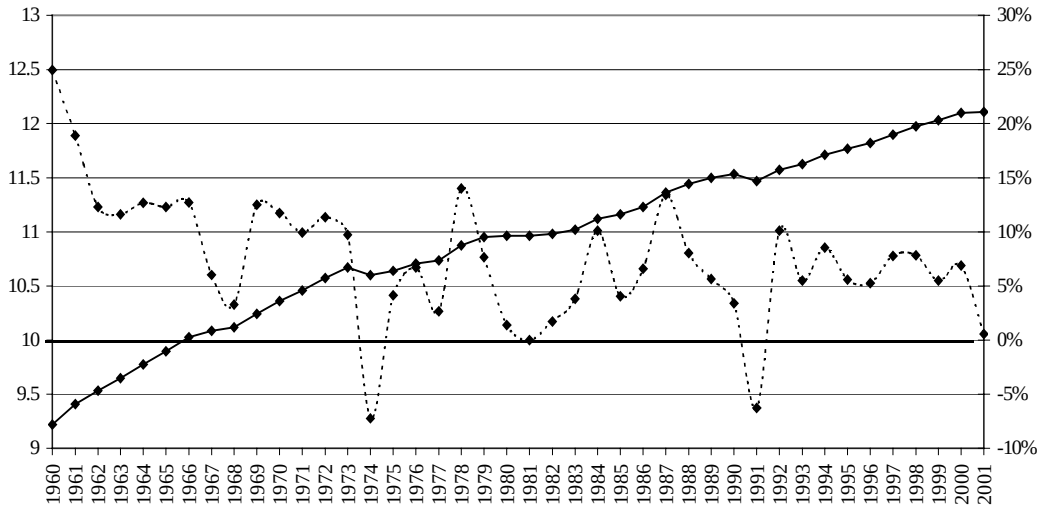
6.67 As regards traffic connecting through the UK, there is a clear division as to how this will be handled in the future – via the network model or via the point-to-point model. The current pattern of airport traffic in the UK is shaped to some extent by the network model, especially at Heathrow, and this is bound to influence forecasts based on current and historic flows. However, if the network model is unsustainable, the CAA's analysis suggests that the logic of a point-to-point approach in an unconstrained world would point to London, and Heathrow in particular, being more rather than less attractive as a connecting point.

ANNEX A - EFFECT OF SHOCKS ON PASSENGER TRAFFIC AT UK AIRPORTS

1 This annex is concerned with the effects of shocks on passenger traffic at UK airports. It starts by describing the general characteristics of the shocks before reporting the empirical results of the econometric analysis which the CAA has conducted in order to determine whether the effects of shocks are largely permanent or transitory.

2 Figure A1 below plots the total annual number of terminal passengers at the UK airports between 1960 and 2001.

Figure A1 - Total UK Annual Passengers Numbers, Logarithm (solid line, left-hand scale) and Growth Rates (dashed line, right-hand scale), 1960 to 2001



Source: CAA Annual Airport Statistics.

3 The main feature of the data is persistent long term growth. But, as the large fluctuations make it clear, this growth has been far from steady.

4 Table A1 below identifies and characterizes some of the larger fluctuations seen in Figure A1[7].

[7] The recession dates for the UK were taken from C. Dow (1998) "Major Recessions: Britain and the World, 1920 – 1995". *Oxford: Oxford University Press.*

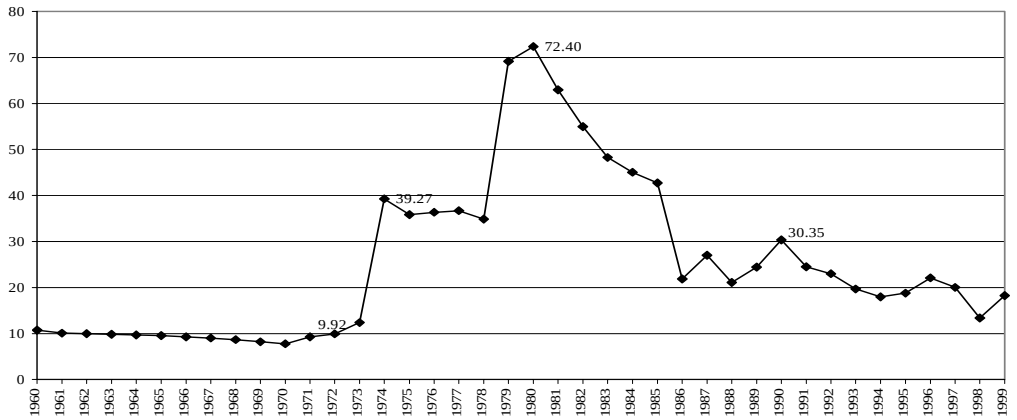
Table A1 - Major Fluctuations in Air Passenger Traffic at UK Airports since 1960

Year	Annual change	Shock	Source of Shock: Demand – Economy	Source of Shock: Demand – "Consumer Perception"	Source of Shock: Supply – Airline costs
1968	3.1%	The Six-Day War in the Middle East in 1967 and the 1967/68 foot-and-mouth epidemic in the UK.		√	
1974	-7.3%	The 1973 oil price shock and the subsequent worldwide economic recession (1973/1975 in the UK).	√		√
1980	0%	The 1979/82 economic recession in the UK.	√		√
1985	4.2%	Terrorist incidents in 1985: Downing of Air India flight 182 (329 dead); Simultaneous attacks on Vienna (2 dead and 37 wounded) and Rome (16 deaths and 73 wounded) airports; Hijacking of the Achille Lauro cruise ship (1 dead).		√	
1991	-6.7%	The 1989/93 economic recessions in the UK, the 1990 oil price shock and the 1991 Gulf War.	√	√	√
2001	0.8%	September 11 terrorist incidents in the US.		√	

5 Only two out of the six identified shocks have actually caused passenger traffic to contract on an annual basis – others reduced its growth below historic rates. The larger of the two contractions – a 7.2% fall on the previous year – occurred in 1974. It followed the 1973 oil price shock which pushed up inflation and sent most industrial countries, including the UK, into an economic tailspin.

6 Like the 1974 shock, the 1991 contraction is also associated with an economic recession and an oil price shock, the latter being caused by the Gulf War. However, while the oil price shock following Iraq's invasion of Kuwait produced a temporary spike in 1990 that lasted about 6 months, the effect of the 1973 oil price shock was to cause a permanent upward shift in oil and, therefore, jet fuel prices, as can be seen in Figure A2.

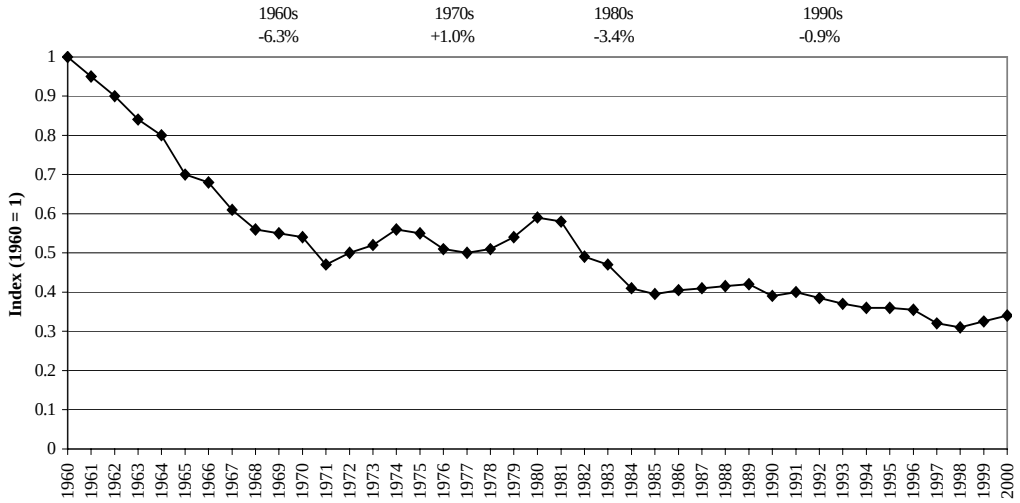
Figure A2 - Real Oil Price Levels (U.S. Dollars per barrel) 1960 to 1999



Source: U.S. Department of Energy.

7 The adverse effect of the 1970s shift in oil prices on airline costs can be seen in Figure A3 below.

Figure A3 - World Airline Operating Costs (Real Terms per Available Seat Km), 1960 to 2000



Source: University of Westminster from Boeing and ICAO.

8 Airline unit operating costs fell in real terms by about 6.5% on an annualised basis between 1960 and 1970. The effect of higher oil prices in the 1970s was to reverse this trend. The unit cots rose during the 1970s by about 1% on an annualised basis, before falling again throughout the 1980s and much of the 1990s, albeit at a much modest rate than during the 1960s.

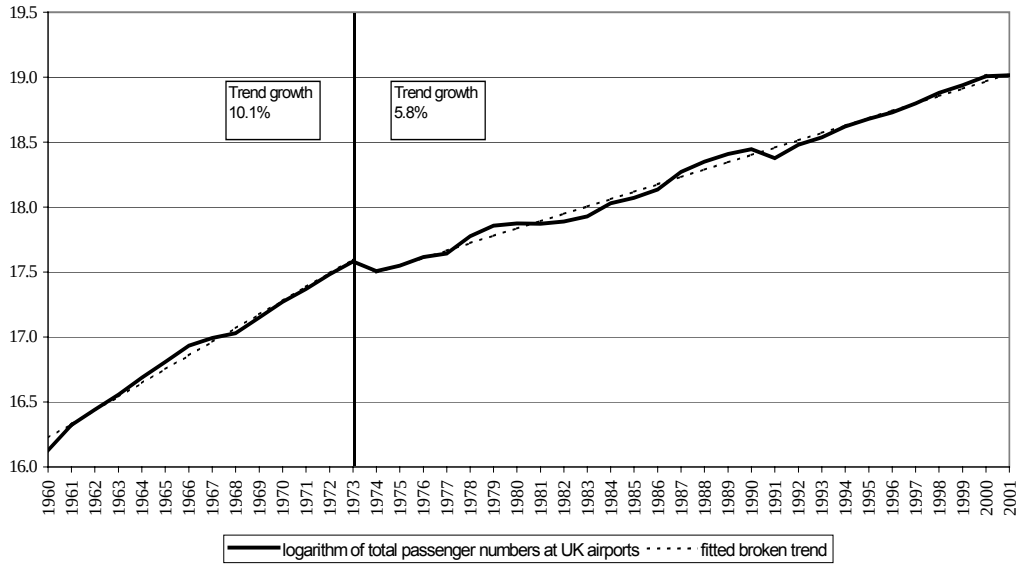
9 The CAA has carried out the econometric analysis of the trend properties of the passenger traffic series shown in Figure 1[8]. Specifically, it used the Zivot and Andrews (1992)[9] sequential break unit root test in order to determine whether the series in question is a) trend stationary process in which case the effects of shocks would be largely transitory, or b) difference stationary process under which the effects of shocks are permanent.

10 The test results indicated that the series can be adequately represented as a trend stationary process with one time break in the trend function dated to 1974. This implies that with the exception of the 1974 shocks the effects of all other fluctuations, including the 1991, were transitory. The effect of the permanent shock in 1974 on the time path of passenger traffic was estimated by fitting the broken-trend function to the data as shown in Figure A4.

[8] The technical paper which contains detailed analysis is available from the CAA on request.

[9] E. Zivot and D. Andrews (1992) "Further Evidence of the Great Crash, The Oil-price Shock and the Unit Root Hypothesis". *Journal of Business and Economics Statistics*, 10, 251 – 270.

Figure A4 - Comparison of Pre-break and Post-break Path, 1960 to 2001



Source: CAA Annual Airport Statistics.

11 The model indicated that from 1960 to 1973 passenger traffic grew at an annualised rate of 10.1%, and it slowed to 5.8% thereafter. The model estimates were used to conduct an impulse response analysis[10], which simulated dynamic effect of a typical shock to passenger traffic. The results suggested that a typical shock had an effect that lasted about 4 years after which the series returned to its long-term trend.

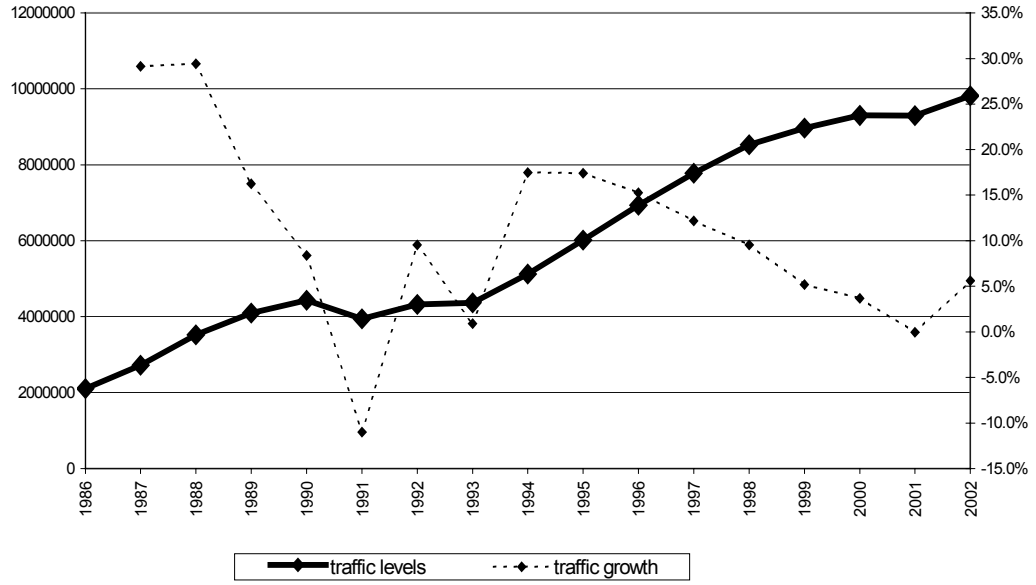
12 Based on historic data it would therefore appear that that shocks to passenger traffic in general did not merit revision of forecasts over a long horizon.

[10] The impulse response analysis is a conceptual experiment in which the profile of a shock hitting a series at time t is compared at time $t + k$ with a base-line profile where no shocks occur at time t.

ANNEX B - THE UK – IRISH REPUBLIC AIR MARKET

1 The only European market that enables a longer term study of maturation in NFC traffic is that between the UK and the Irish Republic. Ryanair has been operating in this market since 1985 although it was only after the restructuring in 1991 that it assumed characteristics of an NFC. Figure B1 below presents movements in total passenger traffic in this market between 1986 and 2002.

Figure B1 - Total UK - Irish Republic Traffic, Levels (solid line, left-hand scale) and Growth Rates (dashed line, right-hand scale), 1980 to 2002



Source: CAA Annual Airport Statistics.

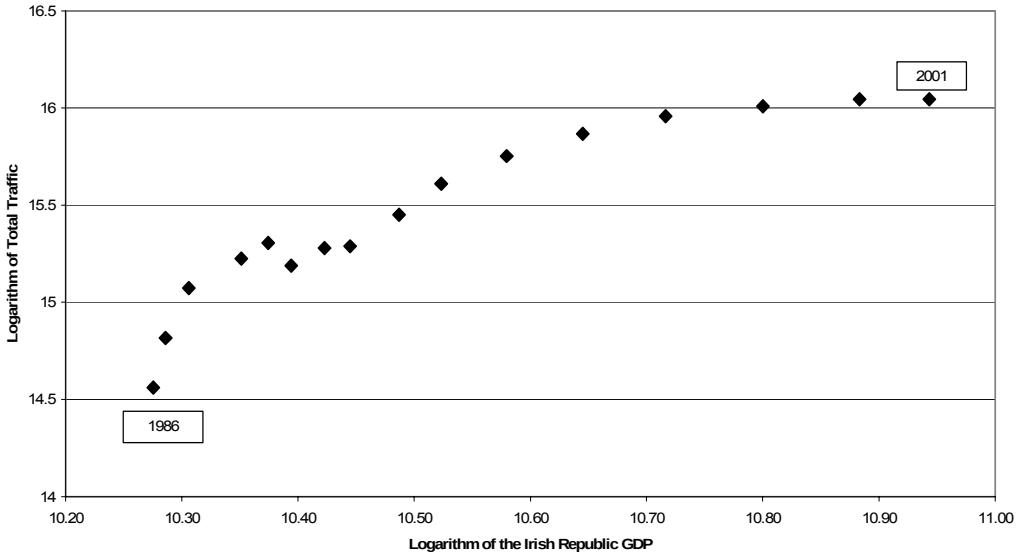
2 Visually, the post-1990 data exhibits a classical pattern of an S-curve: initial slow growth is followed by rapid gains and then a slowdown. The growth peaked at 17.5% in 1994 and has been declining since with the exception of 2002 when the traffic rose on the year before. The fact that traffic level in 2001 is lower than in 2000 does not necessarily imply that the market has reached "full" saturation, as negative growth in 2001 can partly be attributed to the September 11 effect. Nonetheless, the overall impression from looking at Figure B1 is that maturation, if not already set in, is not a long way off.

3 Traffic growth is influenced by a number of factors, including GDP, fares and the availability of alternative modes of transport (e.g. ferries). Of these, GDP growth is considered to be the most important and as such should be taken into consideration when investigating market maturation. Otherwise business cycle induced short-term fluctuations in traffic could be interpreted as signs of maturation, or lack of it, depending on the direction in which the economy is moving. For example, notwithstanding the

effect of the Gulf War on consumer confidence, a lower traffic growth in the early 1990s was due to a general economic slowdown rather then market maturity.

4 Figure B2 below, which controls for the "GDP" effect, reinforces the "maturity" message conveyed by Figure B1[11].

Figure B2 - Scatter Plot of Logarithm of Total UK – Irish Republic Traffic on Logarithm of Irish Republic's GDP, 1986 to 2001

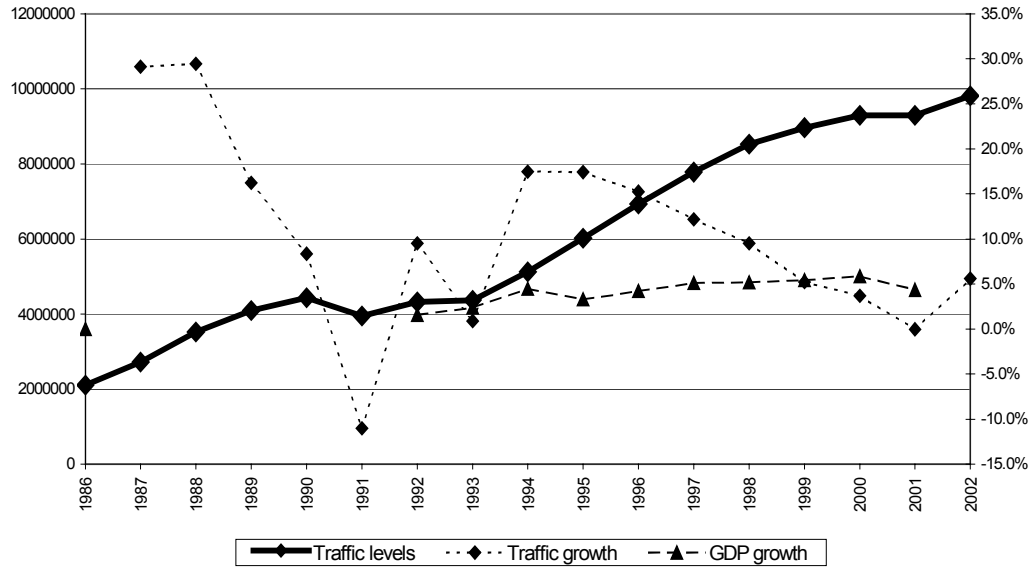


Source: CAA Annual Airport Statistics and CSO Ireland.

5 As seen in Figure B2, the relationship between the logarithms of traffic and the Irish Republic GDP has flattened out towards the end of the 1990s implying falling values of income elasticity. In fact, Figure B3, which compares traffic and GDP growth, shows that since 1999 the traffic has been growing at a slower rate than the average growth of the Irish Republic and the UK GDP, which is one of the most commonly accepted signs of "full" market maturity.

[11] The Irish Republic GDP results are not yet available for 2002 and so comparison was not made for that year.

Figure B3 - Traffic vs. GDP Growth, 1986 - 2002



Source: CAA Annual Airport Statistics, CSO Ireland and ONS UK.

6 However, market maturation has not prevented the individual airlines from stimulating their traffic, as seen in Figure B4, which contrasts the traffic carried by the two largest carriers in the market – Ryanair and Aer Lingus.

Figure B4 - Air Lingus' and Ryanair's Traffic on UK-Irish Republic Routes, 1986 to 2002

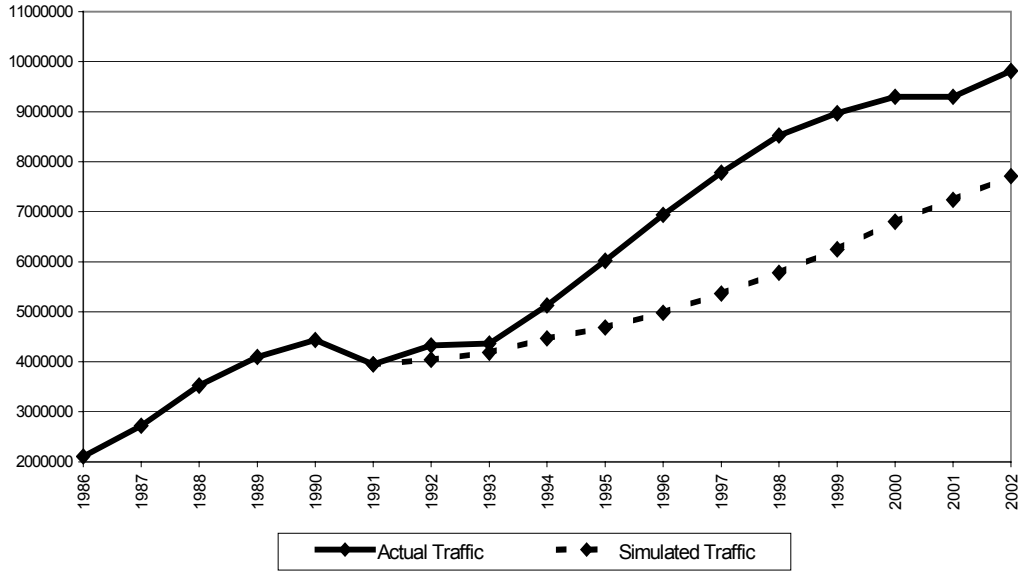
Source: CAA Annual Airport Statistics.

7 Aer Lingus overtook Ryanair as the largest carrier in the market in 1999 and 2000 when it introduced new services to London City and London Gatwick. Ryanair regained

the supremacy in 2001 and 2002 when its growth accelerated to the low-double digits while Aer Lingus recorded negative growth in these two years. Note, however, that Ryanair was engaged in intense competition with Go on the Dublin – Edinburgh and Dublin – Glasgow routes in 2001 and 2002.

8 To gain some understanding of how the traffic in this market has changed because of an NFC presence the CAA has grown the 1991 actual by 1.5 times the annual average rate of growth of the Irish Republic and the UK GDP[10]. The results of this counterfactual exercise are shown in Figure B5 below:

Figure B5 - NFC Traffic Generation, 1986 to 2002



9 On the basis of this simple exercise it would appear that about 30% of the traffic over the long term in this market can be attributed to an "NFC effect". As Figure B5 indicates, the level of stimulation increased steadily after 1993, peaking in about 1997 and 1998 at levels of about 50% and subsequently falling back. It is not entirely clear how long the process of maturity has taken, given the special circumstances which applied to aviation generally in 1991 and 1992. However, it would seem likely to have been in the order of seven years or so.

10 Note that the above analysis was conducted on a very basic level and that a thorough analysis of maturity and traffic generation due to NFCs would need to consider other important drivers of demand and supply, such as airline yield, as well as the complex substitution effects which may be taking place within the short haul markets.

[10] For the purpose of this exercise, the 2001 GDP growth for the Irish Republic was extrapolated to 2002.