Recent trends in growth of UK air passenger demand

Civil Aviation Authority

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Executive Summary

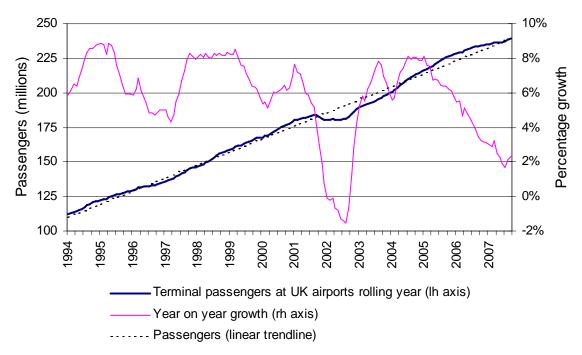
- 1 There has been strong growth in UK air passenger travel over the past few decades, albeit interrupted by short-lived dips due to events such as 11 September 2001, the SARS outbreak and the second Gulf war. Although air passenger travel is still increasing, the last few years have seen a slowdown in traffic growth in the UK which seems to have started sometime during 2005.
- 2 This slowdown in growth is not shared equally across all passenger segments, but mainly affects the two largest: international holidays taken by UK residents and domestic travel. Growth in UK resident holiday travel appears to have been influenced by changes in UK consumer expenditure growth, possibly affected by house prices and interest rates. There is evidence that competition from other modes of transport has affected domestic air traffic, particularly as a result of both changes in airport security increasing the total journey time for air travel and improvements to long distance rail services. Airlines have also experienced cost increases through the rise in oil prices and, in February 2007, the doubling of Air Passenger Duty, although the slowdown in passenger growth precedes this latter cost increase.
- 3 Business travel, leisure travel to visit friends and relatives (VFR) and non-UK resident holiday travel growth have all remained at or above the historic average growth rate. However, growth of UK resident VFR traffic has been sustained mainly by nationals from other EU countries, who made up nearly a quarter of this segment in 2006. This highlights how growing internationalisation has affected the UK economy, partly explained by the freedom of movement of labour and liberalisation of markets within the European Community, which has made traffic growth at UK airports less dependent on UK holiday traffic and domestic services.
- 4 At present, there have been no more than two years of slower traffic growth, and the evidence would suggest that this has been as a result of the current economic environment and competition from domestic rail services, rather than any longer term, structural change in demand for air services. Analysis of the passenger characteristics associated with increased air travel show that, if anything, the trends in UK demographics (increased ownership of property abroad and couples having children later in life) point towards lifestyles with higher rather than lower propensities to fly.
- However, in the short term there is still significant uncertainty surrounding the future of the UK and world economies, global oil prices and security constraints at airports. Past experience and the evidence in this report suggests that passenger demand growth is unlikely to remain at the current lower levels indefinitely, but the timing of any recovery will not be easy to predict.

Background

- In 2003, in its advice to the DfT on the future nature of demand for air travel¹, the CAA argued that, in general, the rate of passenger demand recovered quickly from external shocks. The only exception was the 1970s oil crisis and subsequent economic recession, which permanently changed the underlying trend of UK passenger demand. In late 2005, the CAA issued a study of the trends in UK leisure travel², which concluded that the market was not near to 'maturity', meaning that increases in income still tended to lead to more than proportionate increases in demand for air travel. It was noted that, historically, UK passenger growth had exceeded growth in GDP, typically by a factor of two.
- 7 However, since early 2005, year on year passenger growth has been declining such that, from Q1 2006, it has been about equal to GDP growth. Figure 1 shows the 12-month rolling passenger numbers at UK airports since 1994 and the year on year growth rates they represent. With the exception of the period following 11 September 2001, growth rates remained between 5% and 9% until early 2006 and have since fallen to around 2% per annum.
- 8 However, Figure 1 also shows that overall passenger numbers have not yet strayed far from the linear trend exhibited across the period. Indeed, it could be argued that the recent slowdown is in reaction to growth slightly above this trend in 2004 and the early part of 2005. This report examines the potential causes of the slowdown in passenger growth that has been experienced by services at UK airports and assesses whether there are likely to be any longer term implications for the aviation industry arising from them.

Air passenger growth and capacity, CAA, 2003
 http://www.dft.gov.uk/about/strategy/whitepapers/air/docs/airpassengergrowthandairport5663
 Demand for Outbound Leisure Air Travel and its Key Drivers, December 2005, CAA:
 http://www.caa.co.uk/docs/5/Elasticity%20Study.pdf

Figure 1: Rolling year passenger traffic at UK airports, 1994 – 2007



Source: CAA Airport Statistics

Passenger segments with declining growth

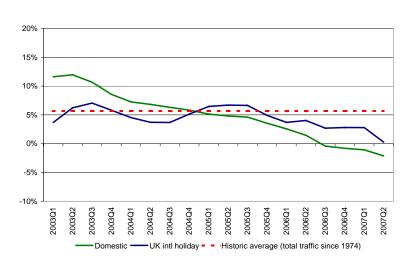
- 9 The decline in passenger growth has affected both the London and the regional airports. At Heathrow, rolling 12-month passenger numbers have been broadly stable since early 2006, with some periods of slight negative growth. This can be explained in part by planning constraints which have prevented growth in the number of flights at Heathrow, together with the effects of bad weather, security alerts and industrial action. However, the slowdown from historic passenger growth rates has also been evident at Gatwick, Stansted and Luton. There has been a slowdown in traffic growth for full service and no frills operations, although passenger numbers for this last group were still increasing by around 10% per annum during 2007.
- 10 However, when passengers are segmented by residence and journey purpose, a clear distinction is apparent between those segments that are still showing growth at or above the historical trend and those where growth has been in decline. Figure 2 illustrates that the passenger segments for UK resident international holiday travel³ and domestic traffic have borne the brunt of the decline. By contrast, non-UK resident passenger segments for all types of travel have shown robust year on year growth. The UK resident business travel segment has seen rolling annual growth recover to between 5% and 10% since early 2005, whereas the number of UK resident passengers travelling to visit friends and relatives has increased by around 11% per annum each year since 2003.
- 11 The growth in VFR traffic has meant that that this segment (for UK and non-UK residents combined) now accounts for around 15% of all passengers, undoubtedly

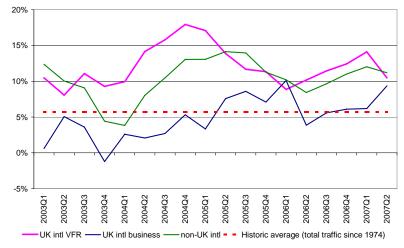
³ This segment includes all passengers whose are travelling on holiday, whether taking a package trip or travelling independently.

helped by the liberalisation of European air markets in the 1990s, combined with the freedom of movement of labour and population within the EU. As more people relocate further away from their home country – whether to find higher paid employment or to make a home in a more appealing climate – air travel becomes increasingly the preferred option for international visits to or by family and friends.

12 Further segmenting the UK resident VFR traffic by nationality supports this, revealing that, since early 2005, the growth of UK resident VFR traffic by UK nationals has slowed in a similar way to growth in UK resident holiday traffic. However, growth in UK resident VFR traffic by nationals of other EU countries has escalated to over 20% in 2005 and over 25% in 2006. A similar distinction can be seen when segmenting non-UK resident VFR traffic by nationality. This highlights how increasing internationalisation of the UK economy is making international traffic growth at UK airports less dependent on UK holiday travel.

Figure 2: Rolling annual passenger growth rates by residence and purpose, all UK airports, 2003 – 2007





Note: 2007 IPS figures are provisional only

Source: International Passenger Survey and CAA Airport Statistics

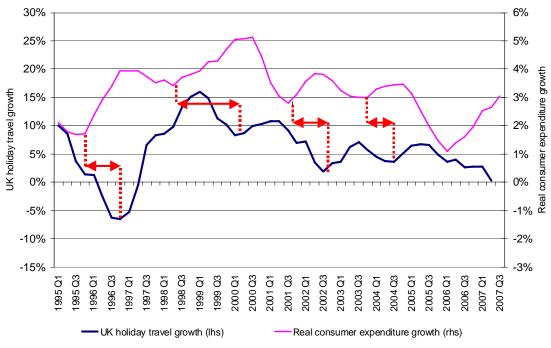
13 However, UK resident international holiday travel remains the largest passenger segment at UK airports, accounting for around a third of all trips in 2006, while domestic

travel is the second largest, accounting for over a fifth of all trips. It is unsurprising, therefore, that these two segments affect the overall passenger growth picture. The next question that needs to be addressed is: what is the likely cause (or causes) of the recent trends in these passenger segments? Four separate areas were investigated: economic factors, competition with other modes, increased cost of air travel and attitudes towards the environment. The propensity for UK residents to take leisure flights was also examined, in particular the relationship with income, demographic factors and property ownership abroad.

Economic factors

14 Air travel is rarely undertaken for its own sake. The majority of outbound passenger journeys by air are taken for leisure purposes, be that for a traditional one or two week holiday, to visit friends and relatives, or to travel to a property owned abroad. The decision to make any of these types of journey depends not only on the cost and convenience of air travel, but also on the costs incurred during the remainder of the trip. It should be expected therefore that there is a relationship between general trends in consumer expenditure and expenditure on holiday travel, and moreover between general trends in consumer expenditure and outbound leisure passenger numbers. Less expected is the result that, whilst changes in consumer expenditure on holiday travel appear to mirror changes in overall consumer expenditure, the effect on numbers of outbound leisure passengers lags the changes in overall consumer expenditure by six to 12 months. The similarity between growth in consumer expenditure and growth in outbound international leisure travel is illustrated in Figure 3 below.

Figure 3: Rolling annual growth in UK international holiday travel (passenger numbers at UK airports) and real consumer expenditure, 1995 – 2007



Source: International Passenger Survey and ONS (series ABJR)

Note: growth rates are rolling annual growth rates calculated every quarter

- 15 From the figure, it can be seen that the decline in growth of UK international holiday travel up to Q2 2007 mirrors the decline in real consumer expenditure growth between Q3 2004 and Q1 2006. A relationship with UK consumer expenditure also helps to explain why it is it is mainly the UK outbound leisure and domestic segments which have seen a reduction in demand growth, whilst the non-UK resident and business segments have been much less affected. Although there has been a recovery in real consumer expenditure growth since Q1 2006, and even taking into account a six or twelve month lag, there has as yet been no recovery in air passenger demand growth.
- 16 The CAA's previous analysis into outbound leisure travel also suggested that changes to house prices might be an important predictor of passenger demand growth over the short term, possibly because consumer confidence was closely related to wealth. Data on real UK house prices⁴ indicate that year on year growth fell from 15% in Q3 2004 to -0.1% in Q3 2005, although it picked up to around 5% in Q1-Q3 2007.

Increases in the cost of air travel

- 17 It appears that there have been three key factors affecting the cost (or convenience) of air travel, either to the passenger or the airline, in recent years. The first has been the rising oil price, which has nearly tripled since the start of 2004. The second has been the doubling of Air Passenger Duty (APD) for all journeys departing UK airports taken on or after February 2007. The third has been the security restrictions following the terrorist threat in August 2006, which have increased the overall journey time and 'hassle factor' for all passengers travelling from the UK's main airports.
- 18 Increases in the cost of travel, if passed through to the passenger, will have an effect on air travel, but this effect will not necessarily manifest itself solely as reduced demand growth. Passengers may choose to change their travel plans to reduce the cost of their flight or simply reduce the other expenses they will incur on their trip, rather than not to fly at all. Cost increases alone might also be expected to affect all leisure passenger segments equally and therefore would not give rise to the specific reductions in demand growth of UK resident holiday or domestic passengers.
- 19 Although there are ways in which airlines can reduce fuel consumed on a flight, the major part of this cost is unavoidable. Jet fuel prices have risen from just over \$320 per tonne in January 2004 to around \$900 per tonne in November 2007. Many carriers have hedging strategies in place to mitigate the increased cost of fuel, but these deals will only protect the airline temporarily against a sustained price increase. For European airlines, the effect of rising fuel prices on their cost base has been dampened to some extent by the weakening of the dollar over the same period.
- 20 Nevertheless, CAA airline statistics show that in 2004, fuel and oil costs represented 16% of all UK airline costs, whilst by 2006 this figure had risen to 26%. Over the period, BA's fuel surcharges⁵ on ex-UK long haul services were raised 14-fold, from £2.50 per sector when first introduced in May 2004 (reaching £10 by the end of 2004) to £35 by the end of 2006, and, although not all airlines levy such charges, it is unlikely that an

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⁴ Source: Nationwide Building Society

⁵ Other long haul airlines that identify fuel surcharges in their overall ticket prices implemented increases of the same order.

airline could absorb such increases in cost for long in a competitive market, so to some degree they must eventually be passed on to the passenger. Estimating the effect of fuel price increases on all passenger flights at UK airports indicates that they have added between £2.5 bn and £3 bn to annual airline costs between 2004 and 2006.

- 21 APD has been levied on air passengers departing the UK since 1994. The rate of APD was doubled for all journeys taken on or after February 2007, although, since it is the airlines that must pay the duty to the exchequer, the charge was not necessarily fully passed on to passengers at this time. However, the slowdown in growth of UK passengers significantly pre-dates this increase in APD, so it cannot have been the primary cause, although it may have had a subsequent impact. The increase in APD charges raised an additional £1 bn, so, if all the extra costs are eventually passed on by airlines to their passengers, then its impact would be expected to be about a third that of the oil price increases. However, APD is applied at two fixed rates for all economy and all premium passengers on longer haul flights, so different routes will have seen their fares increase by different proportions.
- 22 Previous analysis by the CAA⁶ has indicated that outbound leisure demand tends to be relatively inelastic to price increases. Although some passengers will react to increases in the cost of flying by not travelling at all, many will simply bear the extra cost or travel to a different, cheaper destination. Thus, the effects of a universal increase in prices may not be apparent for each route, but would expect to be seen in the level of total demand. In its previous study the CAA suggested that, all other factors being equal, a 1% increase in air fares for outbound leisure passengers would result in a reduction in demand of around 0.8%.
- 23 Airports have also been affected by terrorist alerts and subsequent security precautions since 2005. This has affected the 'cost' of flying by increasing the time required for travellers to pass through the airport and therefore the total journey time by air public perceptions of greatly increased total journey times, fuelled by negative press and publicity, may have as much impact on passenger numbers as actual queuing times. In the same period, other modes, and rail travel in particular, have seen improvements in service and have taken on some of the successful sales practices introduced by airlines, thus enhancing their competitive position.

Competition with other modes of transport

- 24 Particularly for domestic journeys, air travel has traditionally used the advantages of speed, reliability and, more recently, price competitiveness in order to attract passengers from other modes. However, the balance of these factors has changed in recent years.
- 25 Long distance rail travel in the UK was affected by the Hatfield rail crash in 2000. Unlike other rail incidents, Hatfield led to speed restrictions being placed on large sections of track, with disruption persisting for a significant period⁷. This affected the

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⁶ See Chapter 5 of 'Outbound leisure air travel and its drivers', CAA, 2005

⁷ "The punctuality of UK domestic rail services declined significantly after the Hatfield rail accident in October 2000, as speed restrictions were imposed across the network. Although punctuality has subsequently improved, long distance routes are

competitive balance between rail and air for domestic travel. More recently, reduced disruption and the opening in stages from late 2004 of the upgraded West Coast Main Line connecting London and Glasgow, allowing the use of Pendelino trains, has improved the competitive position of rail. Table 1 shows how passenger numbers have fallen on the larger UK domestic and international air routes that face main line rail competition relative to those that do not.

Table 1: Effect of rail competition on international air traffic growth rates

Air Traffic	1998-2003	2004	2005	2006	2007
UK domestic					
Facing competition from rail services	6.6%	3.8%	-0.1%	-4.1%	-3.7%
Not facing rail competition	6.7%	4.9%	3.3%	-0.6%	-1.2%
TOTAL	6.7%	4.1%	1.0%	-3.0%	-2.9%
UK - key European cities					
Facing competition from rail services	-1.0%	-1.6%	-4.7%	-0.1%	-1.0%
Not facing rail competition	4.6%	1.7%	2.9%	2.6%	3.1%
TOTAL	2.8%	0.7%	0.7%	1.9%	2.0%

Notes: European cities facing competition are Paris and Brussels; other cities are Madrid, Frankfurt, Rome, Amsterdam and Stockholm

Domestic routes considered are all those with over 150,000 air passengers in any year since 2004 1998-2003 rate shown is the average annual growth over the period

2007 growth is the calculated by comparing the period January-September 2007 to the same period in 2006.

Source: CAA Airport Statistics

- 26 The table clearly shows that, whilst all types of domestic route have been affected in the last two or three years, those facing competition from rail have seen a much sharper decline than the others. Although the same distinction between routes with a direct rail alternative and those without can also be seen for services to key European cities, competition from cross-channel rail services has been part of a continuing decline for certain air routes evident since 1998, the nature of which has not changed markedly in the last few years. It is therefore unlikely to be making a major contribution to the decline in growth of UK resident holiday passenger numbers.
- 27 Advertising campaigns for long distance rail travel have begun to target the air traveller, even to the extent of offering free rail tickets for passengers who exchange their used boarding cards. A sample of fares for equivalent air and rail routes reveals that, for those passengers willing to book far in advance with little flexibility, the cheapest air fares tend to be matched by the rail companies.
- 28 It is likely that some of the decline in domestic air travel demand growth has been caused by the increased competitiveness of other modes, particularly rail. To the extent that this is due to improvements in rail services, then it is likely to represent a longer term shift in the modal split of UK domestic travel. However, to the extent that is has been driven by increased journey times and inconvenience of air travel resulting from the current security measures at airports, then this effect may only be temporary.

subject to regular severe disruption at weekends (usually replacement of trains with buses for part of the route), as the infrastructure manager closes the line to undertake engineering works." Air and Rail competition and complementarity, SteerDavisGleeve report for DGTren, August 2006.

Attitudes towards the environment

- 29 Evidence from surveys by the DfT and the Commission for Integrated Transport have revealed little indication that concerns over the environment are yet a factor in passengers taking fewer flights. A survey into attitudes to aviation and climate change by the Commission for Integrated Transport, reported in February 2007 that, "...Only a small proportion [of respondents] expect to fly less frequently in the future, and this is predominantly due to changes in personal circumstances rather than a concern about the environmental impact of aviation."
- 30 The UK aviation industry has taken steps to be seen to address the environmental issues of air travel. For example, a number of airlines operating from the UK now offer carbon offsetting schemes to passengers, including easyJet, Flybe, British Airways, First Choice, Virgin Atlantic, Monarch and Silverjet. Airlines have used advertising campaigns to highlight their environmental initiatives and investment in new and cleaner aircraft, and some airlines even use their website to show the carbon dioxide and nitrogen oxide emissions likely to produced by a flight⁸. An industry organisation, Sustainable Aviation, was formed in 2005, bringing together UK airlines, airports, aerospace manufacturers and air navigation service providers. Signatories to its strategy commit to delivering significant reductions in carbon dioxide emissions, nitrogen oxide emissions and aircraft noise over the next 15 years.

The propensity to fly of UK leisure passengers

- 31 There is still a sizeable segment of the UK population that does not undertake regular air travel. However, the strong growth of passenger numbers in the last five to ten years has come more from those who do fly taking more flights, than an increase in new adult⁹ fliers. Therefore, understanding the characteristics of passengers who make multiple trips will be relevant to understanding the increasing demand for UK outbound leisure travel.
- 32 On average, those UK residents who were fliers took just over two return flights per year for leisure purposes in 2007. Statistical analysis suggests that the number of leisure trips taken by UK resident passengers in a year is most significantly related (in terms of demographic factors) to household income (with higher income households taking more flights), household composition (with singles and childless couples taking more flights than families) and ownership of property abroad.
- 33 Owning a home abroad or having household income of £115,000 or more are each expected to increase the number of leisure air trips by a factor of about 1.6 (or, by about 60%) over those without property abroad and earning less than £40,000. Individuals with a home abroad, or with household income over £115,000 take an average of 3.4 leisure trips per year compared to an average of 2.1 trips for those with no property abroad and household incomes less than £40,000. Those with income over £115,000 and a property abroad take an average of over 5 leisure trips per year.

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⁸ See http://www.flybe.com/environment/eco-labels.htm

⁹ Clearly many child air passengers will be flying for the first time, but this is not an indication of air travel becoming more universal.

- 34 Any demographic change, although possibly a long term driver of changes in demand growth, would not be expected to make an impact over such a short timescale as two or three years. Also, the recognised demographic trends in the UK (couples having children later in life¹⁰, increasing home ownership abroad) suggest a move towards increasing rather than decreasing propensity to fly. It also seems unlikely that growth has been affected by some natural limit (driven, for example, by the amount of leisure time available or family commitments) on the number of leisure trips that could be taken by UK residents, since nearly half of UK resident leisure passengers currently take only one leisure trip per year and about three-quarters take only one or two.
- 35 It therefore appears most likely that the recent decline in growth of UK resident international holiday and domestic traffic has been a result of the close relationship between passenger demand and consumer expenditure, increased competition from domestic rail services, assisted in part by increased overall journey times by air, and increases in the cost of air travel, coming mainly from rising fuel prices.

¹⁰ "Changing fertility patterns in the UK over the last 40 years have been characterised by falling fertility rates, a rising mean age at first birth and higher levels of childlessness." Social Trends, No. 37, 2007 edition, National Statistics

Chapter 1. Context and background

- 1.1 Over the past few decades air travel in the UK has experienced robust growth. The number of air passengers using UK airports increased from 32m in 1970 to 235m in 2006, which is equivalent to an average annual growth rate of just under 6%. This is faster than the growth of aviation in most other developed countries, and approximately twice the rate of growth of UK GDP during the same period.
- 1.2 The expansion of air traffic has, on occasion, been interrupted by adverse external developments such as the 11 September attacks in 2001, and the economic recessions of the early 1970s, 1980s and 1990s. With the exception of the 1970s economic slowdown precipitated by the oil crisis, these developments, although painful for the industry at the time, have not had a sustained impact on the rate of traffic growth, which appears fairly stable when considered over the long term.
- 1.3 This impressive growth record has influenced expectations about the future growth of air travel in the UK. Recognising the value of the aviation sector to the UK economy, and the importance which consumers place on holiday travel abroad, policymakers have sought to accommodate the expansion of the sector by facilitating timely delivery of additional capacity, while at the same time taking steps to ensure that the growth of aviation is sustainable.
- 1.4 Several large airlines with significant UK operations have recently placed large aircraft orders, aimed at expanding their networks rather than just renewing their fleet, and, although not all of this extra capacity will be based in the UK, it suggests that the industry anticipates continuing strong demand growth in the longer term. According to CAA Airport Statistics, in May 2007 there were scheduled services from the UK to over 340 destinations abroad of which around 200 were in the EU alone. Ten years ago, the number of international destinations served from the UK was around 280. At that time, it would have been viewed as unlikely that some of these destinations could have air links to the UK let alone support regular, often daily, scheduled services. An example of this is the UK-Poland market where there are now scheduled services linking as many as 13 UK and ten Polish cities.
- 1.5 The liberalisation of European air markets in the 1990s undoubtedly contributed to the rise of new carriers and new routes appearing between the UK and other countries in the EU and the wider European Common Aviation Area (ECAA), a region which has grown as the EU acquires new member states and non-member states negotiate entry into the ECAA. However, the freedom of movement of labour and population within the EU may also have contributed to the growth in UK aviation. As segments of the population relocate further away from their home country whether it is to find higher paid employment or to make a home in a more appealing climate air travel becomes increasingly the preferred option for international visits to or by family and friends.
- 1.6 In the last couple of years, however, the growth of air traffic has slowed, even though there have been no major adverse external developments of the kind that affected traffic growth in the past. In 2006, 235m passengers used UK airports an increase of 3% on 2005. This is only just above the rate of growth of UK GDP

during the same period and half the historic rate of aviation growth in the UK. The growth of traffic in the first ten months of 2007 (the most recent period for which data is available) was equally slow – a 2.4% increase on the equivalent period last year.

- 1.7 This has affected all three main airline business models, namely charter, no frills and full service. This is a recent development over the last decade there has been a rapid growth in the no frills sector while the traffic carried by other services showed more modest growth, and in the case of charter services, contracted.
- 1.8 However, the growth of no frills services has now slowed too, albeit to a rate still rather higher than that of full service or (more so) charter services. Stansted and Luton airports, which have become synonymous with the expansion of the no frills sector, have recently experienced growth which is sluggish by historic standards, and well below the national growth rate for no frills operations. For the first ten months of 2007, traffic at Stansted grew by 1.7% and at Luton by 5.1% on the equivalent period in 2006 a far cry from the double-digit growth experienced in the past¹¹. And the experience at these airports is reflected at the London airports as a whole (which grew by 2.0%) and the regional airports (which grew by 3.0%).
- In 2003, in its advice to the DfT on the future nature of demand for air travel 12, the CAA argued that, in general, the rate of passenger demand recovered quickly from external shocks. The only exception was the 1970s oil crisis and subsequent economic recession, which permanently changed the underlying trend of UK passenger demand (as illustrated in Figure 2-1 in Chapter 2). In late 2005, the CAA issued a study of the trends in UK leisure travel 13, the single biggest market segment for UK aviation. Based on econometric analysis of historic data to 2004, the report did not detect signs that the long term growth pattern was likely to change (i.e. that the market had in any way 'matured'). The report suggested that the potential for organic market growth (i.e. income and wealth driven as opposed to price driven) was still high given that, at the time, consumer expenditure on holidays abroad accounted for a small proportion of total consumer income (about 5%). It was noted that historically UK passenger growth had exceeded growth in GDP, typically by a factor of two.
- 1.10 However, in a relatively wealthy society such as the UK, the determinants of the growth of demand for air travel may increasingly come from factors other than the level of disposable income such as, for example, the availability of leisure time, family commitments and consumer willingness to travel. These, in turn, will depend on a number of different socio-economic and demographic factors, including age, family composition and occupation.
- 1.11 Against this background, the purpose of this report is to:

¹³ Demand for Outbound Leisure Air Travel and its Key Drivers, December 2005, CAA: http://www.caa.co.uk/docs/5/Elasticity%20Study.pdf

¹¹ Of the annual volume of UK air passengers, the first 10 months of the year usually represents approximately 86% of the annual total.

¹² Air passenger growth and capacity, CAA, 2003

- Document recent traffic growth trends and examine how they vary across different market segments;
- Examine the factors causing the recently observed slowdown of traffic growth and assess whether their impact is transitory or the beginning of something more permanent; and
- Provide information on how propensity to fly on leisure trips for UK residents varies across different population groups according to income, age, family composition, home ownership abroad and other potentially relevant demand determinants.
- 1.12 To undertake this work, the CAA has reviewed data on traffic from the aviation industry and where available other transport modes, on passenger characteristics and preferences from various surveys including the CAA's own, and on the changes in the UK economy. The CAA has discussed its work with representatives of Government, the aviation industry and other transport modes.
- 1.13 The analysis and the findings in this report are constrained by two factors. Firstly, it is too early to be able to draw definite conclusions from the analysis. Secondly, some key data, such as statistics on travel purpose and residence from the ONS, are only available with a considerable time lag (typically six months behind the CAA Airport Statistics)¹⁴.
- 1.14 Consequently, this report can be seen as a scoping study which will identify and discuss, and where possible quantify, the key issues bearing on the points listed in paragraph 1.11. More detailed analysis will follow if and when appropriate, with further data.
- 1.15 The remainder of the report is structured as follows:
 - Chapter 2: Setting the scene
 - Chapter 3: Possible causes of slowing air traffic growth
 - Chapter 4: Propensity to fly on leisure trips of UK residents
 - Technical Annexes

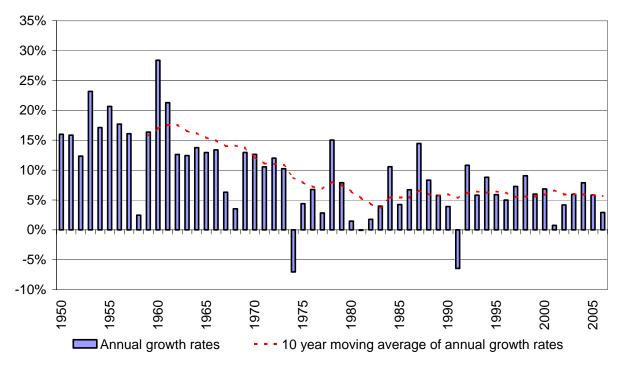
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¹⁴ Other potentially relevant data sources, such as statistics on the performance of other travel modes, are not publicly available at the same level of detail as the aviation data provided to the industry and the general public by the CAA.

Chapter 2. Setting the scene

2.1 Air travel in the UK has expanded at a fairly steady rate of growth since the 1970s. This is illustrated in Figure 2-1 below, which shows the annual rate of growth of total passenger traffic at UK airports between 1950 and 2006.

Figure 2-1: Annual rate of passenger traffic growth, UK airports 1950 - 2006



Source: CAA Airport Statistics

- 2.2 While traffic growth has been subject to a number of shocks over the past three decades ¹⁵, the long term growth rate over this period, as represented by a 10-year moving average trend, appears fairly stable at just under 6% a year. This is almost two and a half times the rate of growth of UK GDP ¹⁶ during the same period. This corresponds with a well-established "rule of thumb" adopted by industry analysts, according to which demand is expected to grow, or decline, approximately twice as fast as any change in GDP ¹⁷.
- 2.3 More recently, however, this relationship appears to be rather more tenuous even though there have been no substantial external shocks of the kind that have depressed traffic growth in the past. This is illustrated in Figure 2-2 below, which compares annual growth rates of UK GDP and passenger traffic at UK airports. The only previous occasions where UK passenger growth has been at or around the rate of GDP growth for two years in a row, as it appears likely to be for 2006 and 2007, was in 1982 and 1983, following a year when both GDP and traffic had been in decline. In 1984, traffic grew by 10.6%, whereas GDP grew by only 2.6%.

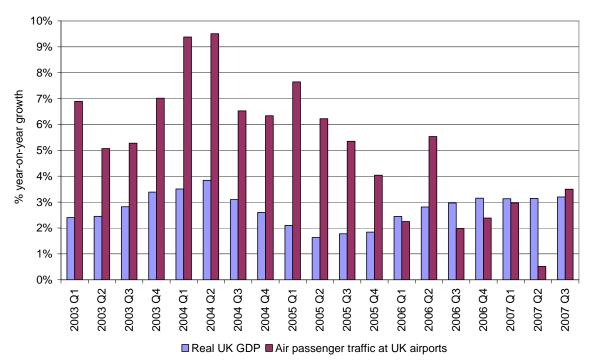
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¹⁵ As noted in Chapter 1, previous CAA analysis has indicated that the recession and oil crisis of the early 1970s did have a sustained impact on the rate of traffic growth.

Measured in real terms.

¹⁷ Graham, A. (2006) Have the major forces driving leisure travel changed? *Journal of Air Transport Management, Vol.12, issue 1, Jan 2006*

Figure 2-2: Quarterly GDP and passenger traffic growth at UK airports, 2003 -2007



Note: both series have been deseasonalised for quarterly variations.

Source: ONS, CAA Airport Statistics

2.4 From the start of 2006, the growth of traffic has been broadly in line with the growth of UK GDP rather than being a multiple of it, as in the past. The exceptions are Q2 in 2006 – which reflects the fact that Easter moved from Q1 in 2005 to Q2 in 2006¹⁸ - and Q2 2007, when traffic grew by only a small amount and was well below growth in GDP.

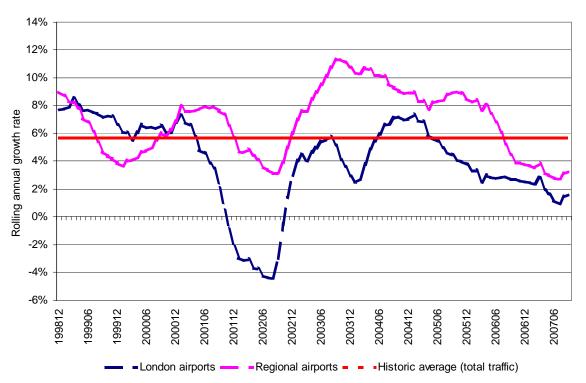
Airport and airline segmentation

2.5 A more detailed picture of traffic development at UK airports is illustrated in Figure 2-3 which shows the rolling annual growth rate of traffic at London and regional airports¹⁹. The low growth rate in 2007 Q2 shown in Figure 2-2 appears in Figure 2-3 as the sharper rate of decline in the rolling growth rates after April 2007.

¹⁸ Although the data has been deseasonalised by quarter, a one-off variation like that seen in Q2 2006 occurs between the seasons will affect the pattern seen.

19 Unless specified otherwise, the London airports are considered to be Heathrow, Gatwick, Stansted, Luton and London City.

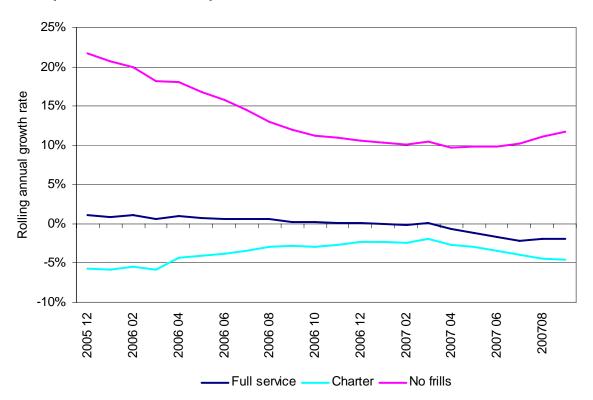
Figure 2-3: Rolling annual growth in passenger traffic, London and regional UK airports, 1999 – 2007



Source: CAA Airport Statistics

2.6 It is apparent that the growth rate of traffic at both groups of airports has declined steadily from 2005 and, as yet, there are no signs of recovery towards the historic long term growth rate illustrated in Figure 2-1. However, it is also worth noting that the rates, although declining, are still positive. Figure 2-4 shows the rolling annual growth rate across all UK airports split by carrier type since the end of 2005. While the decline in the growth rate of no frills services is marked, the actual rate is still high at 10% and is pulling the overall total growth up above 0%. By contrast, both full service and charter services are now showing negative growth rates.

Figure 2-4: Rolling annual passenger growth on different types of operation ^{20,21}, all UK airports, 2005 – 2007



Source: CAA Airport Statistics

- 2.7 Figure 2-5 below plots the rolling annual growth rate of traffic at the major London airports and shows that there has been a marked slowdown in traffic growth at Luton and Stansted recently which mirrors the slowdown of growth observed at the aggregate level shown in Figure 2-1 above. This also indicates that the strong growth in no-frills traffic illustrated in Figure 2-4, which occurred at the same time as this slowdown at Luton and Stansted, has arisen mainly at Gatwick and the UK's regional airports, rather than continuing at the almost wholly no-frills airports of Stansted and Luton. This no-frills growth has, in part, been at the expense of charter and full service operations and therefore it is less apparent in the overall traffic growth at regional airports shown in Figure 2-3.
- 2.8 Although less pronounced in Figure 2-5 in comparison with the other airports²², the growth trend for Heathrow shows a similar decline, but to the extent that the 12 month rolling passenger figures have fallen year on year between November 2006 and September 2007. Unlike the other London airports, Heathrow has virtually reached its runway capacity, so further passenger growth at the airport must come from larger aircraft or increased load factors. However, this capacity restriction at

The total no frills passengers comprise passengers on scheduled services from the following ten airlines: EasyJet; Ryanair; Flybe; bmibaby; Jet2; Monarch; Flyglobespan; Thomsonfly; Wizz Air and Air Berlin. There is no official definition of what a "no frills airline" is, but these are the largest (in terms of passengers carried to/from the UK in July 2007) that meet the generally understood criteria. There will be some residual passengers on other airlines that potentially could also be defined as no frills passengers, but they would have only a negligible impact on the calculations.

²¹ BA Connect, a wholly owned subsidiary of British Airways plc was sold to Flybe on 25 March 2007. The passengers flying on these services would previously have been classified as full service, but from April 2007 are classified with the other Flybe passengers as no frills. In the context of the total passengers however, this switch does not distort the growth rates as shown in the graph.

²² Having a larger absolute volume of traffic than the other London airports, Heathrow might be expected to have lower percentage increases year on year.

Heathrow cannot in itself be the cause of the slowdown in UK traffic growth, since, as Figure 2-3 and Figure 2-5 show, the effects have been seen at both regional and other London airports.

40% 30% Rolling annual growth rate 20% 10% 0% -10% -20% 1999 12 2002 06 2002 12 2004 12

Heathrow —

2004 06

Luton ——Stansted

2003 12

2005 06

2006 06

2006 12

2007 06

Figure 2-5: Rolling annual passenger growth at the main London airports, 1999 - 2007

Source: CAA Airport Statistics

90 666

998 12

2000 06

2000 12

2001 06

Gatwick -

- 2.9 The overall growth rate for London airports in Figure 2-3 is driven mainly by trends at Heathrow (which accounts for nearly half of London's terminal passengers) and Gatwick (around a quarter). The growth peaks that can be observed in Figure 2-5 for Luton in late 2005 (due to route expansions from Wizzair, easyJet and Ryanair) and Stansted in late 2006 are therefore not obviously apparent in the London airports' growth shown in Figure 2-3. London City airport has not experienced a decline in passenger growth rates, and, although it serves only around 2% of all London traffic, its rolling annual passenger numbers have remained between 15% and 22% since early 2005. Nevertheless, the pattern of declining growth appears to be repeated across all the larger London airports, and therefore cannot be explained by factors which affect only an individual airport.
- 2.10 The conclusion from the above analysis is that the slowdown in passenger growth is due to factors that affect most or all airports and airlines, albeit to varying extents. The next section will examine how the growth rates of different passenger segments have changed in recent years.

Passenger segmentation

2.11 In order to uncover the factors causing the slowdown of traffic growth, it is necessary to look beyond the aggregated data and examine the performance of individual market segments. Traffic can be split into segments according to the journey purpose and residency of the passengers using data available from the International Passenger Survey. Figure 2-6 shows the breakdown of UK traffic between these categories in 2006²³.

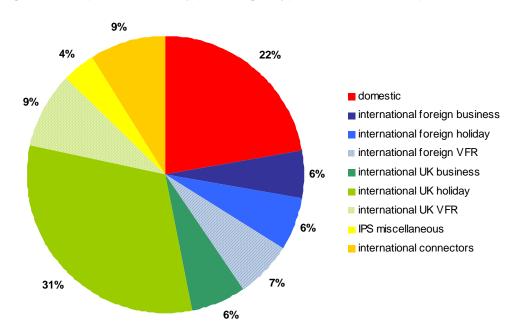


Figure 2-6: Split of traffic by passenger type, 2006, all UK airports

Notes: domestic passengers are counted at both the departure and arrival airports

> 'holiday' covers all passengers travelling for leisure purposes other than VFR and miscellaneous. It therefore includes passengers taking a package tour and those travelling independently.

> 'IPS miscellaneous' covers those passengers travelling for study, to attend sporting events, for shopping, health, religious or for other purposes, together with visits for more than one purpose when none predominates (e.g. visits on both business and on holiday). Overseas visitors staying overnight in the UK en route to other destinations are also included in this

'international connectors'24 is an estimated figure (based on available CAA Passenger Survey data and total traffic numbers), consisting of those passengers that are not travelling on a domestic flight, and who have fallen outside the scope of the International Passenger Survey (i.e. those passengers who have transferred planes at a UK airport without clearing customs).

Source: CAA Airport Statistics and the International Passenger Survey, ONS

2.12 Airlines with hub operations, such as those at Heathrow, combine direct and connecting traffic to generate the passenger volumes required to sustain their range of destinations and flight frequency. Since, in general, higher yields can be obtained

²³ The international traffic split by purpose and residence is obtained from the International Passenger Survey. This survey does not include passengers interlining between two (or more) international flights and is published with a considerable time lag after CAA Airport Statistics. This survey is used to obtain the proportions of passengers by purpose as it includes all UK airports in every year, whereas the CAA Passenger Survey includes a sample of UK airports, which varies each year.

24 International connectors are those passengers who fly into the UK from overseas to connect at a UK airport on an

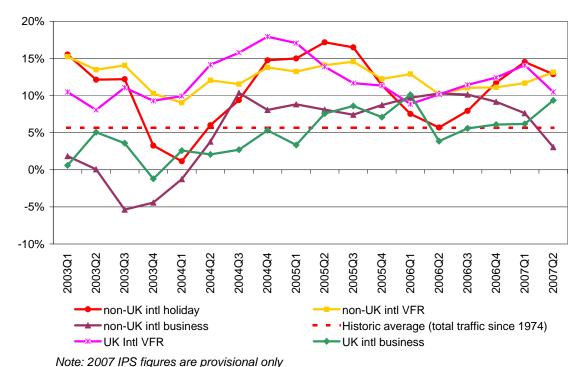
international service without clearing UK customs.

from direct passengers, there is a tendency to increase the proportion of connecting passengers when direct demand softens and decrease it when direct demand is more robust. However, it appears from Figure 2-5 that, in recent years there has not been sufficient increase in these connectors to offset the declining growth in overall passenger numbers.

2.13 The charts in Figure 2-7 show the rolling annual rate of growth of domestic traffic and international traffic, the latter split by journey purpose (business, leisure and visiting friends and relatives (VFR)) and residence. International connectors are not included in the figure, since, for the reasons described above, the proportions of these have historically been related as much to the level of direct demand for UK network airlines, as other demand factors. However, numbers of connectors have fallen recently although not to the same extent as the passenger segments in Figure 2-7b.

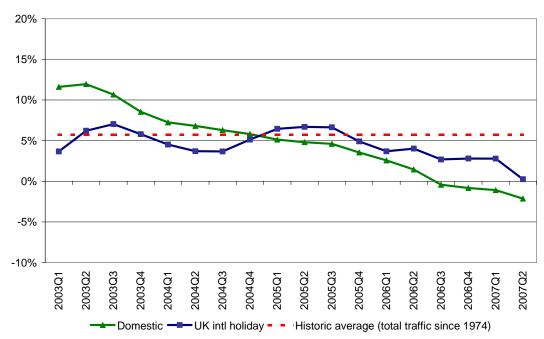
Figure 2-7: Rolling annual passenger growth rates by residence and purpose, all UK airports, 2003 – 2007

a: Market segments growing more strongly than historic average



Source: International Passenger Survey

b: Market segments growing less strongly than historic average



Note: 2007 IPS figures are provisional only

Source: International Passenger Survey and CAA Airport Statistics

- 2.14 Figure 2-7 shows that there is a substantial variation in performance of different market segments. In the first chart, which shows segments where recent growth is at or above the historical average of 6%, it is apparent that the segments of traffic with a foreign component foreign²⁵ holiday, foreign visiting friends and relatives (VFR), foreign business and UK VFR²⁶ traffic have all expanded at a fairly strong rate in the past few years. The growth of UK VFR traffic was particularly impressive in 2006 when, against slowdown of overall traffic, it grew at a rate of above 10% on the year before.
- 2.15 In contrast, the market segments whose recent growth is below the historic average have been predominantly UK traffic domestic and holiday as shown in the second panel. Domestic traffic in particular displays a marked slowdown in growth, with the rolling growth rate being negative from the second part of 2006. UK holiday traffic shows a similar but less pronounced pattern of decline in the growth rate. The growth of UK business travel increased in Q1 2006, slowed significantly in Q2, but then bounced back strongly towards the end of the year. This is most likely due to the change in the timing of Easter, when there is a decline in business travel, between 2005 and 2006.
- 2.16 The fact that only the growth of market segments with predominantly UK resident traffic has slowed suggests that the factors causing the slowdown are largely UK specific rather than more general. Further analysis on those sectors where growth has not slowed confirms this.

²⁵ The split between foreign and UK refers to the place of residence of the passengers. "Place of residence" refers to the place where the passenger has spent the majority of the previous 12 months. Thus residency does not necessarily equate to residence the passenger has spent the majority of the previous 12 months.

²⁶ UK VFR traffic includes foreign nationals residing in the UK and travelling back and forth between the UK and their country of origin.

- 2.17 Although international VFR traffic for both foreign and UK residents has been showing healthy growth, these figures can be disaggregated to reveal some clearly discernible trends, which are masked in the totals²⁷. The detailed IPS data allows us to break down the figures by both residence and then by nationality. Figure 2-8 shows the growth rates for UK VFR traffic further segmented by nationality (UK, other EU (EU27), and the rest of the world (RoW)). This figure shows quite clearly that the UK and RoW nationals have had declining growth in VFR, but that the EU27 nationals residing in the UK and travelling abroad for VFR have shown much stronger growth.
- 2.18 In the final quarter of 2006, the other EU nationals made up a quarter of the UK resident VFR traffic, UK nationals two-thirds, with the remainder being RoW nationals. The sustained growth in UK resident EU nationals has sustained the overall UK resident VFR traffic growth such that there is no obvious decline.

40% 35% 30% 25% 20% 15% 10% 5% 0% -5% 2004 Q1 8 ဗ 8 2003 Q4 g g g δ 8 Rest of World — — UK ——— Total UK residents - - - - Total per MQ6

Figure 2-8 UK resident VFR traffic by nationality, 2001 - 2006

Source: International Passenger Survey

- 2.19 A similar segmentation of non-UK resident VFR traffic shows less pronounced but comparable results. The growth rate of the UK national segment (which makes up around 30% of the total) has declined from over 10% per annum in 2004 to around 5% in 2006, whereas the other EU national segment (which accounts for around 40% of the total) has grown by around 15% per annum in 2004, 2005 and 2006.
- 2.20 This analysis highlights how growing internationalisation in the UK economy, partly explained by the freedoms of movement of labour and liberalisation of markets

²⁷ In this document, where IPS data is referred to, the figures are taken from the quarterly MQ6 – Transport Travel and Tourism publication. These publications include data for the current and previous years (where the current year figures are provisional, and the prior year's may be revisions of previously published data), so data were available up to Q2 2007. More detailed IPS data than that published in MQ6 was used for this analysis, with data available up to Q4 2006.

within the European Community, has made traffic growth at UK airports less dependent on UK holiday traffic and domestic services.

Other European markets

2.21 Other developed European aviation markets have recently experienced healthy traffic growth. This can be seen in Figure 2-9 below, which shows a cross-country comparison of air traffic and GDP growth in 14 EU member states and Switzerland.

18% 16% 14% 12% 10% 8% 6% 4% 2% United Kingdom Switzerland Germany Weland Portugal France Sweder □ 2005 passenger growth ■ 2006 passenger growth ■ Jan-Sep 2007 passenger growth ■ 2005 GDP growth ■ 2006 GDP growth

Figure 2-9: Annual European Traffic Growth, 2005 and 2006

Source: Eurostat and CAA Airport Statistics

- 2.22 It can be seen that the growth of air passenger traffic in the UK in 2006 was slower than the growth of traffic in 14 other developed aviation markets in Europe, many of which saw GDP growth similar to the UK. Further, the other European countries mainly saw passenger traffic growth well in excess of GDP growth for 2005 and 2006, unlike the UK. The Association of European Airlines, the members of which are predominantly European full-service carriers, reported traffic growth of 4.2% in the first nine months of this year, which is higher than the growth of UK traffic, which also includes traffic of no frills operations, of 2.3% over the same period. This suggests that the factors underlying the slowdown in traffic growth are unique to the UK or have affected the UK to a greater extent than other European countries.
- 2.23 In order to gain a greater understanding of the reasons behind the recent slowdown in the growth of UK passenger volume, this paper explores a number of possible causes, concentrating on those market segments that have been most affected. The factors considered here are:
 - Economic factors;
 - Increases in the cost of air travel;

- Competition with other modes of transport;
- Attitudes towards the environment; and
- The propensity to fly of UK leisure passengers.

The next two chapters examine these factors in detail.

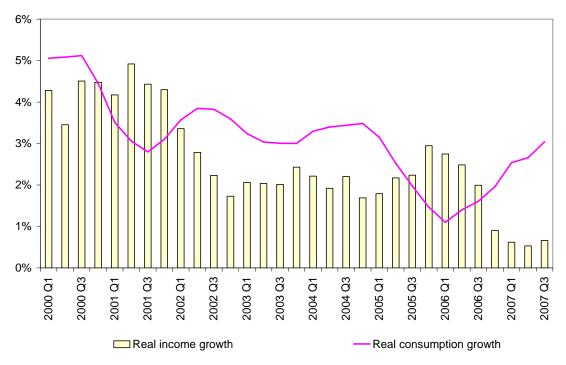
Chapter 3. Possible causes of slowing air traffic growth

- 3.1 This chapter investigates a number of possible causes for the recent slowdown in UK air traffic, including:
 - Economic factors;
 - Increases in the cost of air travel;
 - · Competition with other modes of transport; and
 - Attitudes towards the environment.

Economic factors

3.2 The CAA's previous analysis of the outbound leisure market noted that long term trends in demand appeared more closely related to consumer expenditure than to other economic variables. Expenditure by UK residents on leisure travel is clearly non-essential, but would be expected to rise as wealth increases. Although greater expenditure may not lead directly to more passenger movements (as it could be manifested through greater expenditure per trip), a strong relationship might be expected. Figure 3-1 below shows the rolling annual growth rate of real income and real consumer expenditure since 2000.

Figure 3-1: Rolling annual growth rate of UK real household disposable income and UK real consumer expenditure, 2005 - 2007



Source: ONS

3.3 Between 2000 and 2002, consumer expenditure was boosted by robust growth in households' real disposable incomes, as well as further gains in household wealth, particularly from increases in house prices. However, the continued strength of consumption growth in 2003 and 2004 was against a backdrop of a slowdown in the growth of income and, in the second half of 2005 there was a sharp drop in the rate

of growth of consumer expenditure which lasted until the start of 2006, when it picked up again. By Q2 2007 consumption was growing at 2.7% as compared to 1.4% in Q2 2006.

- 3.4 The slowdown in the growth of consumption has been largely attributed to successive interest rate increases since the second half of 2005. Rising interest rates have made borrowing more expensive and this, coupled with recent sluggish growth of real incomes, has had a negative impact on consumer expenditure. Higher interest rates have also had a negative impact on consumer cash flows by increasing debt service costs on existing loans²⁸, although this is partly offset by gains made by net savers.
- The relationship between real income, interest rates, borrowing²⁹ and consumer 3.5 expenditure is illustrated in Figure 3-2.

7% 70.000 60,000 6% 5% 50,000 40,000 4% 30,000 3% 20,000 2% 1% 10,000 0% 2001 Q1 2000 Q3 **Q**3 2002 Q3 2004 Q1 2006 Q3 2003 Q3 2004 Q3 2005 Q3 g 2007 Q3 2002 Q1 2003 Q1 2006 Q1 2000 Q1 2005 Q1 2001

Figure 3-2: Macroeconomic background, 2000 – 2007

Note: consumer credit includes mortgages and is the seasonally adjusted new amounts loaned in period.

— Real consumption growth (left axis)

Consumer credit: gross lending 2007 prices (right axis)

Source: ONS

Interest rates (left axis)

Real household disposable income growth (left axis)

When real income growth slowed in 2002, consumer expenditure continued 3.6 expanding at a strong rate until the end of 2004; during that period interest rates were low and consumers appeared to borrow to support their lifestyles. However, when interest rates increased in 2004, consumer borrowing stopped increasing and, by 2005, it started to fall whilst consumption growth slowed sharply. The uplift in the

²⁸ According to Morgan Stanley, an investment bank, debt-servicing costs are at their highest as a share of disposable income since the recession of the early 1990s, "Debt Hangover", The Economist, 28 June 2007. ²⁹ Total consumer credit including mortgages.

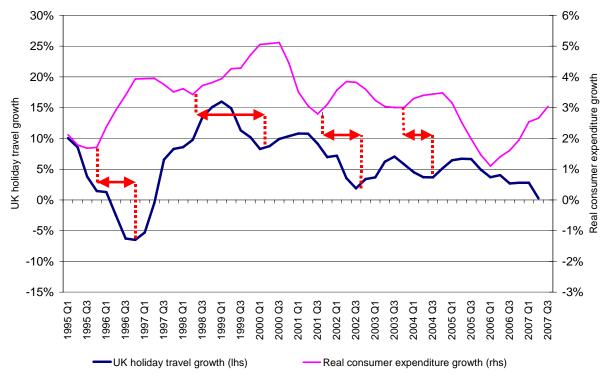
growth of consumer expenditure in the first two quarters of 2007 is surprising in this context³⁰.

3.7 The CAA's previous analysis into outbound leisure travel also suggested that changes to house prices might be an important predictor of passenger demand growth over the short term, possibly because consumer confidence was closely related to wealth. Data on real UK house prices³¹ indicate that year on year growth fell from 15% in 2004 Q3 to –0.1% in 2005 Q3, although it has since picked up to around 5% in 2007 Q1-Q3. This mirrors the changes in consumption growth shown in Figure 3-2, including the recovery in the first two quarters of 2007, although for house prices, the figure for 2007 Q2 has only reached a third of the level of growth seen in late 2004.

UK resident international holiday travel

3.8 The relationship between growth of consumer expenditure and UK residents' demand for holiday travel is illustrated in Figure 3-3.

Figure 3-3: Rolling annual growth in UK holiday travel (passenger numbers at UK airports) and real consumer expenditure, 1995 - 2007



Notes: growth rates are rolling annual growth rates calculated every quarter
holiday travel growth rates in 1999 are affected by a change in IPS survey methodology
Source: International Passenger Survey and ONS (series ABJR)

3.9 There is a fairly close relationship between the growth of consumer expenditure and the growth of holiday travel abroad, with the two series moving in the same direction

31 Source: Nationwide Building Society

³⁰ ONS data on the components of the consumer expenditure measure indicate that the main contributors to this growth were the 'clothing and footwear' and 'recreation and culture' categories.

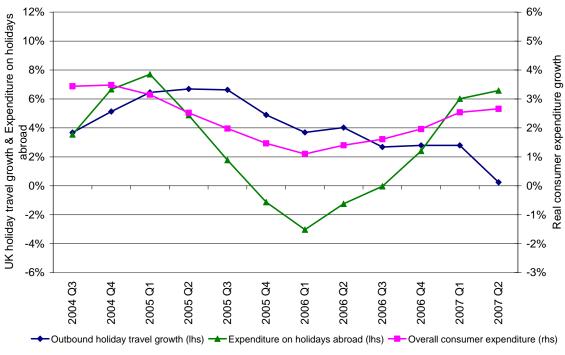
over time. However, with the exception of the period between 1998 and 1999, the relationship appears to be characterised by a considerable lag with changes in holiday travel following movements in consumer expenditure.

- 3.10 For example, an increase in the rate of growth of the consumer expenditure at the start of 1996 was followed by an upswing in the growth of holiday travel almost a year later. Similarly, a sharp drop in consumer expenditure at the start of 2000 was followed by a protracted slowdown in the growth of holiday travel in 2001 and 2002 (which was, in any case, exacerbated by the 11 September 2001 attacks).
- 3.11 A further analysis of the lead-lag relationship between consumer expenditure and international holiday travel is presented in Annex 3, examining the correlation coefficient between the growth of holiday traffic and different lags of growth of consumer expenditure. The analysis indicates that there is a lag of between six months and a year before changes in consumer expenditure work their way through to impact on demand for holiday travel in a more substantial way, but that the effect on expenditure whilst on holiday is much more immediate. Annex 3 also examines the relationship between trends in consumer expenditure and holiday spending by UK residents. Unlike for passenger demand, the growth of expenditure when on holiday abroad correlates best with the growth of consumer expenditure with little or no time lag.
- 3.12 While the cross correlation analysis presented in Annex 3 gives a first insight into the relationship between consumer expenditure and holiday travel, and the time lag between them, it does not necessarily imply any causal effect of one variable on the other. However, a more rigorous causality test³³ confirms the leading indicator role of consumer expenditure on holiday travel but not vice versa. The results also suggest that this leading indicator is useful in predicting the future growth rate of leisure travel up to six months ahead.
- 3.13 This lag could be explained in part by passengers booking their flights in advance and, being unable to change them, restricting instead the amount they spend while abroad. However, CAA Passenger Survey data for 2006 suggests that around 50% of outbound international holiday passengers booked their flights within three months of travelling and only around 10% booked more than 6 months before their flight. The results of a stated preference survey in the CAA's previous study of outbound leisure air travel showed that many passengers respond to higher air fares (a situation which could be considered equivalent to lower willingness to spend) by economising on their trip, either through spending less at their destination or by choosing a less expensive flight to a different destination. However, such passengers still take a flight and so would not have an immediate effect on the growth in outbound leisure travel. Figure 3-4 looks at the most recent developments in outbound leisure growth and consumer expenditure, both overall and on holidays, in more detail.

33 The test performed was based on the Granger causality test, which postulates that if variable X (Granger) causes variable Y, then changes in X should precede changes in Y. Thus the inclusion of past or lagged values of X in a regression of Y should significantly improve the prediction of Y.

³² Correlation coefficient indicates the strength and direction of a linear relationship between two variables. It takes values between 0 (no relationship) and 1 (perfect linear relationship).

Figure 3-4: Rolling annual growth of UK holiday travel passengers, expenditure abroad, and real consumer expenditure



Source: International Passenger Survey and ONS (series ABJR)

- 3.14 The pattern shown by recent data in Figure 3-4 is consistent with the results from the analysis of the historical data in Annex 3. The growth in number of outbound holiday passengers lags the growth of the other two series. However, the growth in expenditure on holidays abroad shows no such lag and moves with overall consumer expenditure.
- 3.15 This evidence suggests that as the ongoing slowdown in the growth in the number of passengers taking holiday trips abroad seems to be related to prior period weakness in consumer expenditure, then its recent downward trend may be a short term phenomenon rather than a structural change in demand³⁴.

Domestic travel

3.16 While the weakness of consumer expenditure growth appears to have played an important role in the slowdown of growth in international holiday travel, the same factor is unlikely to account for the much sharper drop in the growth of domestic air travel. Figure 3-5 below indicates that the correlation between consumer expenditure growth and domestic air travel growth is weaker than the correlation between consumer expenditure and holiday air travel shown in Figure 3-4 above.

³⁴ Nationwide's Consumer Confidence Index shows a decline from early 2005 to early 2007, with a small recovery thereafter. http://www.nationwide.co.uk/consumer_confidence/default.htm

Figure 3-5: Rolling annual growth of domestic air travel and real consumer expenditure



Source: CAA Airport Statistics and ONS

3.17 This may be explained by CAA survey data, which suggests that a considerable proportion of domestic traffic comprises passengers who travel for business³⁵, and this market segment may be less affected by changes in consumer confidence. This suggests that factors other than trends in consumer expenditure may be more significant in explaining the slowdown in domestic growth.

Increase in costs of air travel

- 3.18 There have been three key factors affecting the cost (or convenience) of air travel, either to the passenger or the airline, in recent years. The first has been the rising oil price, which has nearly tripled since the start of 2004. The second has been the doubling of Air Passenger Duty (APD) for all journeys departing UK airports taken on or after February 2007. The third has been the security restrictions following the terrorist threat in August 2006 which have increased the overall journey time and 'hassle factor' for passengers travelling from the UK's main airports.
- 3.19 Increases in the cost of travel, if passed through to the passenger, will have an effect on air travel, but this effect will not necessarily manifest itself solely as reduced demand growth. Passengers may choose to change their travel plans to reduce the cost of their flight or simply reduce the other expenses they will incur on their trip, rather than not to fly at all. Cost increases alone might also be expected to affect all leisure passenger segments equally and therefore would not give rise to the specific reductions in demand growth of UK resident holiday or domestic passengers.

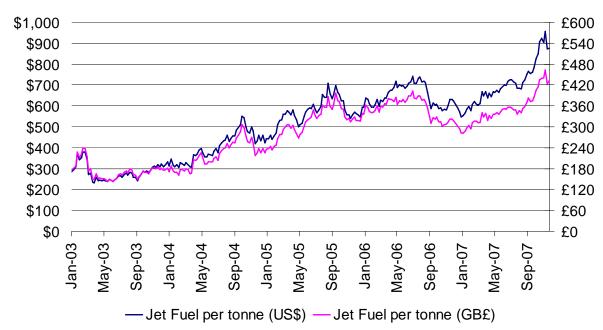
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³⁵ Business travellers represented nearly half of all domestic passengers not making a connecting flight in 2006. In contrast, for international travel, business passengers represented only 22% of non-connecting passengers.

Increases to oil prices

3.20 Although there are ways in which airlines can reduce the fuel consumed on a flight, the major part of this cost is unavoidable. Jet fuel prices have risen from just over \$320 per tonne in January 2004 to around \$900 per tonne in November 2007. Many carriers have hedging strategies in place to mitigate the increased cost of fuel, but these deals will only protect the airline temporarily against a sustained price increase. For European airlines, the effect of rising fuel prices on their cost base has been dampened to some extent by the weakening of the dollar over the same period. Figure 3-6 shows how the price of jet fuel in dollars and its sterling equivalent has risen since January 2003.

Figure 3-6: Price of jet fuel per tonne in US dollars and Sterling equivalent 2003-2007



Sources: Jet fuel prices - London spot rates from www.ft.com; exchange rates - www.oanda.com

3.21 Nevertheless, the CAA's airline statistics show that in 2004, fuel and oil costs represented 16% of all UK airline costs, in 2005 they represented 22%, whilst in 2006 this figure had risen to 25%³⁶. Although these figures take account of any airline hedging of fuel prices, they also reflect the extent to which UK airlines overall reduced other operational costs over the period, either through the efforts of individual airlines or simply through the changing mix of full service, charter and no frills operators. Table 3-1 shows how the reported fuel cost per seat kilometre used (or tonne kilometre used) increased over this period.

³⁶ IATA, in their 2007 financial forecast, report that fuel costs represented 25% of all airline operating expenditure worldwide in 2006 and forecast this to grow to 28% in 2007 and 30% in 2008.

Table 3-1: UK airlines' fuel cost per seat kilometre used 2004-2006

Year	Cost of Fuel and Oil (£bn)	Total Operational Cost (£bn)	Total tonne km used (bn)	Fuel cost as percentage of total cost	Fuel cost per tonne km used (p)
2004	2.2	13.4	28.4	16%	7.6
2005	3.3	14.7	29.0	22%	11.2
2006	3.9	15.2	29.8	25%	12.9

Source: CAA airline statistics

- 3.22 The table indicates that the increase in fuel cost for UK airlines over the period is around 70% (from 7.6 to 12.9 pence per tonne km used). This would equate to an extra cost in 2006 of £1.6 bn. Given that UK operators account for around 60% of all operations at UK airports, this suggests that the oil price increases have added costs of between £2.5 bn and £3 bn overall between 2004 and 2006. With further increases in oil price experienced through 2007, this figure is likely to rise even further.
- A number of full service airlines introduced specific fuel surcharges as a response to 3.23 these increases. BA's fuel surcharges³⁷ on ex-UK long haul services were raised 14-fold, from £2.50 per sector when first introduced in May 2004 (reaching £10 by the end of 2004) to £35 by the end of 2006. Although not all airlines levy such charges, those that do not may be unable to absorb fuel cost increases for long in a competitive market, so it is likely that, eventually, at least some part of these costs will be passed on to the passenger³⁸.
- A small sample of airline half year and full year results³⁹ covering the period to the 3.24 end of September 2007 indicate that profits have increased compared to the previous year and, although in some cases yields are down, load factors have remained roughly constant. All three sets of results comment on the challenge of rising fuel costs, but point out that these have been mitigated to some extent by exchange rates. The short haul airlines note that APD increases have also been a factor in the year to date.

Doubling of Air Passenger Duty rates

3.25 Air Passenger Duty is levied on the carriage, from a UK airport, of chargeable passengers⁴⁰ on chargeable aircraft⁴¹. APD was introduced with effect from 1 November 1994 at £5 per UK departure to EEA points and £10 to non-EEA points. It was increased to £10 and £20 respectively with effect from 1 November 1997. APD was further amended with effect 1 April 2001 to £5 (EEA) and £20 (non-EEA)

³⁷ Other long haul airlines that identify fuel surcharges in their overall ticket prices implemented increases of the same order.

The issue of cost pass-through could be investigated directly using airline yield data, but such data is not widely available and, where it is published, tends to be at a very aggregated level. Total airline revenue, revenue per passenger, or revenue per passenger kilometre, could give some indication of the extent of cost pass-through, but these data would also be affected by, for example, changes to average airline sector distance, mix of premium and non-premium passengers, changes in the level of competition faced, or the ratio of ancillary to direct revenues.

From British Airways, Ryanair and easyJet

⁴⁰ See HMRC Reference: Notice 550 for detail – in summary, a "chargeable passenger" is a non-transit passenger departing the UK who has paid for a seat on the aircraft (i.e. excludes airline employees engaged in duties and passengers carried free of charge under a statutory obligation).

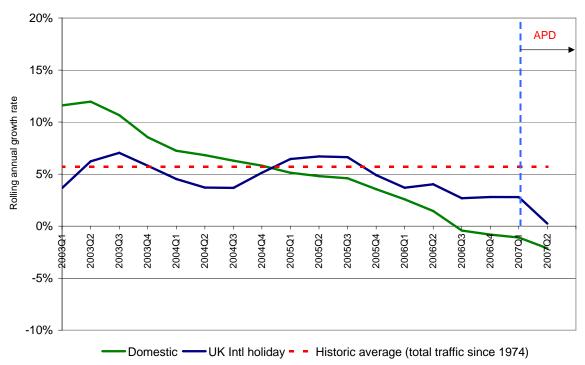
41 See HMRC Reference: Notice 550 for detail – in summary, a "chargeable aircraft" is a commercial aircraft with 20+ seats or

an authorised take off weight of 10+ tonnes.

for travel in the lowest class of travel and double those amounts for travel in a higher class of travel.

- 3.26 In December 2006, it was announced that, effective for flights taken on and after 1 February 2007, APD for domestic and short haul flights was to be increased from £5 to £10 for economy class passengers and from £10 to £20 for premium class passengers. Long haul economy passengers would pay £40 (up from £20) while premium passengers (those booking premium economy, business or first class) pay £80 (up from £40)⁴².
- Both HM Treasury⁴³ and IATA⁴⁴ anticipated these additional costs could have a 3.27 dampening effect on demand. However, as Figure 3-7 below illustrates, the growth of traffic slowed below the historic rate of growth well before the increase in APD came into force in February 2007.

Figure 3-7: Increase in APD and traffic growth (UK holiday and domestic traffic only)



Source: International Passenger Survey and CAA Airport Statistics

The question of the impact of APD on traffic is of considerable interest to both the 3.28 industry and policymakers. DETR's analysis in 1997 suggested that the introduction of APD reduced demand in 1995 by less than 2%45. More recently, a ministerial

⁴² Those flights offering a single class of service have thus far been subject to the lower rate of APD, this includes business class only services (as defined by a seat pitch of over 40") which on a mixed class flight would have been subject to the premium rate. This will be amended from 1 November 2008, when business class only flights will be subject to the higher level of APD. A further change was also announced in the Pre-Budget Report on 9 October 2007. This was the more fundamental replacement of APD with a tax payable per plane rather than per passenger. Although the details of this tax are

not yet clear, it is intended to be implemented from 1 November 2009.

43 Pre-Budget Report 2006, HM Treasury, December 2006. Paragraph 7.82 indicates that the rise in APD is expected to deliver future aviation carbon savings.

IATA Economics Briefing, "Impact of the Rise in the UK Air Passenger Duty". However, the briefing uses passenger price elasticities somewhat larger in magnitude than the CAA has previously estimated.

45 Source: Air Traffic Forecasts for the United Kingdom 1997, Department of the Environment, Transport and the Regions.

response to a parliamentary question revealed that the Customs and Excise analysis indicated that air travel has proven relatively unresponsive to changes in APD⁴⁶.

- 3.29 Measuring the impact of APD as well as any other taxes and charges is difficult in practice. Traffic growth is influenced simultaneously by a number of different factors and, if the impact of these factors is not controlled for, estimates of the impact of APD may be misleading. This is particularly problematic if the analysis is carried out over a longer time span during which other factors, such as air fares and consumer confidence, are likely to change⁴⁷.
- 3.30 The increase in APD which took place on 1 February 2007 was announced on 6 December 2006. Thus there were a significant number of passengers who had booked and paid for flights prior to this announcement, but with a flight date after 1 February. This meant that the airlines were liable for the APD on these passengers.
- 3.31 Generally the no-frills airlines sought to reclaim this money from the passengers, with both Ryanair and easyJet publicly stating that any passenger who had not paid the extra duty would not be allowed to fly⁴⁸. BA, however, announced that it would absorb the price increases for those passengers who had booked before 12 December, although with no commitment to do so for those passengers booking after that date.
- 3.32 Full service carriers file their fares on computer reservation systems, although they can control their average yields without changing these fares by adjusting the availability of the different types of restricted tickets. For this reason, unrestricted fares may give a better picture of whether the increase in APD was passed on to the passenger or not. The fares quoted on computer reservation systems are exclusive of all taxes, fees and charges. The total fare paid by the passenger will therefore comprise this net fare plus the total of the taxes, fees and charges (which includes the APD charge). If the airline were seeking to absorb the cost of the APD increase, one would expect to see a compensatory fall in the underlying fare quoted.
- 3.33 Reviewing a small sample of unrestricted economy, premium economy and business class unrestricted fares⁴⁹ revealed that they did not change between January and March 2007. This suggests that for some routes and ticket types at least, the full service airlines did not immediately absorb the cost of the APD increase, and that it was passed on to the passenger.
- 3.34 The CAA also carried out preliminary analysis of the impact of the increase in APD from 1 February 2007 on air fares and traffic growth from no frills airlines on a number of routes operated from Stansted, Luton, Manchester and Liverpool. The analysis focused on the short term impact and it was carried out in two steps. In the first step, the CAA monitored fares before and after the doubling of APD to

Source: John Healey MP, Economic Secretary to the Treasury, House of Commons, Hansard written answers, 5 April 2005
 Even over the period just before and after the introduction of APD, there were factors affecting the economy and air travel.
 Interest rates were raised by 0.25% in January 2007 and many South East airports were disrupted in early January 2007 due to for

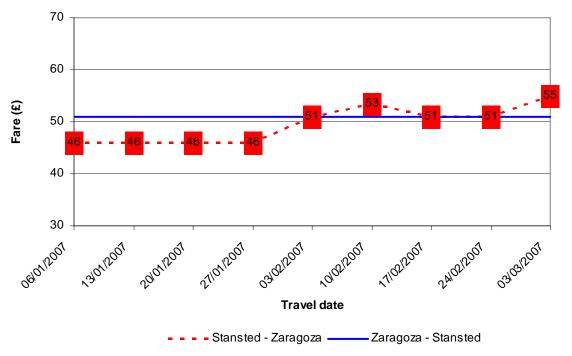
to fog. ⁴⁸ BBC News, http://news.bbc.co.uk/2/hi/uk_news/6258327.stm

⁴⁹ The Y2, W2 and J2 fares, respectively.

determine whether the airlines may have absorbed some of the increase in APD by lowering the underlying fare. For those routes where the underlying fare was not adjusted to offset the impact of APD increase on the total fare, the second step was to examine traffic growth before and after the imposition of APD.

- 3.35 On the majority of routes investigated, the fare difference before and after the doubling of APD was £5, which exactly matches the increase in the relevant APD rate. The period reviewed covered the week immediately preceding the change and the first week after. Some of the routes showed different variations.
- 3.36 In addition to this spot comparison, fares on several routes were monitored until the end of February⁵⁰ to examine whether the increase would stick. For those routes, the fares for outbound flights (which are subject to APD) were compared with inbound fares (which are not), in order to control for route-specific demand developments that may move the underlying fare over time. The outcome of this analysis indicated that the £5 increase represented a full pass-through of the APD increase. An example is shown in Figure 3-8.

Figure 3-8: Ryanair one-way fare, Stansted – Zaragoza, fare is from Stansted, collected every Thursday for travel on the following Saturday



Source: CAA presentation of data collected from Ryanair website

- 3.37 On the Stansted-Zaragoza route, the outbound fare increased by £5 at the time APD doubled while the inbound fare remained unchanged. A similar pattern was observed on the route Stansted-Perpignan.
- 3.38 For those routes where fares increased in line with the increase in APD, the next step was to examine traffic growth before and after 1 February. Since monthly

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⁵⁰ Fares were not tracked after February as they were likely to become more affected by seasonal factors.

growth rates are often influenced by occurrence of special events, the traffic was aggregated over a three-month period as follows:

- November 2006 January 2007 before APD
- February 2007 April 2007 after APD
- May 2007 July 2007 after APD

Traffic in these periods was then compared with traffic in equivalent periods 12 months earlier to control for seasonal effects.

- 3.39 The resulting picture gives no conclusive evidence of the impact of the increase in APD. As we have already seen, there have been a number of factors affecting the growth in air traffic over this period, and it is not possible to isolate the consequences of the rise in APD. However, it is reasonable to infer that the passing through of this duty to the passenger will result in some reduction in demand, all other things being equal.
- 3.40 However, although it will have had an effect on traffic, the increase in APD seems unlikely to have been a key driver in the slowdown of demand growth: the downward growth trend was evident before the APD increase was announced or implemented; the impact of rising oil prices on UK air travel costs has been over double the extra revenue derived from the APD increase; and APD affects all international passenger segments equally, so it would not explain the downturn in growth being concentrated on the UK resident international holiday segment. APD increases would be expected to affect domestic travel proportionately more than international travel, as the tax is paid on both the outbound and return flights of a domestic trip. However, APD increases alone cannot explain the downturn in domestic growth, as the latter was evident long before the former took effect.

Security restrictions at UK airports

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3.41 Recently, the airline industry has been affected by changes to airport security procedures, implemented at airports throughout the UK after authorities foiled an alleged plot to blow up transatlantic aircraft in mid-flight in August 2006. In the immediate aftermath of the plot, there were widespread cancellations and major delays. Although the security procedures were subsequently modified, certain restrictions persisted for guite some time ⁵¹.

3.42 One of the main impacts of increased security at airports is the increase to overall journey time for air travel, and thereby the 'cost' to the passenger of taking a trip. Passengers have been advised to arrive at the airport earlier – even for domestic flights – to allow sufficient time for check in and security clearance. Following the subsequent attacks at Glasgow airport on 30 June 2007, restrictions were placed on vehicles being allowed to drive up to the terminal building. Particularly at the busier airports, the cumulative effect of these restrictions has been to increase the door-to-door journey time of air travel.

Initial security procedures were a mandatory full body search of all passengers, and no hand luggage whatsoever. The restriction on hand luggage was removed, and one piece was allowed after about a week, though the ban on liquids remains a contract of the contract of th

restriction on hand luggage was removed, and one piece was allowed after about a week, though the ban on liquids remained until November 2006. There are still restrictions remaining over the quantity of liquids allowed in cabin baggage, with no more than 100ml allowed in an individual container. However, the restrictions on the number of pieces of hand luggage have now been lifted as some UK airports.

- 3.43 During this period of increased security, there have also been many media reports that the airport experience is worsening⁵², particularly at the busier airports, as the extra time spent at the airport before the flight is taken up with queuing for check in or security.
- 3.44 These adverse changes to the airport processing environment may have increased the relative attractiveness to passengers of other transport modes. This possibility is explored further in the following sections.

Competition with other modes of transport

- 3.45 There are various reasons why the appeal of alternative transport modes may change relative to air travel. For example, there may be positive improvements in services available (e.g. upgrading of the West Coast Main Line), or more negative reasons as to why passengers might prefer to avoid flying (e.g. increases in security restrictions slowing down journey times).
- 3.46 In the following sections we review the evidence for modal competition with international air travel; and conduct a more in-depth analysis of the competition that long-distance rail presents to domestic air travel.

a) Modal competition with international air travel

- 3.47 For international travel, no other mode has passenger volumes on a par with the 150 million or so carried by air transport to and from the UK, so it is unlikely that a slowdown in growth of air travel overall has been caused by competition from other modes. However, for certain destinations, particularly those countries nearest to the UK, there is some evidence that demand for other forms of transport is increasing. There may be a variety of reasons for this, and it is by no means certain that this growth is at the expense of air travel. However, increases in airport security restrictions and the subsequent delays to travel and inconvenience have been highlighted by other transport providers in their marketing literature.
- 3.48 Eurostar operates direct rail services from London to Paris, Lille and Brussels. Using the Eurostar website, customers are able to book through tickets to any Belgian station as well as nearly 80 other European destinations. Eurostar carried 6.1m passengers in the nine months to 30 September 2007 representing a 4% increase on the same period in 2006.
- 3.49 Since mid-November 2007, the London Eurostar terminal has moved to the newly re-opened St Pancras International, the move coinciding with the completion of a dedicated high speed track between central London and the Channel Tunnel. The new line has enabled Eurostar trains to cut journey times between London and the Continent by 20 minutes. St Pancras to Paris Gare du Nord now takes 2 hours and 15 minutes.
- 3.50 Eurotunnel offers the opportunity for passengers to cross the channel and take their private vehicle with them. The number of passenger vehicles using Eurotunnel has

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⁵² For example, "Airports getting you down?", 10 September 2007, www.ft.com

also increased over the nine month period to 30 September 2007 – with a 7% increase bringing the total to 1.6m. Eurotunnel has drawn attention to its environmental credentials, as have domestic rail operators such as Virgin Trains.

3.51 Table 3-2 shows how the annual growth in passengers between the UK and various European cities has changed over the last 10 years. By separating out those cities with a direct Eurostar connection (Paris and Brussels), comparisons can be made with routes where there is no rail alternative. The table indicates that although the presence of a rail link has depressed air passenger growth, this is not a new trend and evidence of it can be seen over the last 10 years.

Table 3-2: Effect of rail competition on international air traffic growth rates

					Q1-Q3
Traffic split	1998-2003	2004	2005	2006	2007
UK - listed European cities					
to/from London airports	1.2%	-0.9%	-3.6%	0.6%	0.0%
to/from regional airports	5.9%	3.7%	8.1%	3.8%	4.9%
TOTAL	2.8%	0.7%	0.7%	1.9%	2.0%
Facing competition from rail services	-1.0%	-1.6%	-4.7%	-0.1%	-1.0%
Other	4.6%	1.7%	2.9%	2.6%	3.1%
TOTAL	2.8%	0.7%	0.7%	1.9%	2.0%
London - listed European cities					
Facing competition from rail services	-2.5%	-2.8%	-9.6%	-1.8%	-6.5%
Other	2.8%	-0.2%	-1.5%	1.4%	2.0%
TOTAL	1.2%	-0.9%	-3.6%	0.6%	0.0%
Regional - listed European cities					
Facing competition from rail services	1.3%	0.1%	1.9%	2.0%	5.5%
Other	8.7%	5.6%	11.1%	4.6%	4.7%
TOTAL	5.9%	3.7%	8.1%	3.8%	4.9%

Notes: Cities facing rail competition are Paris and Brussels; other cities are Madrid, Frankfurt, Rome, Amsterdam and Stockholm

1998-2003 rate shown is the average annual growth over the period

2007 growth is the calculated by comparing the period January-September 2007 to the same period in 2006.

Source: CAA Airport Statistics

- 3.52 Figures released by the Port of Dover⁵³ for 2006 show that passenger numbers passing through it increased by 3.4% on the previous year, to 13.7m. More recent figures show that this trend has continued in 2007, with further increases. P&O Ferries use their website to draw attention to a number of perceived advantages of ferry travel, including the lack of excess baggage costs and the avoidance of "being stuck in an airport".
- 3.53 The UK is the second largest cruise market in the world (after the US)⁵⁴ in terms of passenger numbers, although many passengers will be required to take an

⁵³ P&O Ferries, SeaFrance, Norfolkline and SpeedFerries all operate from Dover.

⁵⁴ "The UK Cruise Market" – a market research report by the US Commercial Service of the US Department of Commerce, August 2005

international flight from the UK in order to get to the boarding point for their cruise. In 2004, more than 1m cruises were taken. According to a report from the US Commercial Service, the sector is rapidly growing, with bookings from the UK quadrupling between 1994 and 2004. In particular, the ex-UK sector (i.e. those passengers sailing from a UK port rather than flying overseas to start their cruise) is noted for its "tremendous growth". A report by Ocean Shipping Consultants forecasts that the UK cruise market will grow at an average rate of 4.5% a year to reach 2.3m passengers by 2020. However, in total this is still a very small market relative to the size of the leisure air travel market.

3.54 Despite some recent passenger growth in other international transport modes from the UK, the relative size of these modes compared to international air travel suggest that they are not the main cause of the slowdown in growth of international outbound leisure air travel.

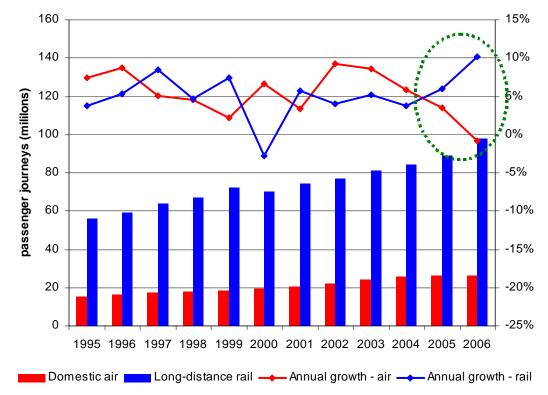
b) Competition with rail for domestic travel

- 3.55 Comparing data for different modes⁵⁵ shows that road vehicle long distance passenger kilometres were nearly six times those of rail and air combined, indicating that it will be difficult to find evidence of substitution from air to road for long distance domestic travel. Given this, and that rail travel, with its faster city centre to city centre travel times, is probably a closer substitute for domestic air travel than either private road vehicle or coach travel, this section will concentrate on the competition between air and rail. However, it should be borne in mind that any modal shifts between air and rail are small in context of the overall domestic travel market.
- 3.56 An important difference between domestic travel and international holiday travel is that the former is much more susceptible to competition from surface modes and in particular from rail services. Rail pricing is becoming more dynamic, for example offering heavy discounts for advance bookings. Figure 3-9 contrasts the growth of domestic air travel and domestic long-distance rail travel, showing that the two modes of travel air and rail have experienced very different growth trends recently.

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⁵⁵ Sources: Office of Rail Regulation (National Rail Trends Yearbook 2006-2007), Department for Transport (Transport Statistics Great Britain 2006), Office of National Statistics (Transport Trends 2006). See Annex 2 for details of this calculation.

Figure 3-9: Annual passenger volumes, domestic air and UK long-distance rail



Source: CAA Airport Statistics, Office of Rail Regulation

- 3.57 Figure 3-9 also highlights the effects of the Hatfield rail crash in October 2000, the 11 September attacks in 2001, and the subsequent bounce back of traffic on rail and air, respectively. However, it is apparent that the slowdown in the growth of domestic air travel from 2005 to below the historic level coincides with a faster growth of long-distance rail travel.
- 3.58 While Figure 3-9 suggests the possibility that there has been traffic substitution from air to rail services recently, long-distance rail traffic volumes are approximately four times larger than domestic air travel volume. That, and the fact that 20% of domestic air travel is connecting traffic⁵⁶, suggests that the growth of rail traffic may also have benefited from other developments (such as infrastructure improvements). Likewise, some of the loss in domestic air passenger numbers may be due to factors other than the competition from rail services.
- 3.59 To examine further the extent to which the trends illustrated in Figure 3-9 above are causally related, traffic growth on the densest routes between UK regional airports, and between London and UK regional airports have been analysed. Details of these routes can be found in Table A1-1 in Annex 1, marked according to whether they face competition from rail services or not. Table 3-3 below presents these results at a more aggregated level.

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⁵⁶ CAA Passenger Survey 2006

Table 3-3: UK domestic air traffic, growth rates 1998 – 2007

						Total
					Q1-Q3	passengers
	1998-2003	2004	2005	2006	2007	(m) 2006
Total UK domestic traffic						26.0
other routes not analysed*						4.5
III/ demostic treffic analysed	6 70/	4.1%	1.0%	-3.0%	2.00/	24 5
UK domestic traffic analysed	6.7%				-2.9%	
facing rail competition	6.6%	3.8%	-0.1%	-4.1%	-3.7%	14.5
not facing rail competition**	6.7%	4.9%	3.3%	-0.6%	-1.2%	7.0
London to regions	4.7%	1.6%	-1.9%	-3.6%	-1.5%	14.6
facing rail competition	5.2%	2.1%	-1.7%	-5.0%	-3.0%	11.2
not facing rail competition	2.9%	0.0%	-2.6%	1.2%	3.5%	3.4
Regions to regions	13.0%	10.6%	7.7%	-1.5%	-5.8%	6.9
facing rail competition	14.0%	10.8%	5.9%	-0.9%	-6.0%	3.3
not facing rail competition	12.1%	10.4%	9.4%	-2.1%	-5.6%	3.6

Notes: Growth rates for 1998 – 2003 are average annual growth rates over the period. The growth for 2007 is calculated by comparing the period January – September in 2007 with the same period in 2006.

Passengers travelling to and from the Channel Islands are treated as UK domestic passengers.

Source: CAA Airport Statistics

3.60 There are a number of results suggested by this analysis⁵⁷.

- Traffic between regional airports has in the recent past grown at a much faster rate than between London and regional airports. Between 1998 and 2003, traffic between regional airports expanded at an average annual growth rate of 12%, which is four times faster than the growth of traffic between London and regional airports (albeit starting from a much lower base).
- The growth performance of both London to regions and region to region markets has slowed recently. The traffic between London and regional airports contracted in 2005, 2006 and in the first nine months of 2007. The traffic between regional airports grew at 8% in 2005 but fell by 2% in 2006, and contracted further in the first nine months of 2007, by 6% on the same period the year before⁵⁸.
- Domestic traffic is carried from all five of London's major airports. Heathrow carries nearly 45% of this traffic and thus drives the overall percentage to a large extent. However, the previous high levels of growth at Luton and Stansted, driven primarily by no frills services, now also appear to be tailing off. In 2006, domestic traffic volumes at Heathrow, Luton and Stansted all fell, whilst Gatwick grew by less than 3%.

⁵⁷ The recent developments in air services between the regions and London, and region to region traffic are covered in greater depth in the CAA publication CAP 775, Air Services at UK Regional Airports, November 2007.

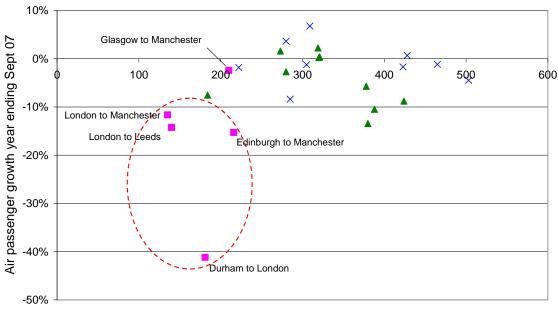
^{*} Passengers not analysed are those travelling on domestic routes with <150,000 passengers p.a., 2004 – 2007.

^{**} City pairs with Air routes not facing rail competition are those not accessible by train alone, i.e. Belfast – London.

⁸ There was some consolidation of intra-regional services during 2007 due to the sale of BA Connect to Flybe.

- More recently, the growth performance of those air services that face competition from rail services has worsened considerably relative to the performance of those that do not, particularly those from London. Air services that face competition from rail services contracted in 2005, 2006 and the first nine months of 2007. In contrast, those air services that are not in competition with rail services recorded positive growth up until 2006.
- 3.61 Air industry representatives interviewed suggested that security restrictions have had a particularly severe effect on shorter distance routes where rail services provide an attractive alternative to air services. Domestic services tend to have a higher proportion of business passengers than international services, and journey time is often of particular importance to these passengers. This seems to be borne out by the data in Figure 3-10, which plots annual growth in domestic air traffic against rail journey duration and proportion of business passengers for the city pairs in Table A1-1 in Annex 1 where there is a rail alternative.

Figure 3-10: Year on year air traffic growth for year ending September 2007, journey duration and proportion of business passengers for selected domestic routes.



Rail journey length (minutes)

Proportion of business passengers on air services

>75% ▲ 55%-75% ×<55%

Source: CAA Airport Statistics

3.62 Routes with shorter rail journeys, particularly those with journey times around, or less, than three hours⁵⁹ and with a high proportion of business passengers appear to have experienced the largest drop in passenger numbers in the year to September 2007. Business passengers are likely to be more sensitive to the relative journey times of air and rail travel, so it might be expected that any increase to the air journey time and decrease to the rail journey time would change the

⁵⁹ Historically, airlines have faced more competition from railways on routes where rail journey is under three hours in duration because much of their speed advantage is lost once check-in and time to access the airport are taken into consideration.

competitive balance. However, this is not true for all routes. Air traffic between Manchester and Glasgow has not fallen significantly, despite a frequent West Coast Main Line service with a journey time of little over three hours.

- 3.63 The evidence presented in Table 3-3 above does suggest that the competition from rail services has played an important role in the recent decline of domestic travel. Closer inspection of the route-level data presented in the annex (Table A1-1) reinforces this conclusion. Furthermore, it reveals that this is a widespread development since the majority of the air services considered that face competition from rail services experienced negative growth in the nine months to September 2007⁶⁰. However, competition with rail is not the only relevant factor since many of the services that do not face competition from rail services have also experienced negative growth over the same period, albeit of a smaller magnitude.
- 3.64 A more detailed analysis of changes in air traffic and rail traffic on route-by-route basis would be required to disentangle the effect of the competition from rail services on domestic air travel from other concurrent developments. However, the CAA was only able to gain access to rail data for a sample four long-distance routes⁶¹ from London for the period between January 2006 and May 2007. This data allows for annual comparison of the change in air and rail traffic for the fivementh period from January to May.
- 3.65 On all four routes air traffic contracted while rail traffic expanded over the period in question. On one route, the increase in rail passengers was greater than the loss in air passengers while on the other three routes the increase in rail passengers was lower than the loss in air passengers. In total, the loss in air passenger numbers was more than twice the increase in rail passengers.
- 3.66 There are several factors which may have specifically influenced domestic passenger switching from air to rail services, including:
 - Rail recovery from the Hatfield effect⁶²;
 - Improvements to the rail network, and
 - Rail and air industry pricing and marketing activities.

These are discussed below in more detail.

Rail recovery from the Hatfield effect

3.67 The Railways Act 1993 broke up the existing British Rail into a number of entities, notably separating the ownership of the infrastructure from the operating companies. Passenger kilometres travelled on the national rail network had fallen steadily from a peak in 1988/89 of around 34 bn per annum to 30 bn per annum in 1993/94. Data from the ORR⁶³ show how the number of passenger kilometres

⁶² Caused by subsequent speed restrictions across the network.

⁶⁰ Comparing the period January – September in 2007 with the same period in 2006.

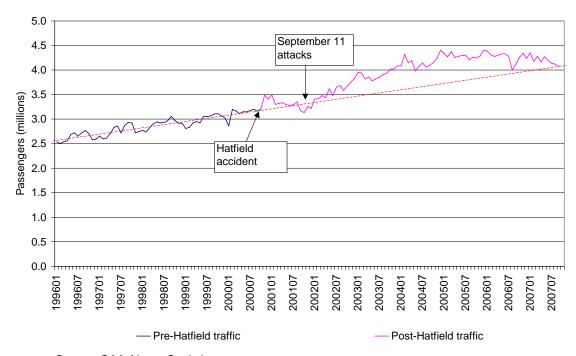
⁶¹ Unidentified here due to commercial confidentiality.

⁶³ National Rail Trends Yearbook, 2006-2007, Office of Rail Regulation

initially continued to fall, but then from 1994/95 began increasing steadily year on year. In 2005/06 the total passenger kilometres was 43 bn.

- 3.68 This pattern of growth, however, was interrupted in 2000. As a result of the Hatfield accident in October 2000 the then network owner Railtrack imposed over 1,200 emergency speed restrictions across its network and instigated a nationwide track replacement programme. This led to severe operational disruption on the national network, resulting in an increase in travel time, delays and overcrowding.
- 3.69 The difficulties in which the the rail industry found itself after the Hatfield accident coincided with the rise of no frills (often cheaper) domestic air travel, and these factors appear to have had a beneficial impact on the growth of domestic air traffic. This is illustrated in Figure 3-11 below, which shows a deseasonalised⁶⁴ monthly series of domestic air traffic between January 1996 and September 2007.

Figure 3-11: Domestic air passenger traffic, monthly deseasonalised series January 1996 – September 2007



Source: CAA Airport Statistics

3.70 With the exception of the period around the 11 September attacks in 2001, Figure 3-11 above shows that there was an upward change in growth after the Hatfield accident, which then levels off. According to the Commission for Integrated Transport (CfIT) the disruption of the rail services led to "an increase of 200,000 domestic air passengers – a 15% increase" However, it is not clear over what period this was measured. The London–Manchester and London–Newcastle routes are noted as seeing exceptionally large increases.

65 UK Commission for Integrated Transport – Factsheet No. 1: The Impact of Post Hatfield Disruption

⁶⁴ The seasonal fluctuations, estimated using the multiplicative ratio to moving average method, have been removed from the monthly time series to enable the non-seasonal trends to be seen more clearly.

3.71 More recently, however, as the performance of the rail industry has improved, growth in domestic air travel has tailed off. This is illustrated in Figure 3-12 which show changes in punctuality and complaints rates between 1999/2000 and 2006/07.

100 140 90 120 80 Complaints per 100,000 journeys Percentage of punctual trains 100 70 60 80 50 60 40 30 40 20 20 10 0 2001-02 2002-03 2003-04 2004-05 2005-06 2006-07 1999-00 2000-01

Figure 3-12: Performance measures of the rail industry

Note: punctuality for long-distance operations is defined as trains arriving withing ten minutes of timetabled arrival at their final destination.

Punctuality, long-distance operators only Complaints rate, all operators

Source: Office of Rail Regulation

- 3.72 It can be seen that there was a marked reduction in rail punctuality and an increase in the complaints rate after the Hatfield accident. However, both performance measures have improved substantially in recent years. Punctuality has returned to the pre-Hatfield level while the rate of complaints effectively halved from the peak of 139 per 100,000 passenger journeys in 2000/01 to 69 in 2006/07.
- 3.73 In this context, the recent slowdown in the growth of domestic air travel can be seen, at least in part, as a correction which may have brought domestic rail travel back towards its pre-Hatfield growth path.

Improvements to the rail network

3.74 The West Coast Main Line is the UK's primary intercity route. The initial plans to upgrade the track were set out in 1994 by Railtrack. Progress was interrupted by the Hatfield accident and subsequent demise of Railtrack. However, the first phase of the work (south of Manchester) was completed and opened in September 2004. The journey time to Manchester was cut to 2 hours 6 minutes (from 2 hours 41 minutes) on the newly introduced Pendolino tilting trains. The improvements not only shortened the journey times, but also improved the punctuality on the line.

3.75 Further upgrading of the track has continued since then, although at the time of writing, the work is not complete and weekend / bank holiday services are still curtailed due to track work. The recently published Virgin Trains timetable plans for 2009⁶⁶ show trains from London-Euston to Manchester running every 20 minutes, with journey duration of just over 2 hours. Other services with improved journey times from London include Glasgow at 4 hours 10 minutes for the fastest train. The comparative flight times are around 1 hour from London to Manchester, and 1 hour 15 minutes to Glasgow. However, the time required at the airport will significantly add to these journey durations. For instance, the BAA London airports recommend checking in for domestic flights between 1 to 2 hours before departure depending on the airport.

Rail and air industry marketing and pricing

- 3.76 Rail industry marketing is focusing on encouraging passengers to travel by train rather than plane. These campaigns seem to be concentrating on two issues. One is the increased security and congestion at airports, which is detracting from the speed advantage of air services, and the other is the relative environmental effects of the two modes.
- 3.77 Virgin Trains, in particular, has run several high-profile marketing campaigns which targeted air passengers directly. For example, their Plane Relief campaign claimed to "cure air-sickness" by providing "powerful dual-action remedy with added environmental relief". This campaign started in February 2006 and, for a limited number of passengers, even allowed travellers between London and Manchester to swap their used boarding cards for a free Virgin Trains First class ticket.
- 3.78 In contrast, larger airlines, such as BA, bmi and easyJet, tend to conduct brand-led advertising at national level, which focuses on international rather than domestic markets. The exception is Flybe which is more active in promoting domestic routes as these represent a more substantial part of its output. Some smaller airlines such as VLM, which operates a service between London City and Manchester, advertise domestic routes in regional newspapers rather than in the national media.
- 3.79 Another potentially important factor, which may have influenced passenger switching from air to rail, are changes in rail operators' pricing practices. Airlines have employed sophisticated yield management techniques to capture more passengers and maximise their revenue. More recently, rail operators have begun employing similar techniques and now offer low fares for bookings made well in advance.
- 3.80 The CAA does not have access to historic rail fares data which would allow a comparison with air fares and thus how relative prices may have impacted on traffic developments. However, to provide some indication of the difference in prices between airlines and rail operators, the CAA has collected air fares and rail fares

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⁶⁶ http://www.virgintrains.co.uk/img/aboutus/downloads/WC_2009_Timetable_Commentary.pdf

data for travel at a future date for a selection of the routes in Table A1-1⁶⁷ (see Annex 1).

- 3.81 Analysis of this data suggests that one of the main differences between air fares and rail fares is that the former tend to increase much faster as the day of departure approaches. However, rail fares are regulated by the Government, and operators are limited in how much they can charge for the Saver Returns (which tend to be the cheapest tickets available at short notice). Also, unlike air fares, rail fares can be sold after all the seat reservations have been taken.
- 3.82 However, the patterns observed in the rail and air fares over time indicate that train operators yield management techniques produce similar results to those of the airlines, and therefore act to encourage early bookings. Table 3-4 below shows the difference between air fares⁶⁸ and rail fares⁶⁹ averaged over all routes covered for bookings made 3, 10 and 45 days in advance.

Table 3-4: Average minimum air and rail fare for domestic routes

	Ticket bought:							
	3 days before travel	10 days before travel	45 days before travel					
Average Air Fare (rounded)	£ 126	£ 93	£ 56					
Average Rail Fare (rounded)	£ 88	£ 82	£ 56					
Air fare as percentage of rail fare	144%	113%	101%					

Notes: routes considered are those shown in Figure 3-13

Fares collected on 26 & 27/11/07 for off-peak travel on 29 & 30/11/07,6 & 7/12/07 and 10 & 11/01/08 with return travel 7 days later. See footnotes 38 and 39 for further details.

Source: www.thetrainline.com for train fares and www.skyscanner.net for air fares

- 3.83 Table 3-4 shows that when booking three days in advance, air fares are over 40% higher than rail fares. Booking ten days ahead reduces this difference to just above 10%. When booking 45 days ahead airfares are almost the same as rail fares.
- 3.84 Figure 3-13 below shows the same information at the level of individual routes. It illustrates the difference in rail and air fares as a percentage of the air fare for the three advance purchase periods. A difference of 100% on a route (for instance Aberdeen to Manchester booked ten days before travel) indicates that the air fare was twice the rail fare, whereas a difference of -50% on a route (for instance

⁶⁷ The air service between London and Blackpool has recently being cancelled and is therefore not include in the fares comparison.

⁶⁸ The data used for the airfares is minimum airfare with the caveat that both outbound and return flights are with the same airline, and the departure times for both flights are similar to each other. In some cases it would be possible to find a cheaper return ticket by flying with different airlines and / or flying at different times. Both full service and no frills carriers were considered.

considered.

69 The rail fares compared were the cheapest non-flexible return tickets available with departure times mid-morning on the given dates. No journeys commenced before 8.30am. For advance bookings in particular, these were usually a combination of two singles. Given the wide range of rail fare options available, some judgement had to be exercised over preferred choices – generally a more direct journey was chosen over a cheaper one unless the marginal cost was deemed to be significant.

Glasgow to London booked ten days before travel) indicates that the air fare was half the rail fare.

500% Difference in fares as percentage of air fare 400% 300% 200% 100% 0% -100% Birmingham to Glasgow Glasgow to Manchester Birmingham to Edinburgh Bradford to London Bristol to Edinburgh Bristol to Glasgow Bristol to Newcastle Cardiff to Edinburgh Derby to Edinburgh Derby to Glasgow Durham to London Edinburgh to London Edinburgh to Manchester Edinburgh to Nottingham Edinburgh to Southamptor Glasgow to London Glasgow to Nottingham Inverness to London Leeds to London London to Newquay London to Plymouth Newcastle to Southampton Aberdeen to Manchester London to Manchester London to Newcastle Aberdeen to London

Figure 3-13: Minimum air and rail fare difference on individual routes

Ticket purchased: ■3 days before travel ■10 days before travel ■45 days before travel

Note: Fares collected on 26 & 27/11/07 for off-peak travel on 29 & 30/11/07,6 & 7/12/07 and 10 & 11/01/08 with return travel 7 days later. See footnotes 38 and 39 for further details.

Source: www.thetrainline.com for train fares and www.skyscanner.net for air fares

- 3.85 It can be seen that on some routes air fares are more costly than rail fares, while on others the opposite is true, even for bookings three days before departure. Relative fares are more likely to influence the choice of mode of leisure passengers, who may plan and book their journeys further in advance. Although Figure 3-13 shows much variation at a route level between air and rail fares, Table 3-4 indicates that the average fares are very similar. This suggests that some price competition exists between the two modes for advance fares.
- 3.86 For some customers the pricing of seats for children will make a significant difference to the overall cost of travel. The National Rail Conditions of Carriage state that up to two children under five years can travel free when accompanied by an adult and children under 16 are entitled to a discount on most tickets. When travelling by air, all children beyond the age of two years require a passenger seat and it is usual for airlines to charge a full adult fare for them. Children under two generally travel for free on aircraft, providing they are not occupying a separate seat.
- 3.87 Chapter 4 will show that families with children tend to make fewer air trips. To some extent this may be due to the practical considerations of travelling with children, but for many the financial impact will also be an influence.

Attitudes towards the environment

- 3.88 There has been much recent publicity in the UK media concerning the environmental effects of air travel. If this reflected a change in public attitudes and behaviour then it would be expected that passengers would choose to forego air travel in order to reduce their carbon footprint either through using alternative modes or destinations, or by not travelling at all.
- 3.89 However, little evidence supports this. The DfT attitudes to air travel survey published in May 2006 commented that of all the interviewees who were anticipating taking fewer flights in the following 12 months, "... no one mentioned environmental concerns as a reason for reducing trips." In February 2007, the Commission for Integrated Transport, in the report on their survey into attitudes to aviation and climate change, stated that, "...Only a small proportion [of respondents] expect to fly less frequently in the future, and this is predominantly due to changes in personal circumstances rather than a concern about the environmental impact of aviation."
- 3.90 Airlines have sought to highlight their efforts to address the environmental effects of their operations. easyJet, Flybe, British Airways, First Choice, Virgin Atlantic, and Monarch are among those airlines prominent in the UK which offer optional carbon offsetting schemes to passengers. Silverjet announced in November 2006 that it would become the world's first carbon-neutral airline by introducing mandatory carbon offsetting for all its flights. Airlines have used advertising campaigns to highlight their green credentials and investment in new and cleaner aircraft. easyJet, for example, has used press advertising to publicise their environmental attributes, highlighting their new, more fuel efficient planes and high load factors. Flybe uses an "eco-label" on its website which describes the environmental properties of the aircraft one has chosen to fly on, by providing details of its noise, Carbon Dioxide and Nitrogen Oxide emissions. Virgin Atlantic is committing money to biofuel research as part of a pledge by Sir Richard Branson to invest all profits from his travel firms in green technology over a 10 year period.
- 3.91 The UK aviation industry is also likely to see more environmental legislation in the future. The European Union has proposed including aviation in the European emissions trading scheme with effect from 2012. One of the reasons for the UK Government's introduction of APD was to ensure aviation met its environmental costs, and the recent announcement that duty will be changed so that it is levied on a per flight rather than a per passenger basis will make the tax burden more proportionate to aviation emissions. Such measures may mean that traffic growth in the near future is more likely to be affected by changes in the cost of aviation rather than attitudes of passengers to the environmental effects of flying.

Summary

- 3.92 This chapter has considered some of the factors which may have caused the recent slowdown in air passenger growth.
- 3.93 Consumer expenditure is an important element in determining the extent of outbound leisure travel, although this effect is tempered by the ability of passengers

to trade down their leisure travel rather than to abandon it completely. There is a lag of six to 12 months between changes in consumer expenditure growth and changes in outbound air passenger growth. Growth in overall consumer expenditure declined in the UK from late 2004 to early 2006, and, taking into account the observed lag, this appears to have played a part in the decline of outbound passenger growth observed since mid 2005.

- 3.94 Some aviation costs have risen significantly since 2004. The price of jet fuel has risen from just over \$320 per tonne in January 2004 to around \$900 per tonne in November 2007. Although airline hedging strategies and the weakness of the dollar may have mitigated some of this effect on UK operations, it is estimated that rising fuel prices have added between £2.5 bn and £3 bn to the costs of all airline operations in and out of UK airports between 2004 and 2006. As a proportion of total costs for UK certified airlines, fuel and oil has risen from 16% in 2004 to 25% in 2006. There is evidence that at least some of this cost increase has been passed through to passengers, although direct evidence to confirm this from yield data is not readily available.
- 3.95 APD was doubled in February 2007, representing an extra £1 bn added to the cost of flying from the UK. The decline in passenger growth pre-dates the increase in APD, and so cannot have been triggered by it, and the extra cost of APD is around a third of the extra cost from rising fuel prices. However, it is still significant and, unlike fuel cost increases, the burden of APD does not fall on routes in rough proportion to their other costs. Different APD rates are levied at only two distance and two cabin class bands; moreover, domestic trips will attract APD on both the outbound and return legs, whereas international trips will only attract APD on the outbound leg.
- 3.96 For shorter haul international and, particularly, for domestic air travel, there is evidence of some demand being lost to other modes. In part, this may be due to the security disruption at airports which has increased overall journey time and therefore changed the competitive balance between air and other modes, although it is also true that long distance rail services have seen improved punctuality and service.
- 3.97 In particular, long distance domestic rail travel has seen a recovery from the consequences of the Hatfield disaster in 2000, following which growth in domestic air travel increased above its historic trend. Improvements to major sections of track have also led to punctuality gains for rail services and the reduction of travel times. This, combined with advertising campaigns targeted particularly at the time-sensitive air passenger, appears to be restoring the balance between air and rail to the pre-Hatfield levels.
- 3.98 At present, passengers' attitudes towards the environmental do not seem to be having a significant effect on the demand for air travel.
- 3.99 Of the factors considered in this chapter, changes in consumer expenditure best explain the decline in international traffic demand growth being concentrated particularly on the UK resident leisure passenger segment. Declining growth in

domestic air traffic is best explained through increased competition from other transport modes. Having considered some short term effects acting on passengers of the aviation industry (the economy, other modes, increased costs, etc) the next chapter will look at the characteristics of the passengers themselves and how these characteristics contribute towards the passenger's propensity to fly. It will investigate whether these longer-term influences shed any light on the recent decline in demand growth.

Chapter 4. Propensity to fly on leisure trips of UK residents

- 4.1 The previous chapter considered recent developments in consumer confidence, aviation costs, modal competition and environmental attitudes as factors that may be contributing to the recent slowdown of air traffic growth in the UK. This chapter goes beyond these short term factors to explore some of the potential longer-term influences on the demand for leisure travel.
- 4.2 Air traffic forecasts typically link the growth of leisure air travel over the long term to income and fares trends. However, in a relatively wealthy society such as the UK, the growth of leisure air travel may also be increasingly influenced by factors such as the availability of leisure time, family commitments and consumer willingness to travel. These, in turn, will depend on a number of different socio-economic and demographic factors, including age, family composition and occupation. Throughout the population these factors will only change over the longer term.
- 4.3 To some extent, changes in the demographic split of the UK's population may have contributed to the strong growth of UK leisure traffic in the last ten years. Increases in property ownership abroad, particularly in the European Union, and an increase in single households (particularly those of working age)⁷⁰ with relatively high incomes may have played their part.
- 4.4 This chapter contains an analysis of the social characteristics of today's airline passengers, in order to highlight the key factors which affect frequency of flying in leisure passengers and attempt to quantify their effects through regression analysis.

The limits to growth in outbound air markets

- 4.5 At first sight, aviation statistics suggest that the number of leisure air trips abroad taken by the UK population is a long way from the level at which some sort of saturation effect might be expected to slow demand growth. According to the ONS, in 2006 UK residents took 49.0m leisure trips abroad⁷¹. This equates to 0.8 trips abroad per head of population⁷². As a propensity to fly, this might not appear overly high and could suggest that there is considerable room for further growth in this market segment.
- 4.6 However, as well as being subject to a large degree of uncertainty, the average may hide considerable variation in the propensity to fly across the travelling public. Different segments of society behave differently when it comes to taking leisure trips abroad and this in itself may provide useful information for evaluating the potential for growth of air travel in the future. For instance, if historic growth in outbound traffic was driven mainly by those passengers who never, or rarely, flew in the past beginning to make air journeys, then it would be expected that growth would slow as more and more of the population began to fly regularly. On the other hand, if growth came mainly from the part of the population that are already fliers taking more

Joseph Rowntree Foundation, Monitoring Housing and Neighbourhood Trends, September 2006
 ONS, MQ6 – Transport Travel and Tourism, Q2 2007, table 19 – all air trips abroad by UK residents excluding business

trips. 72 ONS, Table 01: Mid-2006 Population Estimates gives the total population as 60.6m.

frequent journeys, then it would only begin to slow once other factors (such as time) constrained the ability of passengers to increase their frequency of air travel.

- 4.7 The Department for Transport publication, "Public experiences and attitudes to air travel"73 is based on the ONS Omnibus Survey of May 2006. The survey indicates that 51% of adults had not flown in the last 12 months. This corresponds with the results of the 2002 Omnibus Survey, where 51% of adults had not flown in 2001. However, as the report notes, although the proportion of the population who have flown in the past year is the same in both surveys, in the more recent survey a higher proportion of air travellers were making multiple trips. In 2006, 30% of air travellers said they had flown three or more times in the last year; in 2002 the figure was 23%.
- 4.8 From this, it can be inferred that passenger growth in recent years is coming at least as much from an increased flying frequency by those that do fly, as from a diminishing pool of non-fliers.
- 4.9 Interviewees for the CAA Passenger Survey are asked whether they are a first-time flyer or not. For the last ten years, the airports surveyed continuously 14 have recorded that less than 1% of passengers are adults flying for the first time. This also indicates that much of the UK resident growth in passenger traffic in recent years has come from existing passengers travelling more often (in line with the Omnibus Survey results referred to above), so the recent downturn in growth is unlikely to have come from a decline in the proportion of new passengers, but rather from slower growth in the frequency of travel by existing passengers.

Number of trips taken by regular fliers

4.10 The CAA has analysed its own survey data in order to estimate the propensity to fly for leisure purposes and to examine how it varies across different segments of the population. The CAA Passenger Survey contains information about socio-economic and demographic characteristics of the travelling population in the UK. This survey was augmented in July 2007 with the following question to UK residents travelling for leisure purposes:

Q: How many times have you flown for leisure in the last 12 months on any route?

The answers given in numbers of flights were converted to numbers of return trips, including the one being taken at the time of the interview. These responses were then analysed in relation to information on different passenger characteristics, including household income, family composition, home ownership abroad, age and friends and relatives abroad⁷⁵.

⁷³Department for Transport, "Public experiences and attitudes to air travel" -

http://www.dft.gov.uk/pgr/statistics/datatablespublications/trsnstatsatt/publicexperiencesofandattitu1824?page=1#a1000

Heathrow, Gatwick, Stansted, Luton and Manchester.

The analysis is based on survey data, and thus results are subject to sampling error. With the more detailed analyses there are varied rates of non-response which may lead to apparent inconsistencies in some of the estimates made. However, these inconsistencies are slight and should not materially affect any conclusions drawn from the analysis.

- 4.11 Table 4-1 below shows how many return leisure trips individual passengers reported they had taken in the twelve months prior to their interview. The number of observations in each category has been derived from the number of responses at each trip level, divided by the number of trips. This weighting adjusts for the increased likelihood of interviewing a passenger who is taking multiple trips in the year (and thus inflating the response rate where the number of trips is greater than one)⁷⁶.
- 4.12 The graphs and analysis in this chapter employ a similar weighting technique to transform the survey responses to an approximation of individual passenger behaviour. For technical details of the rationale behind the weighting, see Annex 4.

Table 4-1: Number of leisure trips in the last 12 months taken by individual leisure passengers

Number of	Individual	Percentage	Cumulative
leisure trips	passengers	of total	percentage
1	3,735	45%	45%
2	2,031	24%	69%
3	1,194	14%	83%
4	673	8%	91%
5	319	4%	95%
6	174	2%	97%
7	103	1%	98%
8	35	0%	99%
9	26	0%	99%
10	8	0%	99%
11-20	54	1%	100%
20+	7	0%	100%
Total	8,360	100%	

average 2.3

Note: Number of return trips includes the trip being undertaken at the time of interview

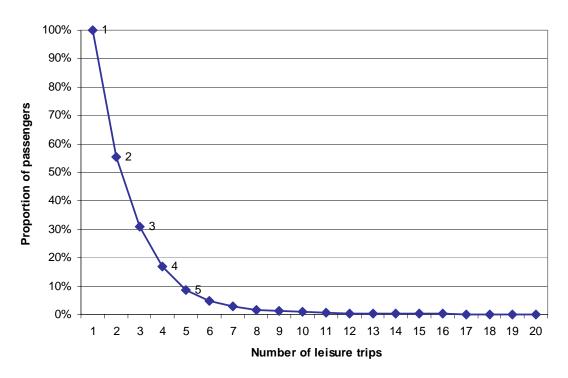
Source: CAA Passenger Survey, July – mid-December 2007

4.13 Table 4-1 shows that the average number of leisure air trips across the travelling population using the continuous survey airports is 2.3 in the last 12 months. Figure 4-1 below shows the inverse cumulative percentage⁷⁷ of individual passengers for increasing numbers of trips:

⁷⁶ To understand why this is necessary, imagine an airport that is only used by two passengers in the year. Passenger A takes ten return trips and passenger B takes 90 return trips, so the average number of trips for the two passengers is 50. Airport statistics would record a total of 100 outbound passenger movements. If a survey interviews one in ten outbound passengers, then it may interview passenger A once and passenger B nine times, so it will have ten interviews, one of which reports ten trips in the last 12 months and nine of which report 90 trips. Taking a simple arithmetic average gives a result of 82 trips per passengers, which is too high.

⁷⁷ That is, the proportion of passengers taking *at least* the number of trips indicated on the x-axis. Since all interviewed passengers have taken at least one trip in the last twelve months (the one they are taking when interviewed), then the inverse cumulative percentage for one trip is 100%.

Figure 4-1: Distribution of number of return leisure trips by individual leisure passengers at continuous survey airports



Source: CAA Passenger Survey, July - mid-December 2007

4.14 Figure 4-1 indicates the following:

- 55% of the UK residents using the continuous survey airports had made more than one return leisure trip in the last 12 months;
- More than two return leisure trips were undertaken by just over 30% of people using the continuous survey airports; and
- The proportion of people taking more than four return leisure trips in the past twelve months was less than 10%.

These results suggest that, even if future growth of UK resident leisure travel does not come from that sizeable proportion of the population that still does not fly regularly, then, since nearly half of 'regular fliers' still only take one leisure trip per 12 months (and three-quarters take one or two), it is unlikely that demand growth for trips will be constrained by availability of leisure time in the foreseeable future.

4.15 A recent report published by Defra⁷⁸ indicates that 45% of the UK adult population (aged 16 and over)⁷⁹ had taken at least one flight in 2006 for leisure purposes (defined as "leisure, holidays or visiting friends or family") – this equates to 22.1m people. Using ONS data on the total number of trips abroad taken by UK residents and making an assumptions about the relative level of flights taken per child in the

⁷⁸ Survey of attitudes and behaviour in relation to the environment: 2007, (BMRB Social Research), published by Defra, www.defra.gov.uk/environment/statistics/pubatt/index.htm

⁷⁹ ONS, Table 01: Mid-2006 Population Estimates gives the population aged 16 and over as 49.1m

- population⁸⁰, the number of leisure trips abroad taken per travelling adult can be estimated to be 2.1.
- 4.16 The Defra survey (which only includes adults) goes on to ask those respondents who did fly for leisure how many flights they took in 2006. The average for trips abroad is calculated as 2.1, and the average for total trips (including domestic) is 2.6. This figure is rather higher than that obtained from the CAA Passenger Survey data, which is 2.3, although the CAA figure includes children (who on average travel less frequently than adults).

Drivers for number of trips taken by regular fliers

4.17 The next step is to investigate how the number of return leisure trips an individual passenger takes relates to the different passenger characteristics listed in paragraph 4.10 above. Table 4-2 below shows the average number of leisure trips taken in 12 months according to reported household income.

Table 4-2: Average number of leisure trips by individual leisure passengers, by household income

Income band	Mean annual trips	Proportion of sample
< £23,000	2.1	25%
£23,000 - £40,249	2.1	33%
£40,250 - £57,499	2.4	19%
£57,500 - £114,999	2.7	18%
> £115,000	3.4	5%

Source: CAA Passenger Survey, July - mid-December 2007

- 4.18 The number of leisure trips is seen to increase with household income from just above two for the household with an annual income of less than £23,000 to over three for those with a household income in excess of £115,000. The difference is rather small and suggests that there are other factors that may have an important influence on a person's propensity to fly.
- 4.19 The results are similar to those obtained in the Defra survey (see Table 4-3), which, although it uses slightly different income bands, provides useful corroboration. As noted above, the Defra results would be expected to give higher numbers of trips, as their sample does not include children, and this proves to be the case.

Table 4-3: Mean annual trips by income bands, Defra survey

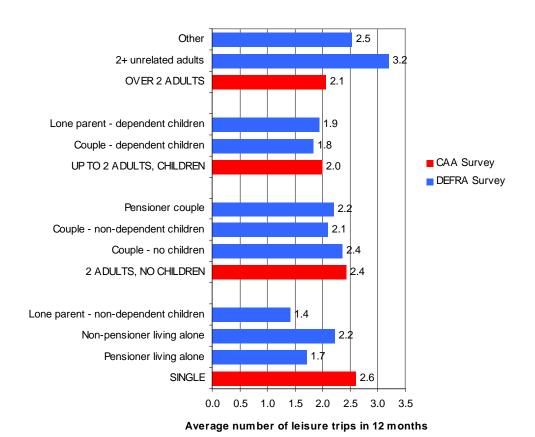
Income band	Mean annual domestic trips	Mean annual European trips (excluding domestic)	Mean annual non-European trips	Total Trips
< £20,000	0.4	1.3	0.5	2.2
£20,000 - £39,999	0.4	1.4	0.6	2.4
£40,000 - £59,999	0.7	1.7	0.6	3.0
> £60,000	0.7	2.1	0.9	3.7

Source: Defra, Survey of attitudes and behaviour in relation to the environment: 2007, (BMRB Social Research)

⁸⁰ Assuming children under 16 take 0.25 flights for every adult who flies, the estimated number of leisure trips by adults is 46.3m using the ONS total leisure trips of 49.0m.

- 4.20 Another factor likely to affect annual number of air trips taken is the household composition of the respondent. In the CAA Passenger Survey, the answers give the number of adults and children living in a household. For these purposes, the data have been segregated into four household types: single (one single adult), couples (two adults, no children under 16), families (one or two adults and at least one child under 16) and other multiple occupancy households (more than two adults, with or without children under 16).
- 4.21 The Defra survey undertook a similar analysis using more detailed groupings. In order to compare the results, the Defra households have been grouped using the CAA household type definitions. Figure 4-2 below compares the average number of leisure trips taken in the preceding 12 months by the various groups. It shows that the two surveys give similar results for households with two adults, but there is some discrepancy in the results for single adult and more than two adult households.
- 4.22 The most likely reason for this is that the definitions used in the CAA Passenger Survey and the Defra survey cannot be perfectly aligned. In particular, where more than one unrelated adult share a house, the CAA Passenger Survey only records them as sharing in the cases where there is communal budgeting thus a household of young single professionals each managing their own budget would be classed as "single" in the CAA data, but within "2+ unrelated adults" sharing in the Defra data.

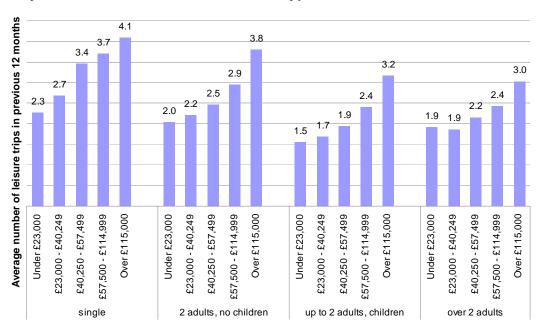
Figure 4-2: Average number of leisure trips by individual leisure passengers, by household type – comparison between CAA Passenger Survey results and Defra Survey 2007



Source: CAA Passenger Survey and Defra: Survey of Attitudes, Knowledge and Behaviour in Relation to the Environment, 2007

4.23 The CAA Passenger Survey data can also be used to compare numbers of leisure trips by income bands and household type. Figure 4-3 below shows how the average number of trips varies with income for each household type.

Figure 4-3: Average number of leisure trips by individual leisure passengers, by household income and household type



Source: CAA Passenger Survey, July - mid-December 2007

- 4.24 The average number of trips varies with household income more for individuals living in households as couples than for individuals living in households as families or other multiple occupancy arrangements⁸¹. For the income band £23,000 to £40,249, which contains the national average⁸², individuals living in households as a couple take on average 2.2 leisure trips, while those living in family households take about three-quarters as many, an average of 1.7. The ratio of the number of trips between these two groups is broadly preserved at different income levels: people living as couples without children earning over £115,000 take 3.8 leisure trips, while those in family households take 3.2 (about four-fifths as many).
- 4.25 This finding reflects the likelihood that families with children have less time available for air travel and find the process of getting to their destination more inconvenient than those without children. Also, the cost would be a larger proportion of the household income than for those couples without children.
- 4.26 Further comparisons can be made between the Defra survey and the CAA Passenger Survey in respect of number of trips and age. Although the age group bands are not directly comparable, the results are broadly similar. By looking at the breakdown of income band by age, it can be seen why the lowest income band of less than £23,000 shows higher trips than might be expected. Figure 4-4 indicates that this income band has the highest proportion of 55-64 year olds, who also have one of the highest number of trip averages by age group. This age group may be more likely to fund their travel from their savings rather than their income.

⁸² Which is £26,720 for 2005/2006, source: Office of National Statistics, The effects of taxes and benefits on household income, 2005/06

⁸¹ For these purposes, household types are divided into: single (one single adult), couples (2 adults, no children under 16), families (1 or 2 adults and at least 1 child under 16) and other multiple occupancy households (more than 2 adults, with or without children under 16).

100% 90% 80% 70% **>64** 55-64 60% 45-54 50% 35-44 40% 25-34 **16-24** 30% 20% 10% 0% £57,500 -Under £23,000 £23,000 -£40,250 -Over £115,000

Figure 4-4: Breakdown of individual passenger responses by age group and income, CAA Passenger Survey

Source: CAA Passenger Survey, July - mid-December 2007

£40,249

4.27 Further analysis of the survey data and frequency of leisure flights can be seen in Annex 5. The passenger characteristics investigated were second home ownership abroad, age group and income band. In summary these results indicate:

£57,499

 Ownership of a second home abroad leads to increased frequency of flying across all income bands

£114,999

- Similarly, ownership of a second home abroad leads to increased frequency of flying across all age groups
- 4.28 Whilst this analysis is informative in terms of identifying broader trends in the data, it still only provides a partial picture of how different passenger characteristics impact on the number of leisure trips. This is because the patterns displayed in the above graphs may be shaped by additional factors which are not taken into account in the three-way interactions (i.e. number of trips and two characteristics). For example, the number of trips taken by passengers owning a home abroad and earning £115,000 or more may be influenced by age or family composition, neither of which are taken into account in Figure 4-4 above.

Estimating the influence of the drivers

4.29 In order to be able to consider the effects of all these characteristics simultaneously it is necessary to employ a more sophisticated statistical technique, namely regression analysis. This technique can isolate the impact of a single characteristic while holding all others constant.

- 4.30 The CAA has estimated a regression⁸³ which relates the number of leisure trips taken by adult leisure passengers (to North American and Western European destinations only⁸⁴) to the following explanatory variables:
 - Income band;
 - Socio-economic group;
 - Home ownership abroad (at the destination when surveyed)⁸⁵;
 - Age;
 - Family composition; and
 - Purpose of the current trip (VFR or holiday).
- 4.31 The results are presented in Table 4-4 below. The analysis was weighted using the number of trips taken so that the results relate to individuals rather than terminal passengers (see Annex 4 for a full explanation of the difference between these terms). The first estimate shows the average number of trips per year for the baseline category (chosen to be the one which takes the fewest number of leisure trips) was 1.16.
- 4.32 The rest of Table 4-4 then shows the estimated factor change in the expected number of trips relative to the baseline category for the corresponding passenger characteristic. For example, moving from the baseline income category (<£23,000) to the income category £57,000 to £115,000, whilst holding all other variables constant, will increase the number of trips by a factor of 1.3, or by about 30%. For each variable (e.g. household income) all the factor estimates are arranged according to the size of their impact from the largest to the smallest.

⁸⁴ This restriction is as a result of survey data availability on all the variables – the home ownership question is only asked of adult international travellers to North America and Western Europe.

⁸³ A negative binomial generalised linear model was used for this over-dispersed count data.

⁸⁵ There is no explicit household wealth variable included, but the ownership or not of a property at the destination is an indicator of wealth.

Table 4-4: Count data regression⁸⁶ model for number of leisure trips in 12 months by international leisure passengers

	Coefficient estimates	95% confidence intervals ⁸⁷
BASELINE CATEGORY AVERAGE NUMBER		(
OF TRIPS	1.156	(0.893 - 1.497)
INCOME		
> £115,000	1.623	(1.422 - 1.854)
£57,500 - £114,999	1.328	(1.203 - 1.466)
£40,250 - £57,499	1.203	(1.094 - 1.322)
£23,000 - £40,249	1.052	(0.971 - 1.140)
< £23,000	1	baseline
HOUSEHOLD COMPOSIT	ION	
Single	1.464	(1.331 - 1.610)
2 adults no children	1.265	(1.163 - 1.377)
More than 2 adults	1.108	(1.010 - 1.214)
1-2 adults with children	1	baseline
SOCIO-ECONOMIC GRO	UP	
Α	1.328	(1.026 - 1.719)
В	1.291	(1.014 - 1.645)
C1	1.202	(0.948 - 1.525)
C2	1.14	(0.896 - 1.451)
D	1.136	(0.884 - 1.459)
E	1	baseline
AGE		
25-34	1.130	(1.010 - 1.264)
55-64	1.122	(1.003 - 1.254)
35-44	1.096	(0.979 - 1.226)
45-54	1.095	(0.980 - 1.222)
>64	1.068	(0.936 - 1.220)
16-24	1	baseline
HOME OWNERSHIP AT DESTI		
YES	1.546	(1.418 - 1.685)
NO	1	baseline
PURPOSE OF TRAVEL		
VFR	1.186	(1.121 - 1.256)
HOLIDAY	1	baseline

Note: Regression based on a sample of 7,085 interviews

4.33 The results are largely as expected given the previous analysis within this chapter. However, the standard errors indicate that some of the coefficients, particularly those for age and socio-economic group with lower coefficient estimates, do not

⁸⁶ Factors within each group are ordered according to the size of the coefficient.

⁸⁷ These 95% confidence intervals give the range within which the parameter estimates will fall 95% of the time with repeated sampling. They give an indication of the robustness of the model. Where the range covers 1, there is less certainty as regards the direction of the effect relative to the baseline category.

have a clear effect that can be asserted confidently from the sample data available 88.

- 4.34 Note that the coefficients for each variable are stand-alone coefficients, and apply to characteristics of the baseline passengers. To incorporate other changes from the baseline (such as age-group as well as income), the relevant coefficients need to be combined by multiplication. For example, an individual earning over £115,000 who owns property abroad would be expected to take 2.51 (=1.623 x 1.546) times the trips per year of an individual earning less than £23,000 who does not own property abroad.
- 4.35 Home ownership abroad and household income of £115,000 or greater are the two most influential variables. Owning a home abroad or having household income of £115,000 or more is expected to increase the number of leisure air trips by a factor of about 1.6 (or, by about 60%). Individuals with a home abroad, or with household income over £115,000 take an average of 3.4 leisure trips per year compared to an average of 2.1 trips for those with no property abroad and household incomes less than £40,000. Those with income over £115,000 and a property abroad take an average of over 5 leisure trips per year.
- 4.36 These results are in line with the findings of a previous CAA publication which focused on the elasticity of demand for outbound UK leisure travel⁸⁹. Those findings suggested that increases in the cost of air travel were initially most likely to cause passengers to 'trade down' the spending on their trips rather than not to fly. It also reported that more and more of the population considered a holiday abroad to be closer to an essential item than a luxury. When considering the elasticity of demand for leisure travel the associated costs of the trip must also be included (e.g. the cost of accommodation at the destination point or the cost of ownership of the property), the total of which could be significantly higher than the air fare itself.
- 4.37 Household composition also appears to have an important influence on the number of leisure trips taken. Single people and couples without children take more trips than family households with children, all else being equal. Being a single householder increases the number of leisure air trips by a factor of about 1.5 while couples living together without children can be expected to take about 1.3 times more trips than those with children.
- 4.38 The socio-economic group of a passenger is an influential variable in its own right, although its impact on the number of trips taken is a lot smaller than that of household income. For example, moving from group E to group A or B is expected to increase the number of trips by a factor of about 1.3. In reality, a move between socio-economic groups is likely to be accompanied by a move between income bands, and a combination of the relevant coefficients would be appropriate (e.g. a move from income band <£23,000 and socio-economic group E to income band £57,500-£115,000 and socio-economic group B would increase the number of trips

⁸⁸ For instance, the standard errors show that the true parameter for the '£23,000 - £40,249' category is likely to lie between 0.97 and 1.14, and therefore may be the same or lower than the baseline (which has a parameter of 1)

^{0.97} and 1.14, and therefore may be the same or lower than the baseline (which has a parameter of 1).

89 Demand for Outbound Leisure Air Travel and its Key Drivers, December 2005, CAA:

http://www.caa.co.uk/docs/5/Elasticity%20Study.pdf

taken by a factor of 1.7^{90}). However, as seen by the wider confidence intervals for these estimates, the effects of the socio-economic group are far less clear than for some of the other characteristics.

- 4.39 Another important variable is having friends and relatives abroad. However, as this variable is proxied imperfectly by the current trip purpose, its parameter estimate should be viewed with caution. What is recorded in the CAA data is the current trip purpose at time of interview, rather than the purpose of all the trips the passenger has taken in the last 12 months. Thus, it is likely that the true proportion of passengers who have friends or relatives abroad is higher, but some will have been travelling for other reasons at the time of interview.
- 4.40 Age bands as a group appear to be the least influential in terms of their impact on the number of leisure trips taken. As with the socio-economic group coefficient estimates, the confidence intervals for age-bands are wide. Care should be exercised in comparing coefficient estimates across different age bands as the propensity to fly could vary significantly within each age band. For example, those in the baseline category 16-24 take fewest leisure trips. However, it is likely that those of age between 20 and 24 take more trips than those who are in the 16-19 age band.

Implications for future demand

- 4.41 One way of assessing the potential for future growth of leisure air travel is to take a view on how various demand drivers in Table 4-4 will develop in the future. There are number of socio-economic and demographic trends affecting these drivers which may stimulate the growth of leisure travel over and above that which will come through an increase in household income alone. Among the key ones are:
 - Trend towards single households:
 - Increase in home ownership abroad; and
 - Composition of UK residents and its impact on VFR travel.
- 4.42 The impact of these trends on future traffic growth of leisure air travel could be quantified using the parameter estimates in Table 4-4 above. However, this would be a complex forecasting exercise which would require exercising judgment not only on the direction of the above trends, but also on the magnitude of the change, which is beyond the scope of this report. For example, while it is likely that the proportion of single households will increase in the future, it is difficult to predict with any certainty how far this trend will develop.

Summary

4.43 This chapter has considered the propensity to fly of UK residents, which is still quite low for the population as a whole. There is a sizeable segment of the UK population that does not undertake regular air travel. However, the strong growth of passenger numbers in last five to ten years has come more from those who do fly taking more

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⁹⁰ 1.328 x 1.291 = 1.714

flights, than an increase in new adult⁹¹ fliers. Therefore, understanding the characteristics of passengers who make multiple trips will be relevant to understanding the increasing demand for UK outbound leisure travel.

- 4.44 On average, those UK residents who were fliers took just over two return flights per year for leisure purposes in 2007. An statistical analysis was carried out to determine the key drivers of demand from these passengers and it discovered that number of trips is related to:
 - Household income: individuals in households with total earnings over £115,000 per year were likely to take around 60% more trips per year than those earning less than £40,000. However, it is likely that other factors such as age and socio-economic group will also differ in distribution between these income bands and thus make the difference even larger.
 - Owning a property abroad: averaged across all the other socio-economic factors examined, home ownership at the destination increased the number of trips taken by an individual per year by around 55%.
 - Household type: other factors being equal, those in single person households took around 50% more trips in a year than individuals in couples with children.

These factors are multiplicative in the sense that individuals with over £115,000 in household income *and* owning a property abroad would be expected to take 150% more trips per year than those earning less than £40,000 with no property abroad ⁹².

- 4.45 To some extent, changes in the demographic split of the UK's population may have contributed to the strong growth of UK leisure traffic in the last ten years. Increases in property ownership abroad, particularly in the European Union, and an increase in single households (particularly those of working age)⁹³ with relatively high incomes may have played their part.
- 4.46 There is also the possibility that individuals will move up into higher income bands, thus making them more likely to take multiple leisure trips. Given that the current mean number of trips for those in the highest income band (>£115,000) is 3.4 a year, this indicates that given certain changes in socio-economic factors, other segments of the flying population who are currently flying less than this could be expected increase the number of their trips once they have the means to do so.
- 4.47 These results suggest that the main demographic trends in the UK have contributed to growth in passenger demand, and therefore it is unlikely that changes in any of these longer-term drivers have been the cause for the recent slowdown in growth at UK airports. However, it may be that for certain segments (e.g. income bands, or age groups) the effects of the increases in UK interest rates with, for example, their consequent impact on the cost of ownership of property, will have been felt more keenly.

⁹³ Joseph Rowntree Foundation, Monitoring Housing and Neighbourhood Trends, September 2006

⁹¹ Clearly many child air passengers will be flying for the first time, but this is not an indication of air travel becoming more

universal. 92 A 150% increase is the result of the two separate increases since 1.60 x 1.55 = 2.48

- 4.48 For most segments of the population, it is likely that increases in wealth or income will results in increases in expenditure on leisure travel. However, particularly for those passengers that already travel multiple times per year, this could be manifested in choosing higher priced fares (travelling to more distant destinations or in greater comfort) or spending more at the destination itself, rather than taking extra trips in a year. Indeed as the number of trips increases, it is likely that factors such as the availability of leisure time itself may place a constraint on the demand for leisure travel.
- 4.49 However, the survey data highlights the relatively low number of trips taken by the majority of UK leisure passengers per year. Nearly half of those interviewed had taken only one trip in the previous 12 months, most of the remainder had taken between two and five trips, and 5% of those interviewed had taken more than five trips per year. This suggests that there is still scope for existing passengers to increase their number of trips, even if there were no little or no change in the size of the overall travelling population.

Annex 1. Domestic air passenger growth

Table A 1-1: Domestic air passenger growth on selected routes, 1998 - 2007

		DAII						2006		
CITY 1	CITY 2	RAIL SERVICE	1998-2003	2004	2005	2006	2007*	passengers (m		
London	Edinburgh	1	5.9%	1.3%	1.9%	-4.7%	-1.3%			
London	Glasgow	1	6.5%	-2.0%	-5.7%	-4.1%	3.8%	3.′		
London	Belfast	0	4.3%	-0.1%	-2.4%	-1.9%	3.3%	2.0		
London	Manchester	1	3.6%	1.4%	-4.7%	-5.5%	-11.9%	1.8		
London	Aberdeen	1	-1.1%	10.7%	1.8%	0.0%	-1.9%	1.0		
London	Newcastle	1	10.3%	3.4%	-1.7%	-5.1%	-8.9%	1.0		
London	Jersey	0	-3.3%	-5.9%	-2.1%	1.4%	13.8%	0.6		
Belfast	Liverpool	0	56.3%	-2.0%	15.1%	-17.1%	-11.2%	0.5		
Birmingham	Edinburgh	1	6.9%	2.9%	22.7%	5.1%	-11.6%	0.5		
Belfast	Birmingham	0	0.5%	-9.4%	26.4%	5.3%	-6.0%	0.4		
Belfast	Glasgow	0	15.7%	12.3%	8.7%	-7.0%	-4.9%	0.4		
Belfast	Edinburgh	0	30.6%	25.2%	7.9%	-3.6%	-3.7%	0.4		
Belfast	Manchester	0	-0.6%	19.5%	4.6%	39.8%	5.3%	0.4		
London	Inverness	1	6.6%	21.8%	-1.7%	-2.7%	-4.9%	0.4		
London	Guernsey	0	0.3%	6.3%	-2.9%	0.5%	-1.0%	0.4		
Birmingham	Glasgow	1	4.2%	-4.4%	-6.1%	0.9%	3.8%	0.3		
Bristol	Edinburgh	1	27.2%	-0.2%	1.2%	-3.4%	-16.9%	0.3		
Bristol	Glasgow	1	24.3%	5.3%	-3.0%	-6.6%	-12.5%	0.3		
Belfast	Bristol	0	34.7%	12.9%	-3.9%	-9.6%	-13.5%	0.3		
Belfast	Newcastle	0	18.3%	20.9%	20.8%	-6.4%	1.5%	0.3		
Edinburgh	Manchester	1	7.2%	6.1%	28.8%	-9.9%	-13.1%	0.3		
Bristol	Newcastle	1	93.5%	116.8%	4.5%	-2.7%	4.2%	0.2		
London	Isle of Man	0	3.9%	4.0%	10.8%	9.3%	-12.0%	0.2		
Edinburgh	Southampton	1	16.1%	101.8%	11.5%	7.3%	-13.2%	0.2		
Glasgow	Southampton	1	6.7%	51.7%	64.1%	5.2%	-21.9%	0.2		
Manchester	Southampton	1	2.8%	49.9%	90.7%	10.8%	-19.0%	0.2		
Belfast	Leeds Bradford	0	9.3%	49.4%	-3.5%	1.7%	-2.3%	0.2		
EMA	Glasgow	1	20.2%	-21.6%	-18.4%	7.7%	-2.7%	0.2		
Edinburgh	EMA	1	27.5%	5.0%	-27.2%	-26.8%	-1.8%	0.2		
Glasgow	Manchester	1	3.0%	7.7%	-7.0%	0.7%	-4.5%	0.2		
Isle of Man	Liverpool	0	-7.7%	14.2%	3.0%	-19.2%	-15.8%	0.2		
Isle of Man	Manchester	0	2.6%	15.2%	34.8%	16.3%	-16.3%	0.2		
Belfast	EMA	0	17.4%	17.3%	-4.0%	0.6%	-0.3%	0.2		
Cardiff	Edinburgh	1	43.2%	14.8%	4.9%	-2.2%	1.7%	0.2		
London	Londonderry**	0	19.8%	7.1%	-25.5%	44.5%	2.4%	0.2		
London	Durham Tees Valley	1	-4.8%	-0.8%	10.0%	-3.6%	-44.5%	0.2		
Jersey	Southampton	0	2.4%	-10.2%	0.0%	-4.4%	-6.3%	0.2		
London	Leeds Bradford	1	-2.8%	-0.2%	-1.8%	-20.4%	-10.3%	0.′		
London	Newquay	1	32.3%	20.1%	4.5%	-34.2%	19.3%	0.1		
Aberdeen	Birmingham	1	3.6%	-6.5%	4.0%	28.7%	143.4%	0.′		
								21.5		
						otl	her routes	4.5		
total domestic passengers										

^{*} increase is calculated by comparing traffic on the rotues January - Setpember 2007 to the same period in 2006.

^{**} service only commenced in 1999, thus average annual increase calculated over 4 years, 1999 – 2003. Source: CAA Airport Statistics, terminal passengers at reporting UK airports (including Channel Islands)

Annex 2. Calculation of estimate of road passenger kilometres

- 2.1 In order to estimate long-distance road passenger kilometres, the following assumptions were made:
 - That the motorway traffic is the equivalent of long-distance traffic. This is taken from Table A 2-1: TSGB 2007 table 7.3.
 - That the proportion of cars and vans using motorways in 2006, is a proportion that can be applied to the historical data too. This is taken from Table A 2-2: TSGB 2007 table 7.4.
 - That the average car occupancy per the ONS Transport Trends 2006 can be applied to this subset of vehicles.
 - That the average car occupancy in 2005 can be used as an approximation of that in 2006 (data not available as yet).

Table A 2-1: TSGB 2007 table 7.3

7.3 Motor vehicle traffic: by road class: 1996-2006

								В	illion vel	nicle kilo	metres
	1996	1997	1998	1999	2000 ¹	2001 ²	2002	2003	2004	2005	2006
Motorways	78.3	82.1	85.7	87.8	88.4	90.8	92.6	93.0	96.6	97.0	99.2
Rural 'A' roads: 3											
Trunk ⁵	60.4	62.5	63.3	64.7	64.2	65.9	64.6	61.5	59.7	58.0	59.2
Principal ⁵	63.1	64.1	65.4	66.0	65.8	67.4	71.8	77.7	81.6	83.3	84.6
All rural 'A' roads	123.5	126.6	128.7	130.7	130.0	133.3	136.4	139.3	141.3	141.3	143.8
Urban 'A' roads: 4											
Trunk ⁵	13.9	13.8	13.8	14.0	14.0	7.6	7.4	6.7	6.0	5.5	5.6
Principal ⁵	67.0	67.1	67.5	67.9	67.7	74.2	74.8	75.1	76.8	76.2	76.7
All urban 'A' roads	80.9	80.9	81.3	81.9	81.7	81.8	82.2	81.7	82.8	81.7	82.2
All Major roads	282.7	289.6	295.7	300.4	300.0	305.9	311.2	314.0	320.7	320.1	325.3
Minor roads:											
Minor rural roads	58.9	60.0	60.4	61.3	61.5	61.6	64.5	64.4	65.9	66.8	68.5
Minor urban roads	99.6	100.7	102.4	105.3	105.5	106.9	110.8	111.9	112.0	112.5	112.6
All minor roads	158.5	160.7	162.8	166.6	167.0	168.5	175.3	176.4	177.9	179.3	181.1
All roads	441.1	450.3	458.5	467.0	467.1	474.4	486.5	490.4	498.6	499.4	506.4

¹ The decline in the use of cars and taxis in 2000 was due to the fuel dispute.

Source: Department for Transport, TSGB 2007

² Figures affected by the impact of Foot and Mouth disease during 2001.

³ Rural roads: Major and minor roads, from 1993 onwards, are defined as being outside an urban area (see definition below).

⁴ Urban roads: Major and minor roads, from 1993 onwards, are defined as within an urban area with a population of 10,000 or more. These are based on the 2001 urban settlements. The definition for 'urban settlement' is in Urban and rural area definitions: a user guide which can be found on the Department for Communities and Local Government web site at:

http://www.communities.gov.uk/publications/planningandbuilding/urbanrural

⁵ Figures for trunk and principal 'A' roads in England, from 2001 onwards, are affected by the detrunking programme.

Table A 2-2: TSGB 2007 table 7.4

7.4 Road traffic: by type of vehicle and class of road: 2006

Billion vehicle kilometres Goods vehicles 2 Rigid by number Articulated by number of axles of axles Larger Cars Motor buses ΑII 4 or 6 or All motor and cvcles and Liaht Goods vans 1 2 5 taxis etc. coaches 3 more 3 + 4more vehicles vehicles cycles Motorways: 74.2 0.4 0.6 11.8 3.2 0.5 0.5 0.9 4.0 3.1 12.1 99.2 Rural 'A' roads: 3 Trunk 4 7.1 45.6 0.4 0.3 1.8 0.3 0.3 0.4 1.5 1.5 5.8 59.2 Principal 4 0.7 68.3 0.8 0.6 10.3 2.1 0.4 0.4 0.3 0.7 4.5 84.6 0.1 All rural 'A' roads 17.5 2.1 113.9 1.2 1.0 3.9 0.7 0.7 0.7 2.1 10.3 143.8 0.1 Urban 'A' roads: 5 Trunk 4 4.5 0.7 0.1 0.0 0.0 0.0 0.1 0.1 0.4 5.6 Principal 4 63.3 0.9 1.2 8.7 1.5 0.2 0.2 0.1 0.2 0.2 2.6 76.7 0.7 All urban 'A' roads 67.7 1.0 1.2 9.4 1.7 0.3 0.3 0.1 0.3 0.3 3.0 82.2 0.7 Minor roads: Minor rural roads 53.9 0.9 0.7 11.2 1.2 0.3 0.2 0.1 0.1 0.1 1.9 68.5 0.9 Minor urban roads 92.7 1.7 2.0 14.4 1.4 0.2 0.1 0.1 0.0 0.1 1.8 112.6 2.9 All minor roads 146.5 2.6 25.6 0.5 0.1 0.1 0.2 181.1 2.7 2.6 0.3 3.7 3.8 All roads: 402.4 64.3 11.4 1.9 1.7 1.9 6.5 5.7 29.1 506.4 4.6

Source: Department for Transport, TSGB 2007

- 2.2 Thus using this data and these assumptions, the motorway passenger kilometres for car and van traffic can be estimated. This is our proxy for long-distance private road vehicle kilometres.
- 2.3 By applying the average vehicle occupancy to the vehicle kilometres, the passenger kilometres can be estimated, as shown in Table A 2-3.

¹ Not exceeding 3.5 tonnes gross vehicle weight.

² Over 3.5 tonnes gross vehicle weight.

³ Rural roads: Major and minor roads, from 1993 onwards, are defined as being outside an urban area.

⁴ Figures for trunk and principal 'A' roads in England are affected by the detrunking programme.

⁵ Urban roads: Major and minor roads, from 1993 onwards, are defined as within an urban area with a population of 10,000 or more. These are based on the 2001 urban settlements. The definition for 'urban settlement' is in Urban and rural area definitions: a user guide which can be found on the Department for Communities and Local Government web site at:

 $[\]underline{\text{http://www.communities.gov.uk/publications/planning} and building/urbanrural}$

NB: Versions of this table for the years 1993-2004 are available from the DfT website at:

http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadstraffic

Table A 2-3: Estimated UK motorway passenger kilometres, 1995 - 2006

Motorway Car Traffic: 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
billion vehicle kilometres ¹	55.3	58.5	61.4	64.1	65.7	66.1	67.9	69.3	69.6	72.3	72.6	74.2
average car occupancy ²	1.60	1.60	1.60	1.58	1.58	1.58	1.58	1.59	1.58	1.57	1.58	1.58
passenger kilometres (bn)	88.4	93.7	98.3	101.3	103.8	104.4	107.3	110.2	109.9	113.5	114.7	117.2

Sources

¹ DfT, Transport Statistics Great Britain 2006, (uses 2006 proportion of 74.8% of all motorway vehicle kilometres being cars and taxis)

Annex 3. <u>Analysis of relationship between consumer expenditure</u> and international holiday travel

3.1 Analysis of the lead-lag relationship between consumer expenditure and international holiday travel is presented below. Figure A 3-1 shows the correlation coefficient⁹⁴ between the growth of holiday traffic and different lags of growth of consumer expenditure (see figure 3 in the Executive Summary).

1.0 0.9 0.8 correlation coefficient (0-1) 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0.0 t-1 t-2 t-3 t-4 t-5 t-6 t-7

Figure A 3-1: Estimation of correlation coefficient between growth of holiday traffic and growth of consumer expenditure

Note: time periods are measured in quarters

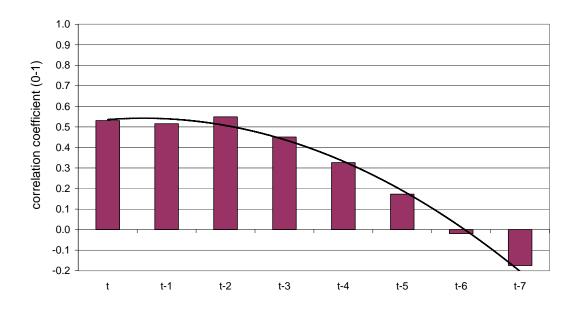
- 3.2 The growth in UK holiday traffic is calculated on a rolling annual basis each quarter from the International Passenger Survey and compared with the growth in real consumer expenditure.
- 3.3 The estimates of the correlation coefficient paint the same picture as Figure 3-3 in chapter 3 that compares the growth rates of the two series. It can be seen that the strongest correlation occurs with a time lag of between two and four quarters, after which the size of the correlation coefficient declines steadily. That is, it takes between half a year and a year for the changes in consumer confidence to work their way through and impact on demand for holiday travel in a more substantial way.
- 3.4 Figure A 3-2 below examines the correlation between the growth of overall consumer expenditure and the growth of actual expenditure on holidays abroad (as opposed to the growth in number of trips shown in Figure A 3-1 above).

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⁹⁴ Correlation coefficient indicates the strength and direction of a linear relationship between two variables. It takes values between 0 (no relationship) and 1 (perfect linear relationship).

⁹⁵ The "expenditure on holidays abroad" excludes the airfare. Source: IPS data

Figure A 3-2: Estimation of correlation coefficient between growth of consumer expenditure and growth of actual expenditure on holidays abroad



Note: time periods are measured in quarters

3.5 Expenditure when on holiday abroad responds much more quickly to changes in the overall consumer expenditure than the number of holiday trips. The correlation coefficient is strongest at time t (i.e. contemporaneously) and the first two quarters' lags after which it tapers off gradually.

Annex 4. Derivation of results by individual passenger

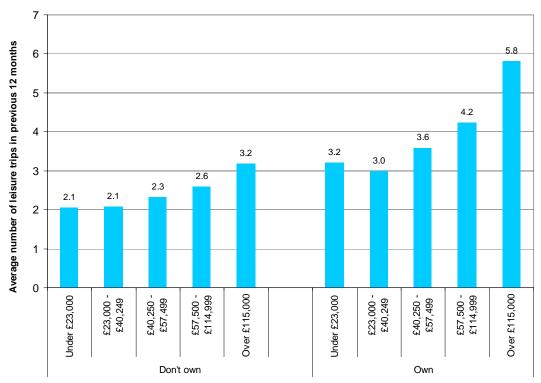
- 4.1 Each year, the CAA Passenger Survey interviews a sample of departing passengers from UK airports⁹⁶. Generally this data is weighted using the annual airport statistics.
- 4.2 However, as the survey data used are from 2007, the records have not yet been subject to the standard survey weighting procedures whereby records are weighted according to the airport, month and route population totals.
- 4.3 The records we have obtained have come from the continuous survey airports (Heathrow, Gatwick, Stansted, Luton and Manchester). In total nearly 20,000 passenger records were obtained.
- 4.4 Although the standard weighting procedures have not been applied we do not believe that in respect of the relationships between the characteristics under investigation that this will make a substantial difference to the findings.
- 4.5 However, given we are looking at the number of leisure trips taken per year, we have to employ another form of weighting in order to relate the answers to individual people as opposed to passengers.
- 4.6 In the instance where a person makes more than one trip per year, there is an increased chance that they will be sampled. An individual taking more than one trip in a year will appear multiple times in the annual airport statistics used to weight the survey data.
- 4.7 Generally we are interested in the characteristics of the passengers, rather than the individuals who make up the total passengers. However, chapter 4 looks at the characteristics of travelling individuals in order to make comparisons to the population as a whole.
- 4.8 The average number of leisure air trips per year as reported by passengers interviewed in the survey of London airports is 3.8. However, where for example a person has taken ten trips in a year, they will become ten passengers, each of time reporting that they have taken ten trips in the preceding 12 months, whereas a person taking only one trip a year will count as one passenger reporting one trip in the past 12 months. Thus the survey responses need to be scaled such that each passenger record has a weight inversely proportional to the probability of being sampled.
- 4.9 The regression analysis makes use of all passenger records, but gives each a weight equal to the inverse of the number of trips taken in the last 12 months.
- 4.10 The term "individual passengers" refers to these weighted passenger responses.

⁹⁶ These are the Continuous Airports (Heathrow, Gatwick, Luton, Stansted and Manchester), and each year a rotating selection of regional airports are also sampled.

Annex 5. <u>Socio-demographic factors related to frequency of leisure flying</u>

- 5.1 This annex extends the analysis in Chapter 4 where the number of leisure trips taken is related to various passenger characteristics.
- 5.2 Figure A 5-1 shows how the number of leisure air trips varies with income according to whether a household owns a property abroad or not. Note that this question is only asked of those adult (16 or over) passengers travelling to North American and Western European destinations, and is in relation to the destination of the passengers' current trip. Thus it is likely that the proportion of individual passengers answering "yes" to this question (7% of the weighted responses) is somewhat lower than the proportion who own a second property anywhere abroad.

Figure A 5-1: Average number of leisure trips by individual leisure passengers, by household income and home ownership abroad (at destination when interviewed), restricted to international passengers only⁹⁷, adults only



Source: CAA Passenger Survey, July - mid December 2007

5.3 The difference in the number of trips for equivalent income bands according to home ownership abroad (at the destination when surveyed) is quite striking. In fact, the ownership (by the respondent) of a home at the destination (when surveyed) almost completely dominates the income effect. For example, an individual travelling to North America / Western Europe for leisure who lives in a household with income somewhere between £40,250 and £57,499 and owns property at their destination makes, on average, more leisure trips abroad than someone living in a

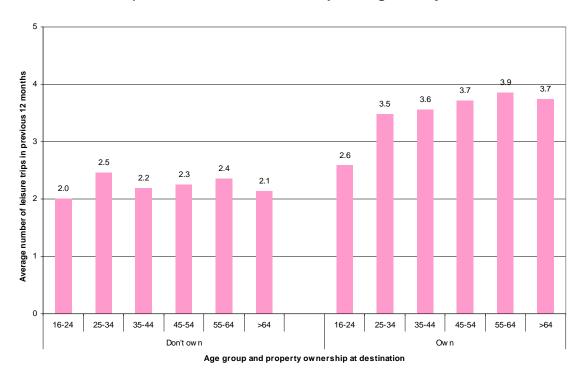
.

⁹⁷ North American and Western European destinations only

household with income twice as much or more but not owning a home at their destination.

5.4 Figure A 5-2 below shows how the number of leisure trips varies with age according to whether a household owns a property in the current destination country or not:

Figure A 5-2: Average number of leisure trips by individual leisure passengers, by age group and home ownership abroad (at destination when interviewed), restricted to international passengers only



Source: CAA Passenger Survey, 2007

- 5.5 In every age band, those who own a home abroad at their destination when surveyed take between one and a quarter (for age band 16-24) and one and three quarter (for age band over 64) times as many trips as those who do not.
- 5.6 These findings should be treated with caution, however, as only about 1,100 interviewees (which are then weighted as per Annex 4) both owned a second home and gave an answer for age and the number of trips taken. Thus some of these categories are very small in terms of sample size.