

The Determinants of the Demand for International Air Travel to and from the UK

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Abstract:

Over the past decades air travel has been the fastest growing mode in many countries, including the UK. Because of this, and because of the requirements of air travel on the local transportation network and its more general environmental impacts, forecasts of the future demand for air travel and knowledge of its determining factors are essential components in the formation of transportation policy. The objectives of this paper are to analyse the demand for air travel to and from the UK during the past decade and to investigate the factors determining its development. The factors considered are income, airfares, foreign trade, exchange rates and domestic price levels. Pooled time-series cross-section data are used to estimate dynamic econometric models for air travel by British residents to 20 OECD countries and for residents of these 20 countries to the UK. In each case, the leisure and business markets are treated separately.

The estimated long-run income (trade) elasticities are in excess of 1 for all markets. Airfares are also shown to be an important determinant of demand, with long-run elasticities on the order of -0.3 to -0.6. The growth in income and trade has had the greatest impact on air travel over the period, particularly for the business market, and especially for travel to the UK. Fares have been most important for the UK leisure market, with the fare reductions explaining around 40% of the increase in air travel.

INTRODUCTION

Personal mobility has increased substantially world-wide over the past decades and air travel continues to become an increasingly important transport mode. The UK is no exception. During the past decade, take-offs and landings at UK airports increased by over 40% and passenger arrival/departures by over 70%. Growth has been greater for international flights than for domestic flights both in terms of take-offs and landings (57% compared to 24%) and passengers (78% compared to 48%).

The air travel market in the UK is predominantly international. International flights account for 77% of take-offs and landings at UK airports, and 88% of passenger arrivals and departures. Today, nearly 70% of the air trips to and from the UK are made by UK residents. Visits abroad by air by UK residents increased by about 70% during the past decade, while visits by foreign residents to the UK increased by 49%. Of British residents' international air journeys, over 2/3s are to European destinations, and a similar proportion of foreign travellers to the UK are from European countries. The type of trips vary somewhat for UK and foreign residents. Of UK residents' international air journeys about 16% are business trips, compared to 32% for foreign residents' flying to the UK.

The growth in travel, and air travel in particular, can partially be explained by rising income. Real disposable income in the UK grew by just over 20% over the past decade, and other countries have seen comparable growth. However, there has also been a substantial decline in real airfares, resulting from deregulation and increased competition. One can expect that this has also played a significant role.

The primary objective of this study to examine the effects of airfares on air travel demand. This is done on the basis of a dynamic econometric model relating air travel demand to real fares, income and other contributing factors. Unfortunately, data - particularly on airfares - are rather limited. In this study, we exploit the data from the International Passenger Travel Survey (IPS) in the UK. The Survey is a large continuous survey carried out by the Office for National Statistics at all the main air, sea and tunnel ports or routes into and out of the UK. Travellers passing through passport control are selected at random and interviewed face-to-face. Over a quarter of a million interviews were conducted in 1998 representing about 0.2 per cent of travellers.

The data in this paper cover the years 1989 to 1998. The data used concern leisure and business air travel by UK residents to 20 international destinations, and travel by residents of the same countries to the UK. These 20 destinations account for 83% of total international leisure air journeys and 84% of

international business journeys made by UK residents. Of foreign residents travelling to the UK, the 20 countries considered account for 81% of leisure trips and 85% of business trips.

DATA ON AIR TRAVEL, FARES AND OTHER RELEVANT VARIABLES

The data sources used in the study are summarized below:

Air trips between UK and 20 countries (leisure/business)	International Passenger Survey
Air fares from UK to 20 countries (leisure/business)	International Passenger Survey
Disposable Income, 20 OECD countries	OECD Main Economic Indicators
Population, 20 OECD countries	World Bank
Retail price index, 20 OECD countries	IMF's International Financial Statistics
Exchange rates, local currency per £	IMF's International Financial Statistics
Trade (exports + imports), UK to/from 20 countries	Office of National Statistics

The number trips by UK residents to the 20 destinations are shown in FIGURE 1 for leisure (a) and business (b). The number of trips is given on the horizontal axis, and the destination on the vertical. The rates of growth from 1989 to 1998 are also shown on the vertical axis, following the country name.

For leisure trips, the destinations with the highest growth rates are generally the very small markets (Scandinavia, NZ). In absolute levels, the greatest increase in trips has been to Spain, the US, Ireland and Italy for leisure and to Ireland, the US, France and the Netherlands for business. For leisure, the growth rates vary from an increase of 159% for Finland to a decrease of 33% for Austria and for business from 512% for NZ to 17% for Germany.

Comparing the two graphs, we see that in terms of market share, there is a considerable difference between the leisure and business markets. For leisure trips, Spain is by far the most common destination, followed by the US, Greece and Ireland. For business trips, France is the most common destination, followed by the US, Germany and the Netherlands. Leisure trips are more predominant to all countries, with the exceptions of Germany and Belgium.

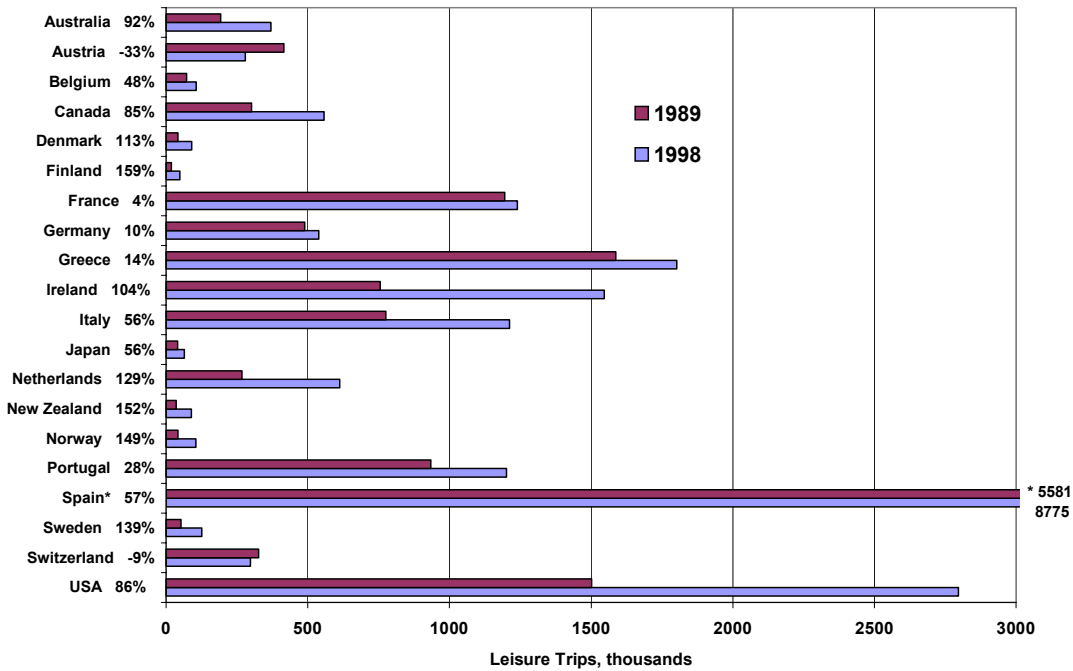
Total trips by UK residents to the 20 destinations have increased by 51%, leisure trips by 49% and business trips by 60%, so the share of leisure trips has declined slightly.

FIGURE 2 shows air travel for foreign residents to the UK in a similar fashion. For leisure travel, some of the countries with the highest growth rates are the same as the destinations showing the greatest growth for UK residents (Denmark, Sweden, Norway, The Netherlands). The business market shows a rather different pattern, with Italy, Greece, Austria and Ireland experiencing the greatest growth. Residents of the US, Ireland and Germany dominate the leisure market, residents of the US, Germany and France make the majority of business trips.

For the non-UK residents, leisure trips to the UK increased by 49%, business trips by 62% and total trips by 54%. Again there has been a slight decline in the share of leisure trips. Although leisure trips predominate for both groups of travelers, the proportion is much higher for UK residents (82%) than for foreign residents (65%).

The predominance of a few countries, either as destinations for UK residents or as foreign residents' trips to the UK, is apparent. Of UK residents' leisure trips to the 20 countries, 60% are to Spain, the US and Greece, while US and Irish residents make up 60% of foreign residents' trips to the UK. The business market is dominated by the US, France and Germany for both UK and non-UK residents. These three countries make up 43% of UK residents' business trips, while they account for 67% of foreign residents' business trips to the UK. The predominance of these countries for business travel is not surprising given that they are the UK's major trading partners, together accounting for 45% of trade between the UK and the 20 countries.

a. Leisure trips



b. Business Trips

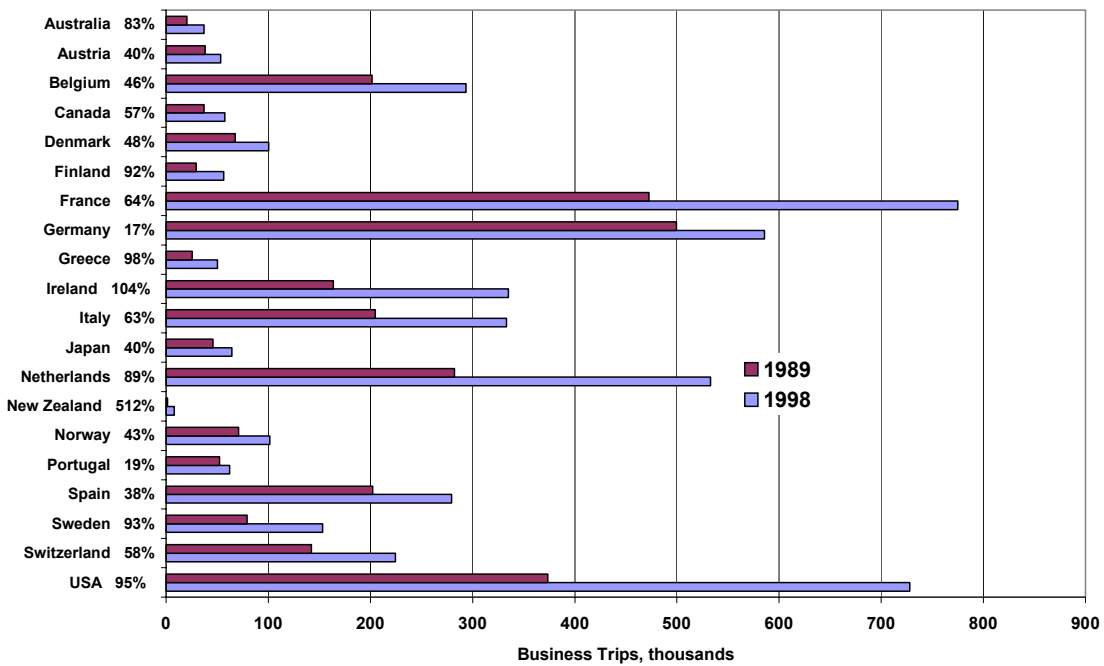
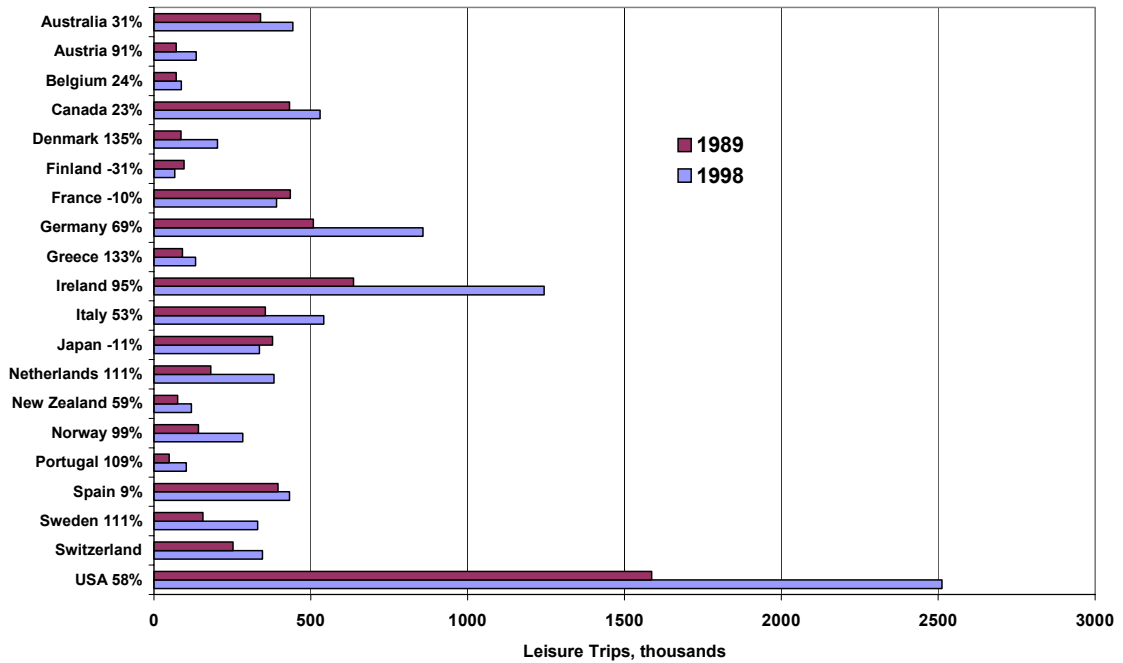


FIGURE 1 International air travel by UK residents: (a) Leisure (b) Business. Thousands of trips 1989 and 1998 and growth rates in percent.

a. Leisure trips



b. Business Trips

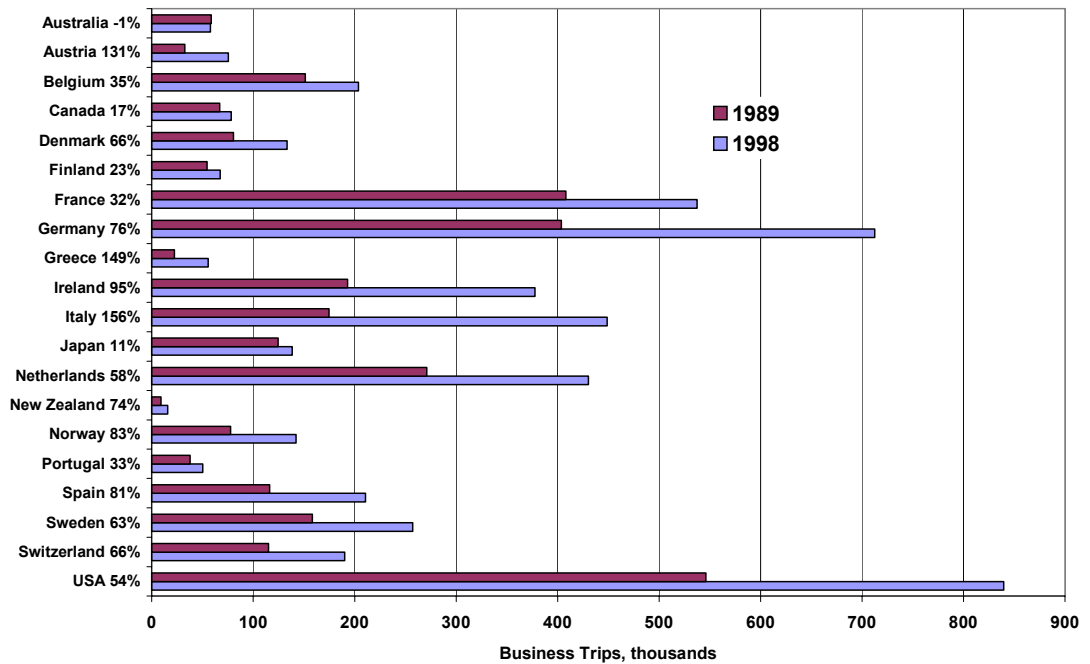


FIGURE 2 International air travel to the UK by non-UK residents: (a) Leisure (b) Business. Thousands of trips 1989 and 1998 and growth rates in percent.

Fares to the same destinations are shown in FIGURE 3 for leisure (a) and business (b) trips. These are not published fares, but are the fares actually paid by the respondents as collected in the IPS. Fares are only available for UK residents, so in the empirical work we assume that the same fares apply for foreign residents' air trips to the UK.¹ The fares shown in the figure are given in 1998 £s using the UK retail price index, so the rates of growth are in real terms for UK residents. Leisure fares have decreased to all destinations, from 52% between the UK and Australia and New Zealand to 17% between the UK and Germany. For business trips, the changes range from a decline of 41% between the UK and Canada, to small increases between the UK and France, the Netherlands and Australia. It is apparent that the decline in fares has been far more substantial for leisure travel than for business travel. The trip-weighted leisure fare has declined by 38%, compared to 13% for the comparable business fare. This reflects the entry of low-fare carriers which have primarily been directed towards the leisure market.

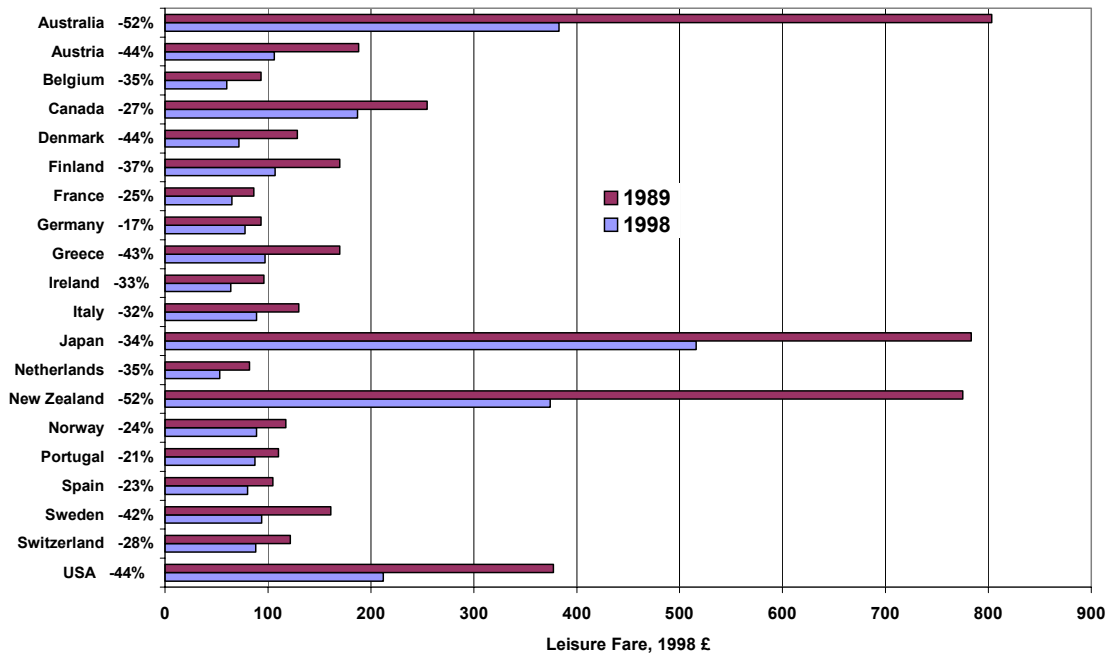
The development in real air fares has not been the same for non-UK residents because of exchange rate variation and differences in the general price development in the individual countries. For foreign residents' trips to the UK, fares are calculated by converting the UK fares to local currency using the respective year's exchange rates, and expressed in real terms using the relevant country's RPI. These are shown in TABLE 1. On average, leisure fares to the UK have declined by 24% over the period, while business fares have increased by 1%. There is, however, a notable variation amongst countries, with leisure fares ranging from a decrease of 46% in Greece to an increase of 8% in Canada, and business fares ranging from a decrease of 23% in Austria to an increase of 46% in Australia. Comparing the changes in fares of non-UK residents to the UK to the changes in fares for UK residents to the same countries (FIGURE 3) shows that air travel between the UK and each country (with the exception of Portugal) has become cheaper for UK residents than for residents of the other country. This is explained purely by exchange rate changes and in differences in rates of inflation, and is based on the assumption that the flights to the UK purchased in other countries are priced equivalently to those purchased in the UK so that the fare in the other country is the fare in the UK converted using the current exchange rate. There are a number of reasons why this may not be case, but in the absence of information on fares in the individual countries, there is no choice but to make this assumption. This should be held in mind in considering the fare developments noted above as well as in interpreting the empirical results.

TABLE 1 Real Airfares to the UK in Local Currency, % Change 1989 to 1998

Country	Leisure	Business	Country	Leisure	Business
Australia	-32	46	Italy	-16	13
Austria	-40	-23	Japan	-21	6
Belgium	-31	-13	Netherlands	-31	9
Canada	8	-13	New Zealand	-37	16
Denmark	-39	-11	Norway	-5	-2
Finland	-8	27	Portugal	-25	-8
France	-17	11	Spain	-6	11
Germany	-11	5	Sweden	-25	-2
Greece	-46	-19	Switzerland	-27	-16
Ireland	-23	2	USA	-39	-11
Average	-24	1	UK (trip weighted average to the 20 countries)	-38	-13

¹ Fares in the IPS do not include the fare portion of package holidays.

a. Leisure trips



b. Business trips

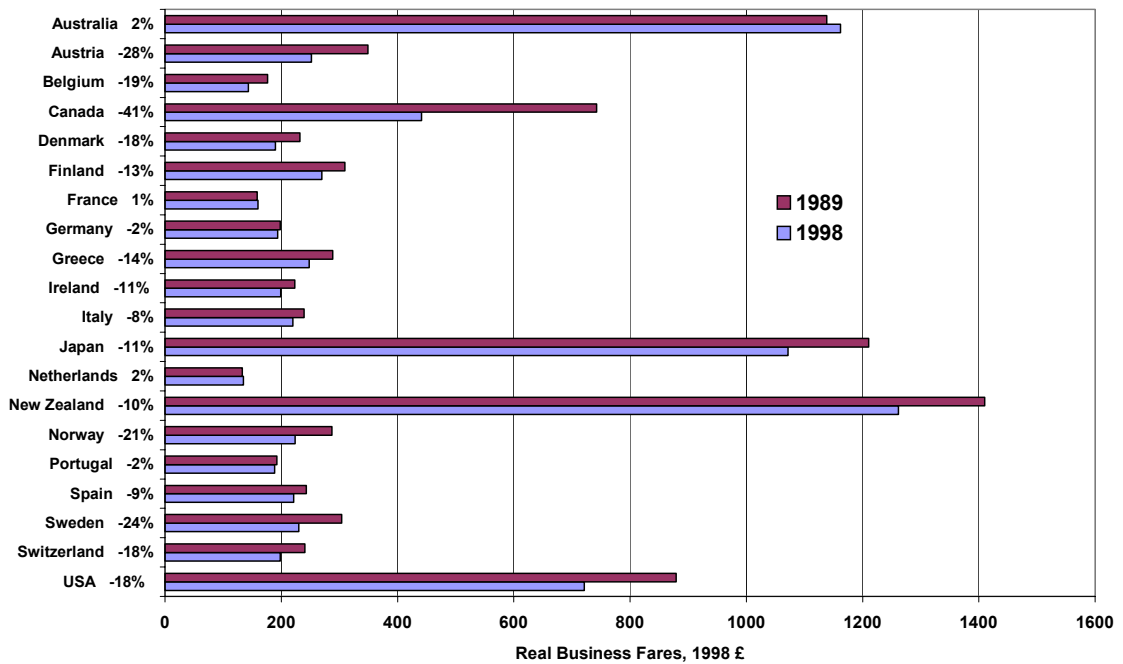


FIGURE 3 Air fares in 1998 £s, 1989 and 1998 and growth rates in percent.

Other cost factors which may affect destination choice by UK travellers and travel to the UK by foreigners are shown in FIGURE 4. The percentage changes over the period of three variables are shown. Purchasing power is defined as the ratio of relative prices to the exchange rate and thus is a measure of the overall effects of differences in inflation and exchange rate movements. A positive value implies that the country has become cheaper for UK residents over the time period, while a negative value implies that it has become more expensive. For non-UK residents the effects are the opposite. A positive value denotes that the UK has become more expensive for foreign residents over the period, while a negative value implies that the UK has become cheaper. Most countries have become cheaper for UK residents, while Greece and Portugal have become more expensive. Similarly, the UK has become more expensive for foreign tourists from all countries except Greece and Portugal. The trip-weighted purchasing power for UK residents with respect to the 20 countries has improved by 20%.

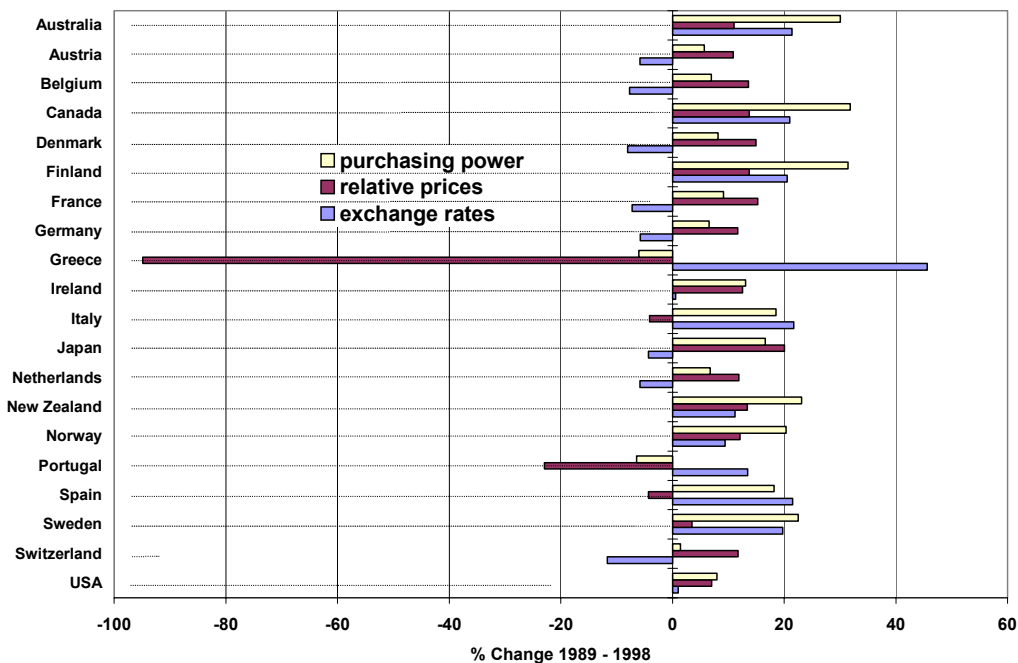


FIGURE 4 Changes in purchasing power, prices and exchange rates relative to the UK, 1989 - 1998.

The separate effects of inflation and exchange rates are also shown. In most countries domestic prices have increased less rapidly than in the UK (except for Italy, Spain, Greece and Portugal), so that prices have become lower in relation to those in the UK over the period. The exchange rates changes show the change in the local currency per pound, so that a positive value implies that UK residents get more local currency per pound and foreign residents get fewer pounds for their local currency. This has been the case for about half of the countries, whereas for the other half the pound has become weaker (cheaper in local currency).

Income could also be expected to be a main determinant of air travel. The development of real disposable income in the UK and in the 20 countries over the period is given in TABLE 2. Income in the UK has increased 20.5% between 1989 and 1998, slightly less than the average for the 20 countries. There is a considerable variation in growth rates amongst countries, ranging from just over 4% in Switzerland to 84% in Ireland.

TABLE 2 Real Disposable Income in Local Currency, % Change 1989 to 1998

Country	% Change	Country	% Change
Australia	25.3	Italy	16.9
Austria	21.0	Japan	7.6
Belgium	20.3	Netherlands	25.1
Canada	10.9	New Zealand	10.8
Denmark	26.3	Norway	37.1
Finland	14.7	Portugal	24.2
France	14.1	Spain	29.5
Germany	12.4	Sweden	11.8
Greece	18.8	Switzerland	4.2
Ireland	84.4	United States	22.2
Average	21.9	United Kingdom	20.5

For business travel, we would expect the number of trips between the UK and the different countries to be related to the country's trade with the UK. This is shown in FIGURE 5. Again, the level of trade is given on the horizontal axis and the country, followed by the percentage change between 1989 and 1998 on the vertical. Growth in trade has been greatest with Spain, Ireland and the US, while a few countries have seen a decline in trade. Total trade between the UK and the 20 countries increased by 20% over the period.

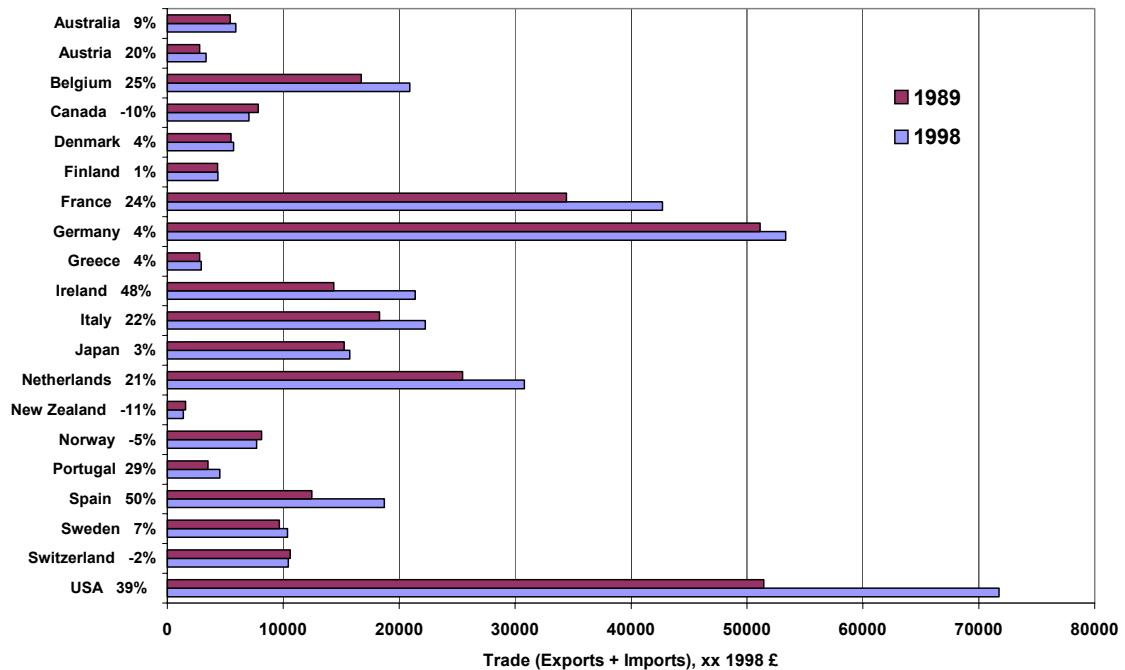


FIGURE 5 Trade (exports + imports) between the UK and included countries, 1998 £s and percent change 1989 - 1998.

THE MODEL

Four models are estimated: UK residents' leisure trips/ business trips to the 20 countries and non-UK residents' leisure/business trips to the UK. The models for the UK are derived below.

We assume that the long-run equilibrium demand for leisure travel, in terms of trips per capita, Q_{LRt}^* , to country R in year t can be expressed as a function f of the real air fare, F_{LRt} , between the UK and country R in UK prices, UK per capita disposable income, I_{UKt} , the relative price level of country R to the UK, P_{Rt} , and the relative exchange rate, X_{Rt} :

$$Q_{LRt}^* = f(F_{LRt}, I_{UKt}, P_{Rt}, X_{Rt}). \quad (1)$$

For business travel, the same variables are included, with income replaced by trade, T_{Rt} , between the UK and country R :

$$Q_{BRt}^* = f(F_{BRt}, T_{Rt}, P_{Rt}, X_{Rt}). \quad (2)$$

In order to account for lags in the adjustment to changes in the explanatory variables, a partial adjustment model is used to relate actual patronage, Q_{LRt} and Q_{BRt} to its long-run equilibrium level. This results in the following models:

$$Q_{LRt} = f(F_{LRt}, I_{UKt}, P_{Rt}, X_{Rt}) + \theta_L Q_{LRt-1} \quad (3)$$

$$Q_{BRt} = f(F_{BRt}, T_{Rt}, P_{Rt}, X_{Rt}) + \theta_B Q_{BRt-1} \quad (4)$$

where $0 \leq \theta_L, \theta_B < 1$ are adjustment parameters, which indicate the proportion $(1-\theta)$ of the gap between equilibrium and actual patronage that is closed after one year. The presence of demand in the previous period on the right-hand side of the equation can be interpreted in terms of habits or inertia - what individuals do in the past also affects their future behaviour. Also, since demand in period $t-1$ is influenced by prices, etc. in period $t-1$, and similarly for all other previous periods, demand in any period is determined by the entire past history of prices and other relevant variables. Individuals do not respond to changing circumstances instantaneously, but with a delay. The partial adjustment model used implies that the effects of the independent variables decline geometrically over time.

Since we only have a small number of times-series observations (10 years), we cannot estimate separate models for travel to each country individually. Instead, we employ a time-series cross-section approach by pooling the observations for all countries. By combining the data in the estimation procedure, the number of observations (and degrees of freedom) is increased, thus improving the significance of the estimated parameters. It also provides more variation in the data, since air travel and fares vary more between countries than over time. The disadvantage of this technique, however, is that it assumes that the demand relationship and the elasticities are the same for travel to all countries. Differences between countries are represented by a Fixed Effects Model specification, which allows country-specific intercepts. Assuming f to be a linear function and all variables to be in logarithmic forms results in the following constant elasticity specifications:

$$\ln Q_{LRt} = \alpha_{LR} + \beta_{LF} \ln F_{LRt} + \beta_{LI} \ln I_{UKt} + \beta_{LP} \ln P_{Rt} + \beta_{LX} \ln X_{Rt} + \theta_L \ln Q_{LRt-1} + \varepsilon_{LRt} \quad (5)$$

$$\ln Q_{BRt} = \alpha_{BR} + \beta_{BF} \ln F_{BRt} + \beta_{BI} \ln T_{Rt} + \beta_{BP} \ln P_{Rt} + \beta_{BX} \ln X_{Rt} + \theta_B \ln Q_{BRt-1} + \varepsilon_{BRt} \quad (6)$$

where the β_{LZ} s and β_{BZ} s are the coefficients relating to variable Z ($Z = F, I, T, P, X$) for leisure and business travel respectively. All slope coefficients (the β s and θ) are constrained to be the same for all countries, while the α_{RS} are country-specific intercept terms. Other differences between destinations and assumed to be random, and captured by the error term (ε).

The models for non-UK residents are specified in the same manner except that UK income is replaced by the incomes of the individual countries and both incomes and fares are expressed in local currencies.

The short-run elasticities are obtained directly from the coefficients of the independent variables, while the long-run elasticities are calculated as the short-run elasticities divided by the adjustment coefficient $(1-\theta)$. The greater the value of θ , the slower the speed of adjustment and the greater the difference between the short- and long-run elasticities.

ESTIMATION RESULTS

The models are estimated from the pooled time-series cross-section data for air travel between the UK and the 20 countries for the time period 1989 to 1998. The models are estimated using Generalised Least Squares procedures using cross-section weights to account for possible heteroskedasticity.

The estimated coefficients (apart from the 20 fixed effects) and related statistics are shown in TABLE 3. In all cases, the estimated parameters are of the expected signs, and most are highly significant. Fares have a negative impact on demand and income and trade a positive effect. The coefficients of the exchange rate (local currency per £) are positive in the UK models (as the £ becomes stronger in relation to that of the other country, more local currency is obtained per £ and travel to that country increases) and negative in the non-UK models (as the £ becomes stronger, travel to the UK declines). The sign of relative prices (retail price index destination/ retail price index UK) is negative in the UK models (if prices in a destination country increase relative to those in the UK, the country becomes more expensive and travel to that country decreases), and positive in the non-UK models (if local prices increase relative to the UK, the UK becomes less-expensive and travel to the UK increases). Finally, the coefficient of the lagged dependent variable is positive and of a reasonable order of magnitude.

The resulting short- and long-run elasticities are shown in TABLE 4. For leisure trips the fare elasticity for UK residents is -0.24 in the short run and -0.58 in the long run. In comparison, non-UK residents appear to be slightly less price-sensitive. For business trips the elasticities are similar for both UK and non-UK residents, but those for the UK are not significantly different from zero. Although one might postulate that business trips would be less price-sensitive than leisure trips, since the latter are more discretionary, this appears not to be the case for non-UK residents' trips to the UK.

The long-run income (for leisure trips) and trade (for business trips) elasticities are above unity, suggesting air travel to be a luxury good. For UK residents both of the same order of magnitude - about 0.4 in the short-run and slightly above unity in the long run. For non-UK residents both elasticities are substantially higher (just over 1 in the short run and in excess of 1.6 in the long run. Although this implies that air travel to the UK is more sensitive to income than is travel abroad by UK residents, this is unlikely to be the case for all 20 countries included, and we would expect a considerable variation in income elasticities amongst countries. The paucity of data, however, does not permit us to investigate this issue.

Relative prices appear to be more important than the exchange rate for business travel, but the difference is less clear-cut for leisure travel. Overall, business travelers seem to be more sensitive to changes in exchange rates and relative prices than leisure travelers are, which is contrary to expectations. Finally, the dynamic structure indicates that the long-run elasticity is between 1.5 and 2.4 times the short-run elasticities and that 90% of the adjustment occurs within about 2 to 4 years. Adjustment appears to be slower for UK residents than for others, and slightly slower in the business market than in the leisure market.

TABLE 3 Estimation Results for PA Model for Leisure and Business Air Travel by (a) UK Residents to 20 International Destinations, and (b) Residents of 20 Countries to the UK

(a) UK residents travelling to/from 20 countries							
Leisure Trips				Business Trips			
		Coefficient	Std. Error	P-value	Coefficient	Std. Error	P-value
Trips (t-1)	θ	0.59	0.06	0.00	0.56	0.08	0.00
Fare	β_F	-0.24	0.09	0.01	-0.13	0.17	0.43
Exchange rate	β_X	0.39	0.06	0.00	0.24	0.07	0.00
Relative prices	β_P	-0.32	0.15	0.03	-0.41	0.19	0.03
Income per capita	β_I	0.43	0.14	0.00			
Trade per capita	β_T				0.46	0.07	0.00
Adjusted R-squared			0.999			0.999	
Sum of Sq. Errors			2.652			3.509	
F-statistic			43177			69305	
Observations			180			177	
(b) Residents of 20 countries travelling to/from the UK							
Leisure Trips				Business Trips			
		Coefficient	Std. Error	P-value	Coefficient	Std. Error	P-value
Trips (t-1)	θ	0.43	0.05	0.00	0.32	0.06	0.00
Fare	β_F	-0.18	0.09	0.04	-0.21	0.09	0.02
Exchange rate	β_X	-0.20	0.11	0.07	-0.67	0.09	0.00
Relative prices	β_P	0.27	0.17	0.12	1.12	0.24	0.00
Income per capita	β_I	1.02	0.11	0.00			
Trade per capita	β_T				1.10	0.09	0.00
Adjusted R-squared			0.999			0.999	
Sum of Sq. Errors			0.117			0.153	
F-statistic			69778			59805	
Observations			179			177	

TABLE 4 Estimated Short- and Long-run Elasticities and Dynamic Adjustment for Leisure and Business Air Travel

	Leisure				Business			
	UK residents		Non-UK residents		UK residents		Non-UK residents	
	Short Run	Long Run	Short Run	Long Run	Short Run	Long Run	Short Run	Long Run
Fare	-0.24	-0.58	-0.18	-0.33	(-0.13)	(-0.31)	-0.21	-0.32
Exchange rate	0.39	0.95	-0.20	-0.36	0.24	0.55	-0.67	-0.99
Relative prices	-0.32	-0.77	0.27	0.47	-0.41	-0.94	1.12	1.66
Income	0.43	1.05	1.02	1.80				
Trade					0.46	1.05	1.10	1.63
Long-run multiplier		2.42		1.76		2.30		1.48
years to 90% adjustment		4.32		2.75		4.03		2.04

Elasticities in parentheses are not significantly different from zero at the 5% level.

From the estimated elasticities and the changes in the explanatory variables over the period, the relative influence of the various factors on air travel demand can be approximated. These calculations indicate that the growth in income and trade has had by far the greatest impact on air travel over the period, accounting for at well over half the growth in each market. Trade has had a relatively greater impact on the business market than has income on the leisure market, and both income and trade have been more important for non-UK residents than they have been for UK residents. Fares have been most important for the UK leisure market, with the fare reductions explaining around 40% of the increase in air travel. The strength of the pound is responsible for about 20% of the growth in UK residents' air travel, but has also led to a significant, but smaller, decline in travel to the UK. The relative price development between the UK and the other countries has had a small but negative impact on travel abroad by UK residents, and an equally small but positive impact on travel to the UK.

Empirical evidence of fare elasticities for international air travel is sparse, but a few studies can be found in the literature. For the UK, the Department of the Environment, Transport and the Regions (1) estimates the long-run fare elasticities for the leisure and business markets to be -1.3 and -0.5 , respectively, and the income elasticities to be between 0.4 and 0.8 . The fare elasticities are rather greater than those estimated in this study, and the income elasticities lower. Although they were partially based on the same IPS data, the models were based on a different segmentation and a wider range of countries. Also using UK IPS data for the period 1970 to 1998, Graham (2) estimates the income elasticity for leisure travel to be around 2 , but found no significant relationship between travel and fares. This can probably be explained by the fact that we used pooled time-series cross-section data, rather than solely time-series data, as in the Graham study. Of non-UK studies, Jorge-Calderón (3) in a study of European air travel finds a fare elasticity of between -0.5 and -1.0 for different origin-destinations. The Australian Bureau of Transport and Communications Economics (4) in a study of demand elasticities for air travel between Australia and 12 countries finds fare elasticities ranging between -0.1 and -2 for leisure travel and 0 to -0.6 for business travel for the different countries, and income elasticities between 0 and 12 . The variation is considerable, so that it's rather difficult to compare the elasticities with those estimated in our study.

CONCLUSIONS AND TOPICS FOR FURTHER STUDY

The results presented in this paper show that international air travel by UK residents for leisure purposes is relatively price sensitive, suggesting that part of the increase in air travel over the past decade noted earlier can be explained by declining air fares. Business travel, however, appears to be insensitive to fare changes, and is driven mainly by other factors, particularly foreign trade. For non-UK residents, the fare elasticity appears to be the same for leisure and business travel. In all cases, income (trade) is a prime determinant of air travel, although relative price levels and exchange rates also play an important role. In addition, there we find that there are substantial lagged effects - the short-run elasticities are much smaller than the long-run elasticities.

Our results, however, are only tentative, and further work is required. Particularly, other types of models and specifications will need to be examined, and various statistical tests carried out. It would also be advantageous to extend the time period covered by the analysis. This would allow us to examine possible differences in elasticities amongst countries. Income as well as fare elasticities may differ by countries, and such differences will be important if the model is to be used for forecasting purposes. Extending the data back in time would also provide observations of rising airfares as well as the generally falling fares that characterise the period in the current study. There may be an asymmetry in the response to rising and falling fares, and if this is the case, the elasticities estimated in this study might not be appropriate when fares are rising. Additional work on air travel demand will increase the number of countries considered and explore the possibilities of analyzing domestic air travel within the UK.

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