Air Travel Demand

IATA ECONOMICS BRIEFING Nº 09

The demand for air travel is sensitive to changes in air travel prices and incomes. However, the degree of sensitivity (i.e. its demand elasticity) will vary according to different situations. Reliable estimates for demand elasticities are essential in order to ensure that air transport policies are effective.

This report provides new research into the sensitivity of air travel demand to changes in air travel prices and incomes. It is based upon extensive research undertaken on behalf of IATA by InterVISTAS Consulting Inc. – using new econometric analysis and a review of previous studies to estimate air travel demand elasticities applicable to a wide range of air transport markets. It provides clear guidelines on the appropriate level and type of demand elasticity to use when analysing a policy proposal, such as liberalisation, airport charges, taxation or emissions schemes.

Demand Elasticities

Demand elasticities measure the change in the quantity demanded of a particular good or service as a result of changes to other economic variables, such as its own price, the price of competing or complementary goods and services, income levels and taxes.

A demand elasticity for price of less than one in absolute value reflects inelastic or price insensitive demand, where the proportional change in quantity demanded is less than the proportional change in price. An elasticity of greater than one in absolute value reflects elastic or price sensitive demand. In other words, the proportional change in quantity demanded will be greater than the proportional change in price.

The elasticity of air travel demand varies according to the coverage and location of the market in which prices are changed and the importance of the air travel price within the overall cost of travel.

The appropriate elasticity to use will depend on the type of question being asked. What is the price that is being changed? What is the market that is being assessed (e.g. demand for an individual airline or demand for total air travel)?

Key Results

The new econometric analysis develops a set of in-depth guidelines, and appropriate elasticities, that can be applied to the analysis of different air markets. Base elasticity estimates are developed for the different levels of aggregation. Multiplicative estimates were then developed to adjust the elasticities to reflect specific geographical markets.

The econometric results found that at the route level (where competition between airlines or city-pair markets is high) the sensitivity of demand to price is very high. However, at the national or regional level, air travel is relatively price insensitive. The results support demand elasticities for price of:

- **Route Level: -1.4**
- **National Level: -0.8**
- **Supra-National Level: -0.6**

The review of previous research found consistent results showing that air travel price elasticities on short-haul routes were higher than on long-haul routes. This largely reflects the greater opportunity for inter-modal substitution on short haul routes (e.g. travellers can switch to rail or car in response to air travel price increases). On this basis an elasticity multiplier of 1.1 is used to adjust air travel price elasticities for short-haul markets.

Geographic Market Analysis

The econometric analysis found statistically significant differences between different geographic air travel markets. The differences are linked to the route length and specific market conditions in each area. The estimated price elasticity multipliers for each market are:

	Route/Market level		National level		Supra-national level	
	Short-haul	Long-haul	Short-haul	Long-haul	Short-haul	Long-haul
Intra N America	-1.5	-1.4	-0.9	-0.8	-0.7	-0.6
Intra Europe	-2.0	-2.0	-1.2	-1.1	-0.9	-0.8
Intra Asia	-1.5	-1.3	-0.8	-0.8	-0.6	-0.6
Intra Sub-Saharan Africa	-0.9	-0.8	-0.5	-0.5	-0.4	-0.4
Intra S America	-1.9	-1.8	-1.1	-1.0	-0.8	-0.8
Trans-Atlantic	-1.9	-1.7	-1.1	-1.0	-0.8	-0.7
Trans-Pacific	-0.9	-0.8	-0.5	-0.5	-0.4	-0.4
Europe-Asia	-1.4	-1.3	-0.8	-0.7	-0.6	-0.5

By way of illustration, elasticities for different situations can be developed by selecting the relevant base price elasticity and applying the relevant multipliers. For example:

- **To examine the impact of an EU-wide aviation tax on airport terminal passenger numbers the elasticity would be developed as follows:**
  - Base multiplier: -0.6 (supra-national)
  - Geographic market: 1.4 (Intra Europe)
  - Short-haul adjustor: 1.1

The price elasticity is: -0.6 x 1.4 x 1.1 = -0.9.

- **To examine the impact of the same tax on overseas visitors and tourism the elasticity would be developed as follows:**
  - Overseas resident adjustor: 1.3

The price elasticity is -0.9 x 1.3 = -1.2

- **To examine the impact of an increase in airport landing fees on a short-haul route in Asia:**
  - Base multiplier: -1.4 (route)
  - Geographic market: 0.95 (Intra Asia)
  - Short-haul adjustor: 1.1

The price elasticity is: -1.4 x 0.95 x 1.1 = -1.5

Key Policy Implications

The correct elasticity value to use in analysing an air transport policy decision depends on the type of question being asked. The impact on demand of higher travel costs on a given route due to a rise in airport landing charges requires a different (higher) elasticity than when examining the traffic impact of a wider travel cost increase due to a passenger tax on all routes in a country.

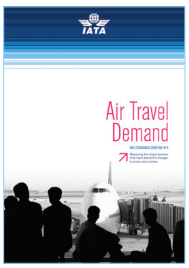
Air transport policy decisions run the risk of being ineffective, or even counter-productive, if the correct demand elasticity is not used.

For example:

- A revenue-raising policy that raises the price of travel on a route (e.g. higher airport charges) will reduce passenger numbers more than expected if the price elasticity is under-estimated. The price elastic response to air travel price increases found at the route level means that demand falls at a proportionately higher rate than the increase in price.
- An environmental policy to raise the price of travel (e.g. a national aviation tax) on a national or supra-national basis will be ineffective if the price sensitivity of outbound travel is low, as found. A price inelastic response at the national or supra-national level means that the impact on reducing demand will be proportionately less than the increase in price. The greater price sensitivity of inbound overseas residents will result in a diversion to other destinations, a 'leakage of carbon' and thus a reduction in environmental effectiveness.

The focus of existing policy to reduce CO_2 emissions from air travel has been on trying to manage air travel demand by raising the cost of travel for passengers. The results contained in this report show that such policies are likely to fail. Instead, IATA's 4-Pillar Climate Strategy[1] focuses on action to decouple emissions through technology, infrastructure and operations, as well as those brought about by well designed economic instruments.

Air transport is an integral part of the global economy. It is essential to understand how the sensitivity of air transport demand affects policy and economic decisions, to ensure that these decisions are made on a more effective basis.



For further details and for a copy of the full report, please go to: www.iata.org/economics

[1]Building a Greener Future (2007) IATA.