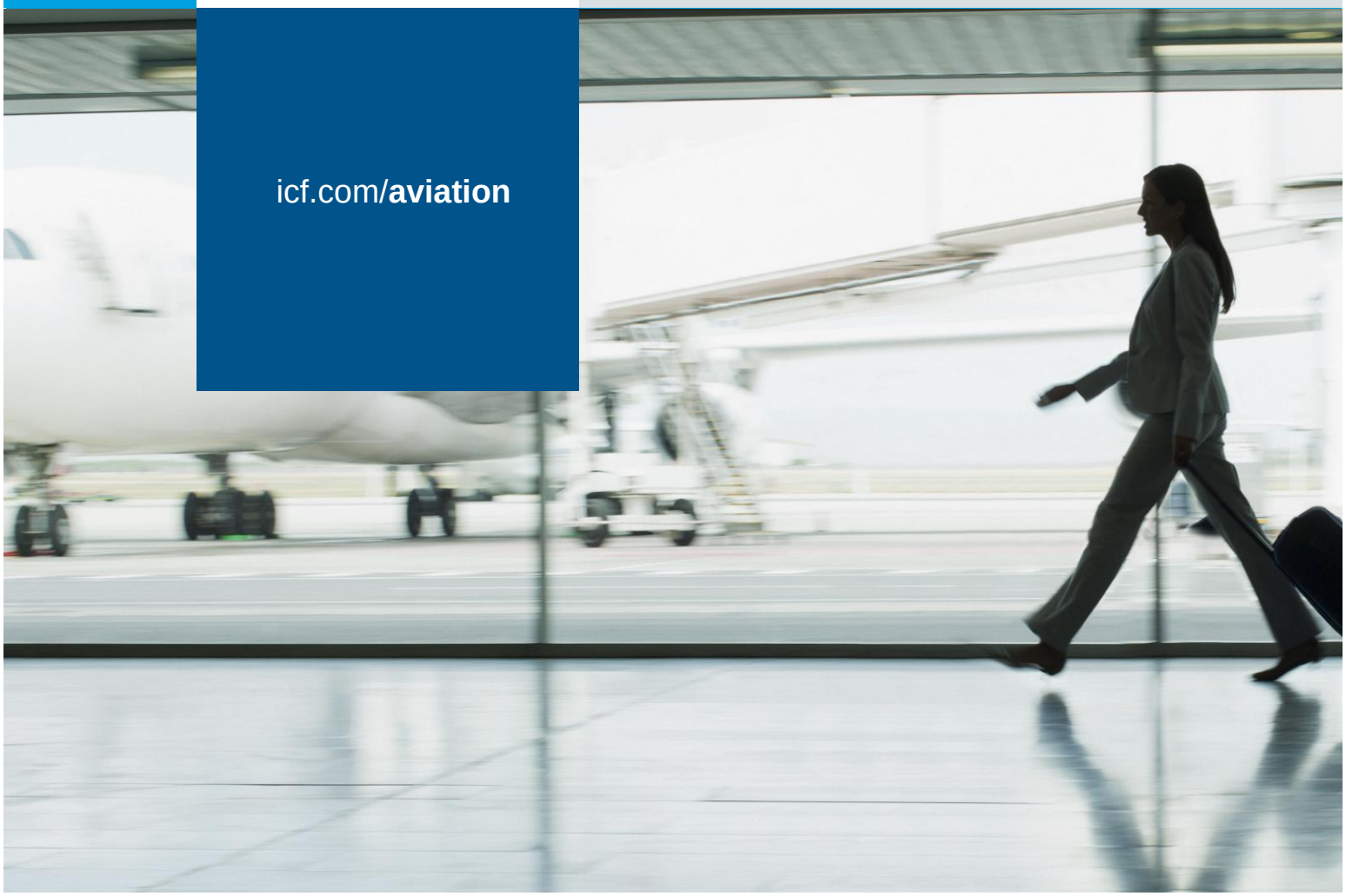
Identifying the Drivers of Air Fares

An **ICF** report prepared for **ACI EUROPE**

May 3, 2018

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1. Foreword

Airline fare setting is a complex and dynamic process, varying by carrier, route and time. It lies at the heart of an airline's commercial strategy as it aims to maximise the return on its assets employed, namely its aircraft and its people. In the following report, we have sought to describe clearly and comprehensively how the numerous factors an airline has to juggle play into the fare that passengers ultimately face. As a team who has an airline background, and advises both airlines and airports on matters of strategy, ICF has been uniquely well placed to do this.

Our intent has been two-fold – firstly, to provide some clarity around this fare setting process, which can often seem opaque, and secondly, to analyse objectively the linkages between airport charges and air fares, in light of some of the recent debates on this topic. At a very basic level, one would expect that a change in any significant cost item would impact the eventual price charged, and this is indeed an attractive narrative. However, there are two key questions to ask first: 1) do airport charges fall into the 'significant category? And 2) do *changes* in airport charges automatically translate into changes in air fares? Or, as we contend, do changes in these costs often get subsumed within the bigger commercial considerations an airline faces, such as the degree of competition on a route, the season and type of day, the availability of slots, or indeed fuel prices or labour costs.

We certainly do not conclude or suggest that airport charges, however defined, have no impact on airline behaviour. We know this to be false; we see this on a regular basis, as airlines negotiate hard on charges and take them into account when deciding which airport bases to grow or shrink, where to increase capacity and so on. However, that is quite a different process to when airlines actually *set* fares, which happens much closer to the time of the flight, and which happens much more frequently and with greater volatility.

I trust that the following report will prove valuable in the ongoing debate around airport charges and their role in the European aviation market, by using traceable, clear and consistent industry data to illustrate its key points. Certainly, it is a debate that will continue as long as users are expected to pay for the airport infrastructure they use, but some balance in the discussion around both the quantum and the actual linkages will hopefully prove valuable.

Kata Cserep

Vice President

ICF

2. Executive Summary

Airport charges can be a contentious subject. Despite most European airports being subject to regulation at both a national and supranational (via the Airport Charges Directive) level, airline lobbying groups continue to complain of excessive airport charges which, they argue, force airlines to increase fares with the effect of suppressing consumer demand.

We show in this report that airport costs are a relatively small and stable component of an airline's cost base. In general, airport charges have been broadly flat or decreasing over the past decade, and typical fluctuations rarely exceed €1 per passenger. This compares to much more significant and frequently observed changes in other airline costs such as fuel and aircraft costs that are both more significant and more volatile. If recent history is to be characterised as one in which air fares have been driven up by an increasing cost base, then the role played by airport charges would be marginal. We cannot know the counter-factual ("what would have happened if…") but from our analysis we can see that there is no evidence to suggest an industry – one in unprecedented good shape – that is being held back by the pricing decisions of airports and regulators.

Having established this context, we then look at how airlines set their prices, how underlying costs influence the pricing mechanism and whether variations in airport charges have a significant impact on air fares. Our analysis demonstrates that airport charges (and other costs) are predominantly second-order drivers of fares. In common with most industries, costs influence profitability and longer-term decision making, but it is predominantly the balance of demand and supply that set the prices, as evidenced by the extreme volatility of air fares and the sometimes counter-intuitive (from a cost of provision perspective) pricing strategies.

The key findings of the report are as follows:

Airport charges represent a relatively small share of airlines' costs

Weighted by passenger volume, almost 80% of passengers are carried on airlines for whom airport charges represent 6% or less of their cost base

These charges have been flat or decreasing over the past decade

We have presented evidence, based on the actual aeronautical yields reported by airports, which demonstrate that on average charges are flat or decreasing. Airline annual reports also confirm that this cost item has not been (in most cases) growing – in absolute or as a share of costs – over time.

There is significant variation by airline type and haul

The type of airline and the nature of the route (specifically, the distance) influence the significance that airport charges play. It is vital that future studies in this area consider the full spectrum of airline model rather than simplify to a one-size fits all analysis.

In terms of the linkages between these airport charges and the air fares faced by passengers, we have observed the following:

Airlines price air fares according to market fundamentals

Numerous case studies demonstrate that the price of a seat can vary significantly depending on when the ticket is booked, time of travel and the levels of competition on the route. These variations in price are primarily driven by short run demand and supply factors, not the long run cost of operating the flight.

There are numerous factors that influence how an airline will respond to changes in costs

Airlines will monitor their costs at various stages of the planning and sales cycle and will consider their options in the wider context of their own business, the competition and the likely impact from their customers, i.e. passengers. In terms of likely outcomes, many cost changes go largely unnoticed by passengers, either because they are not passed through to fares or because they are relatively modest or occur at times or in markets where demand is price inelastic.

Airlines do not always pass on cost changes to passengers

We present a number of case studies in this report that demonstrate occasions where changes in costs are not being passed through to passengers, whether positive or negative. In these situations, the airlines have taken a conscious decision to price to the market while absorbing small changes in operating cost base.

Airport charges play a relatively small role in determining the price of an air ticket

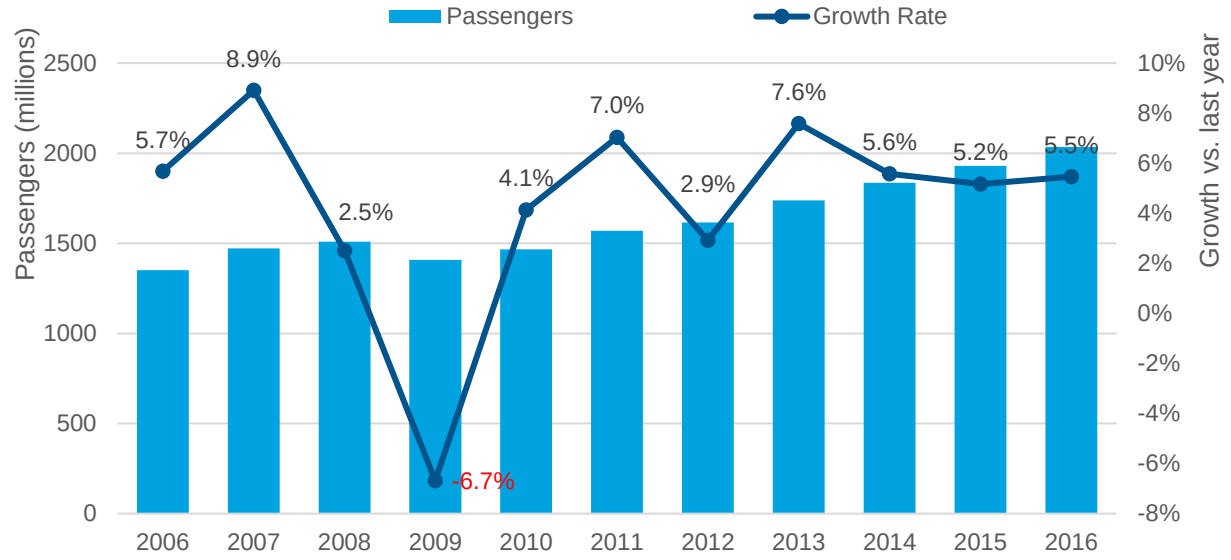
Historically, airport charges have been both less significant and less volatile than fuel, staff or aircraft-based costs. As such, these other costs have a greater influence on airline cost bases. However, even these costs are not directly linked to air fares paid, as carriers play a sophisticated game in optimising prices to respond to demand and competitive conditions. That is not to say that airport charges do not play any role, only that their significance should not be overstated relative to other factors

3. Introduction and Context

The story of aviation in Europe has been one of continuous growth and expansion since the inception of the modern civil aviation industry, with airports across the continent collectively breaking through the 2 billion passenger mark in 2016. Europe is host to many of the world's largest airports and airlines, as well as one half of the Airbus-Boeing duopoly.

The aviation industry has expanded rapidly since the 1980s, with the European market enjoying its fair share of this global growth story. Its airports have seen passenger numbers increase more than fourfold between 1991 and the present day. The major European economies dominate the market, with the United Kingdom, Spain, Germany, Turkey, France and Italy accounting for 40% of the market in 2016. The market suffered as Europe's economies became embroiled in the Global Financial Crisis in 2008/09, but since then, buoyed by low fuel prices and a recovering world economy, European air passengers have grown at a CAGR of 5.6% p.a. (2010-2016).

Exhibit 1: European Airport Passengers, 2006-2016



Source: ACI

A key factor of this growth is the expansion of Low Cost Carriers (LCCs). LCCs capitalised on pent up consumer demand for cheap, no-frills air travel to expand rapidly in the period following deregulation of the European aviation market. The vast majority of capacity growth over the past decade can be attributed to LCCs, and they now account for over a third of scheduled European seat capacity.

Despite this period of sustained growth, and no evidence of significant above-inflation air fare growth, there have been suggestions that increasing airport charges have been a constraining factor. Addressing these concerns directly, this report will demonstrate the following

1. **Airport charges are a relatively small share of airline costs** (Section 4.3)
2. **These charges have not been increasing over time** (Section 4.4)

3. **In common with most competitive industries, prices are primarily a function of demand and supply, and changes in underlying costs are not automatically passed through to consumers** (Section 5)

4. Airport Charges: Significance to Airlines and Trends over Time

In this section we analyse how significant airport charges are in an airline's cost base and how materially this changes between different airline business models. We review how airport charges have been evolving over time, using both airline and airport published data.

4.1. What is an 'Airport Charge'?

The term 'airport charge' can be misunderstood if not clearly defined. In this report we consider 'airport charges' to include services and charges that **are paid to an airport by an airline**. We use the wider term 'Airport Visiting Costs' to include all of the costs that are related to landing and taking off from an airport, and **which includes costs and taxes that are not under an airport's jurisdiction**. Previous studies have conflated airport charges with Airport Visiting Costs, which can result in misleading conclusions. Ground handling and taxes (both discussed briefly below) should not be considered as an airport charge, since the airports have little to no influence on the price levels. We believe this approach is consistent with how airports report revenues and airlines report costs.

Airport Charges are a subset of Airport Visiting Costs

Airport Charges are charges set by an airport for the use of its runway and terminal facilities.

Ground Handling (typically paid to third parties) and **government taxes,** are not airport charges, but count towards the wider definition of 'Airport Visiting Costs'

4.1.1 Ground handling charges

At many major European airports, ground-handling is carried out by third party companies, independent of airport and airlines. Airlines incur ground handling charges to pay for a wide variety of services required to operate flights from an airport. These services cover areas such as baggage handling, ramp handling, aircraft maintenance and cleaning, fuel provision and cargo handling. They can also cover passenger liaison and other supervisory services. Ground handling charges in Europe are governed by the Ground Handling Directive (GHD) which came into force in October 1997. It stipulates that airports with annual traffic of over 3 million passengers must allow third parties to compete for ground handling services, preventing airports from abusing a potential monopoly position. Airports not covered by the directive are typically market takers with respect to passenger traffic and so are not able to levy uncompetitive ground handling tariffs.

4.1.2 Taxes

Local authorities, national governments and regulatory bodies impose taxes on airport customers in some jurisdictions. These taxes are introduced for a variety of reasons. Most are designed to contribute to public finances, others as a funding mechanism for airport-related infrastructure and services whilst some are imposed on environmental grounds. Despite these

often being described as “airport taxes” and included in benchmarking studies of airport charges, many of these taxes are collected by the airline directly from the passenger. In cases where the airport is responsible for collection, the revenues are typically passed on to the body responsible for administering the tax and have no contribution towards airport net revenue. In fact, the existence of these taxes is often a detriment to the airport as it artificially curtails demand for air transport services. Both airlines and airports have a history of cooperating to advocate against taxes which are introduced to provide another source of revenue to national governments and are not strictly predicated on the needs of the aviation industry.

4.2. Airline Segmentation

Airlines typically employ highly specialized business models which seek to target a segment or area of the addressable market for passengers. An airline business model can be considered the sum of its route network, aircraft, target demographic and operating performance. While these factors can be combined across the industry in multiple permutations, and certainly distinctions continue to blur and evolve, industry analysts typically segment the sector into the following categories:

- Full Service Carrier (FSC or legacy carrier)
- Low Cost Carrier (LCC or low fare carrier)
- Regional Carrier
- Charter Carrier

In order to assess how significant airport charges are for airlines we have analysed annual reports and airline investor reports to extract information on the costs reported by airlines. Airline-reported data was analysed over the previous 10 years where available.

ICF selected a sample of European airlines that broadly represent the spectrum of different airline operating models, cover a number of different geographies, and for which good data could be sourced.

The following table lists the airlines we have included in our analysis for each of the different business.

Exhibit 2: Airlines Analysed in this Study

	Airline	Comment
Full Service Carrier	Air France / KLM	Primary bases at Paris and Amsterdam
	Lufthansa	Europe’s largest airline
	IAG	Heathrow’s largest airline
Low Cost Carrier	Ryanair	Europe’s largest LCC
	easyJet	Second largest LCC in Europe, and London-Gatwick’s largest
	Norwegian	Europe’s largest long haul LCC operator
Regional Carrier	Flybe	Europe’s largest independent regional airline
Charter Carrier	TUI Airways	UK subsidiary of the TUI group

4.3. Significance of Airport Charges to Airlines

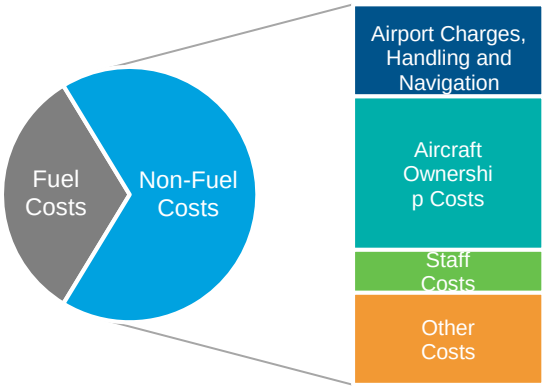
4.3.1 Approach to analysing airline costs structures

Airlines do not report their detailed cost items in a consistent way, complicating comparisons. Airport charges in particular are rarely reported separately, and are often combined with other costs items such as air navigation and ground handling. ICF's general approach can be summarised as follows:

- Convert each airline's reporting structure into a consistent format
- Identify the cost item for each airline that contains 'Airport Charges'
- Estimate the share of this cost line that is actually accounted for by Airport Charges

For the purposes of this study, ICF have adopted the following high level cost structure in analysing airline annual reports. Whilst capturing the major cost categories, this approach was also consistent with how most airlines disaggregate their costs.

Exhibit 3: Airline Cost Structure

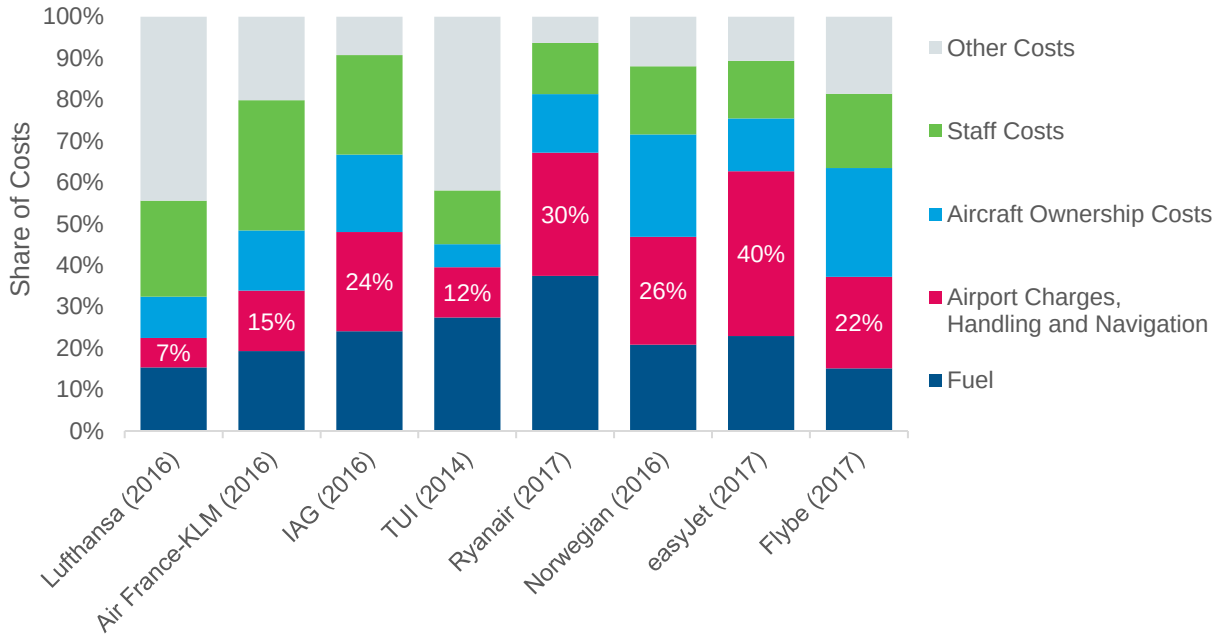


Airport Charges, Handling and Navigation	Airport-related costs (Airport charges, ground handling) and ATC costs (both en-route and tower)
Aircraft Ownership Costs	This includes all cost items related to the ownership and maintenance of aircraft. Ownership costs can be in the form of depreciation (for owned assets) and/or leasing costs (for leased aircraft). The bulk of these costs are incurred whether or not the aircraft flies
Staff Costs	Includes both fixed and variable staff costs
Other Costs	Mainly overhead costs, but also includes ▪ Distribution costs (cost of sale) ▪ Marketing/Advertising costs

Source: ICF analysis

Exhibit 4 shows the breakdown of annual airline costs by the categories laid out in Exhibit 3.

Exhibit 4: Share of Airline Costs by Category

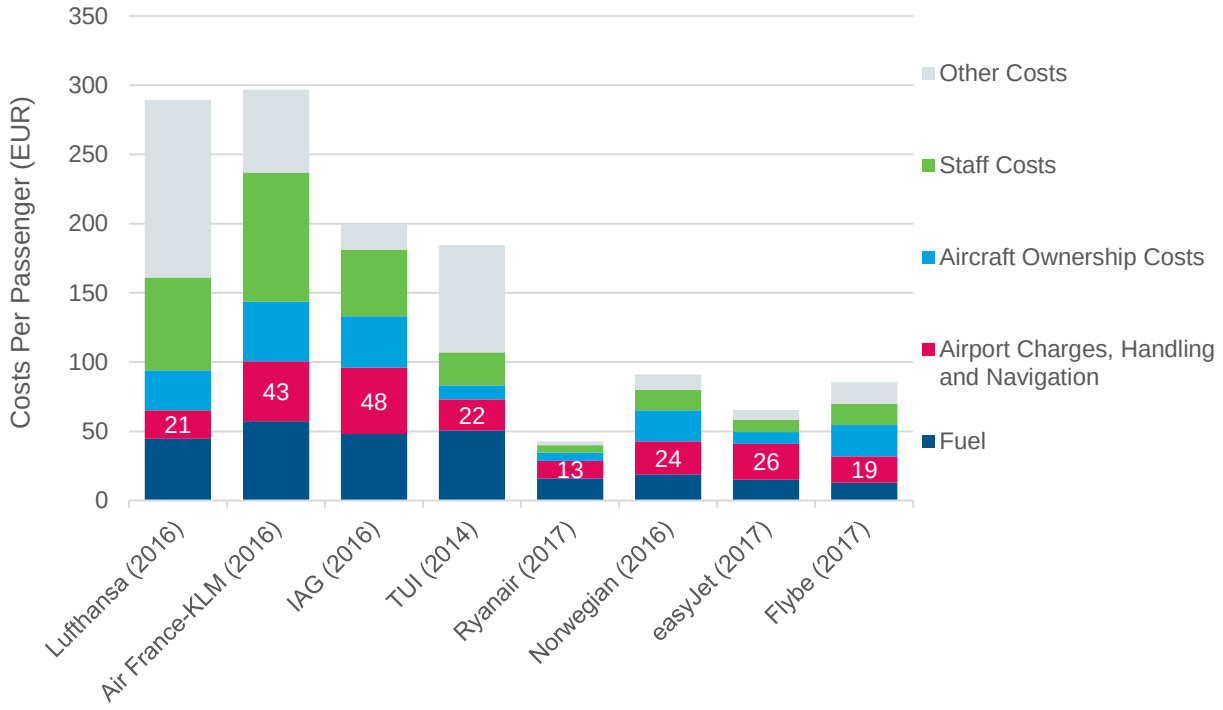


Source: Annual reports, ICF analysis

For most carriers, fuel costs, airport charges, handling and navigation costs, aircraft ownership and staff costs account for the vast majority of the cost base. Lufthansa and TUI are notable exceptions, likely a result of costs related to non-airline activities. There is considerable variation in the significance of the various categories across the cohort. Airport charges, handling and navigation costs can be seen to comprise between 6-40% of the cost base for the airlines being considered. The share of costs varies substantially by business model, with low cost carriers such as EasyJet and Ryanair seeing these cost items account for a greater proportion of the overall cost base compared to the full-service carriers of Air France-KLM, IAG or Virgin Atlantic.

Exhibit 5 shows per passenger costs by airline. Unit costs (per passenger) are typically a function of both the business model (full service carriers tend to have higher fixed costs than LCCs for example) but also of the length of haul. The higher costs per passenger for the legacy carriers is therefore partly explained by virtue of their higher average sector length.

Exhibit 5: Airline Costs per Passenger by Category

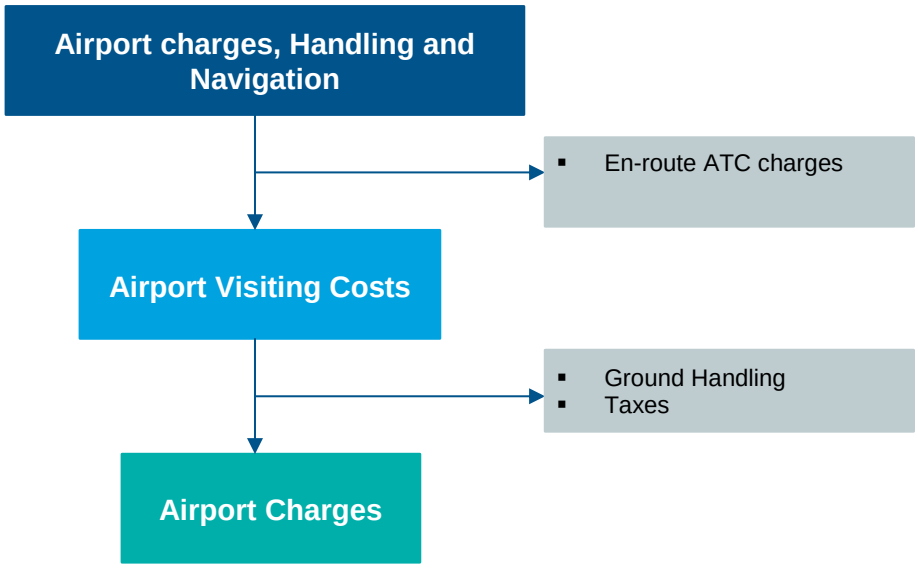


Source: Annual reports, ICF analysis

4.3.2 Estimating the share of airport charges in an airline's cost base

The relationship between the 'Airport charges, Handling and Navigation' category, the 'Airport Visiting Costs' and 'Airport Charges' are displayed graphically below.

Exhibit 6: Airport Charges as Share of Airport charges, Handling and Navigation Costs



Source: ICF

Airport charges are rarely explicitly referred to in airlines' annual reports, and they often appear in combination with ground handling and/or air navigation costs. Where an airline reports airport charges in combination with another category of airport visiting costs/other charges we have estimated the share of the cost item that is accounted for by airport charges. Estimates were made using data points from other airlines' annual reports, the UK CAA (which reports detailed cost items for UK airlines) and the reported aeronautical yields at the airline's main airport bases.

Based on ICF's analysis (presented in Exhibit 7 and Exhibit 8), the levels of airport charges incurred by airlines varies from €3 - €14 per passenger, representing between 3% and 17% of the airlines' cost base. Mainline and LCCs (representing the vast majority of airline passengers) have broad airport charges of between 3% and 12% of total costs, while regional carriers, which account for a small market share, have higher airport costs. Based on our sample set, and illustrated in Exhibit 9, almost 80% of passengers are carried on airlines where airport charges represent 6% or less of their total cost base.

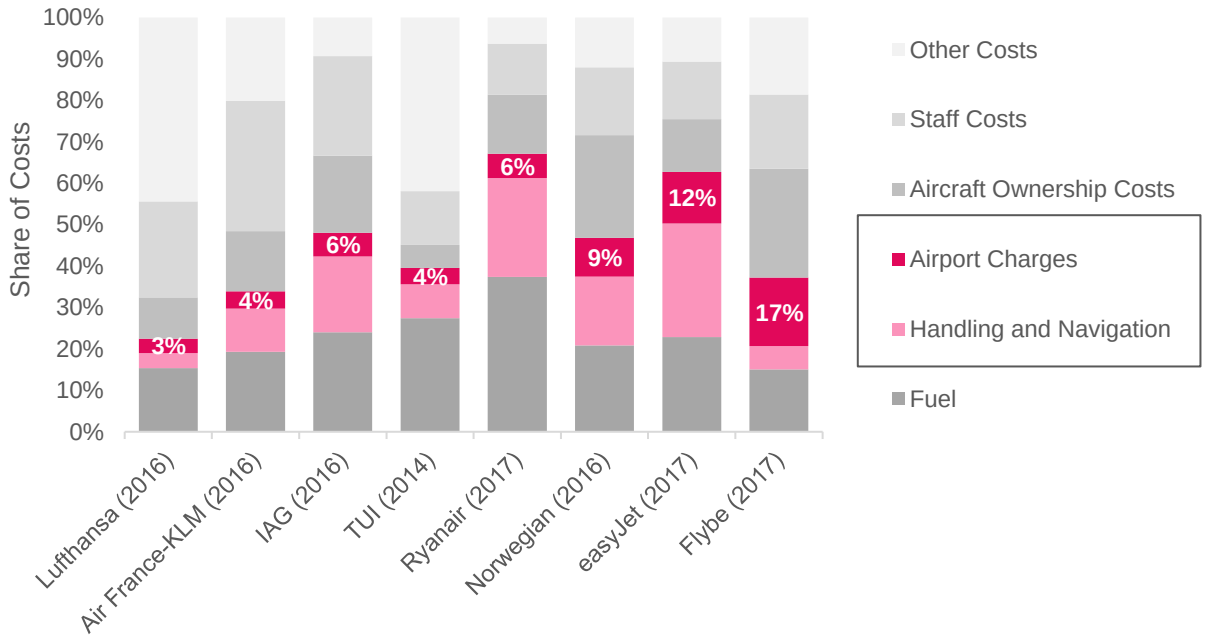
Exhibit 7: Airport Charges as Share of Annual Report Item Containing Airport Charges

	Airport Charges EUR per pax	Airport Charges % of Total Costs	Estimation Basis
Air France-KLM	12	4%	• 'Landing & Air Route' cost item • Aero yields at Paris and AMS
IAG	11	6%	• 'Landing & Nav' cost item • Aero yields at LHR, LGW
Lufthansa	10	3%	• 'Fees and Charges' cost item • Aero yields at Fraport, ZRH and VIE
TUI	7	4%	• 'Airport Charges' cost item
Ryanair	3	6%	• 'Airport & Handling' cost item • Aero yields at STN, DUB, BGY, CRL
Norwegian	9	9%	• 'Airport Charges, ATC' cost item • Aero yields at LGW, CPH, Swedavia
easyJet	8	12%	• 'Airports & Ground Handling' cost item • Aero yields at LGW, AMS, MXP, LTN, BRS
Flybe	14	17%	• 'Airport & En Route' cost item
Weighted Ave.	**8.6**	**6.4%**	

Source: Annual reports, ICF analysis

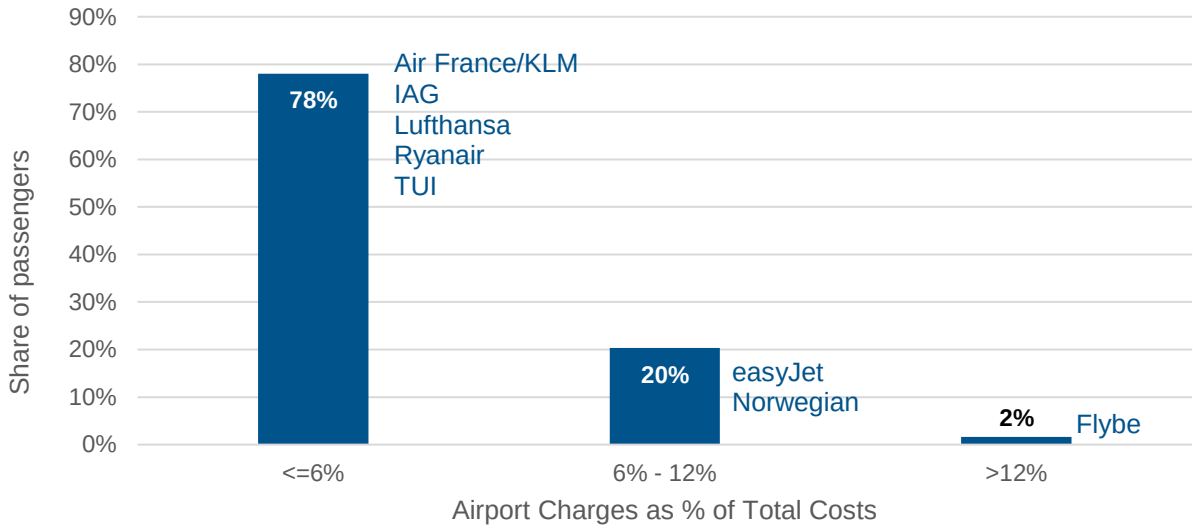
The table above represents our best estimate at the airlines' airport charges, but there are unavoidable uncertainties in the calculation due to the inconsistent manner in which airlines report their expenses. Lufthansa, for example, report a cost item names 'Fees and Charges' which includes a very large proportion of their costs. In this instance, we have had to rely more heavily on the reported aeronautical yields at its main airport bases.

Exhibit 8: Share of Airport Charges of Total Costs



Source: Annual reports, ICF analysis

Exhibit 9: Histogram of Share of Passengers by Airport Charge significance

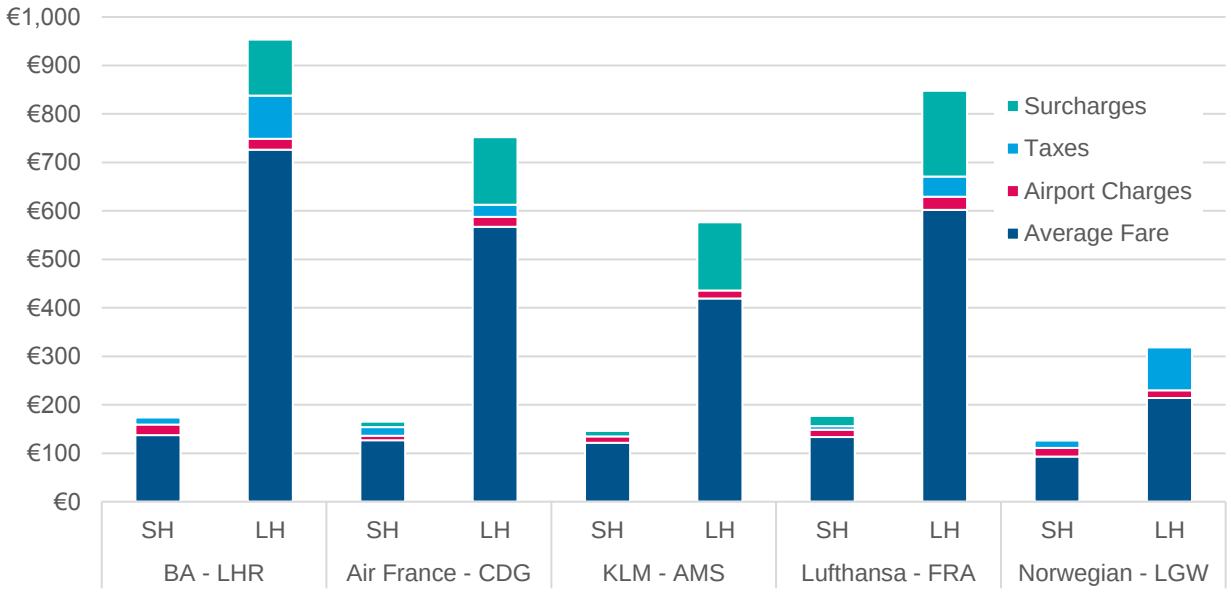


Source: Annual reports, ICF analysis. Based on latest available annual report.

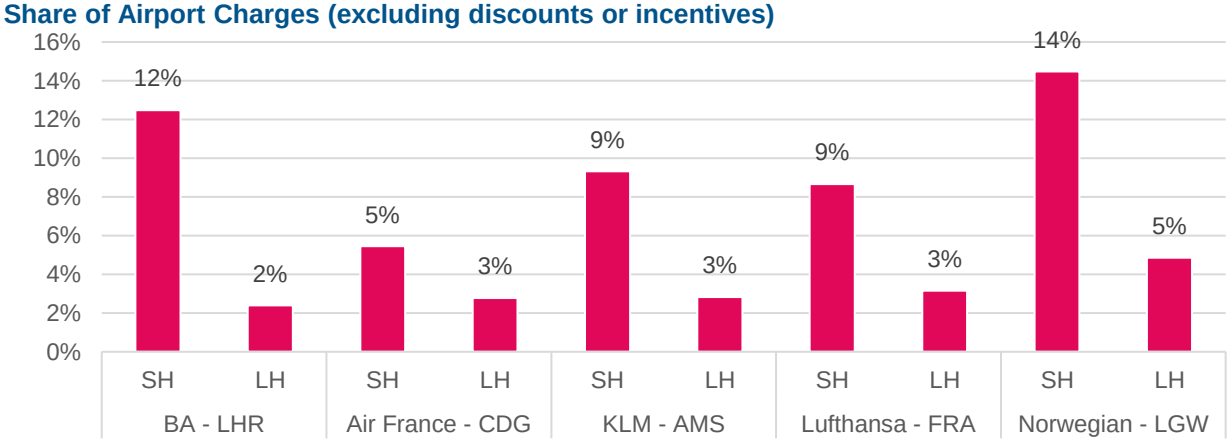
4.3.3 Influence of the length of haul on the significance of airport charges

The relative importance of airport charges as a share of the total price of an airline ticket also depends on the haul. Exhibit 10 shows average air fares of major European airlines at their main base, plus airport charges (at the home base only), taxes and surcharges. For legacy carriers as well as Norwegian, airport charges constitute a smaller share of the total price on long haul markets than on short haul markets, despite on average higher airport charges for long haul operations.

Exhibit 10: Average Cost of a One-Way Ticket from Base



Share of Airport Charges (excluding discounts or incentives)



Note: Main bases: LHR = London Heathrow; CDG = Paris Charles de Gaulle; AMS = Amsterdam Schiphol; FRA = Frankfurt am Main; LGW = London Gatwick
Source: IATA PaxIS, ita matrix, Airportcharges.com

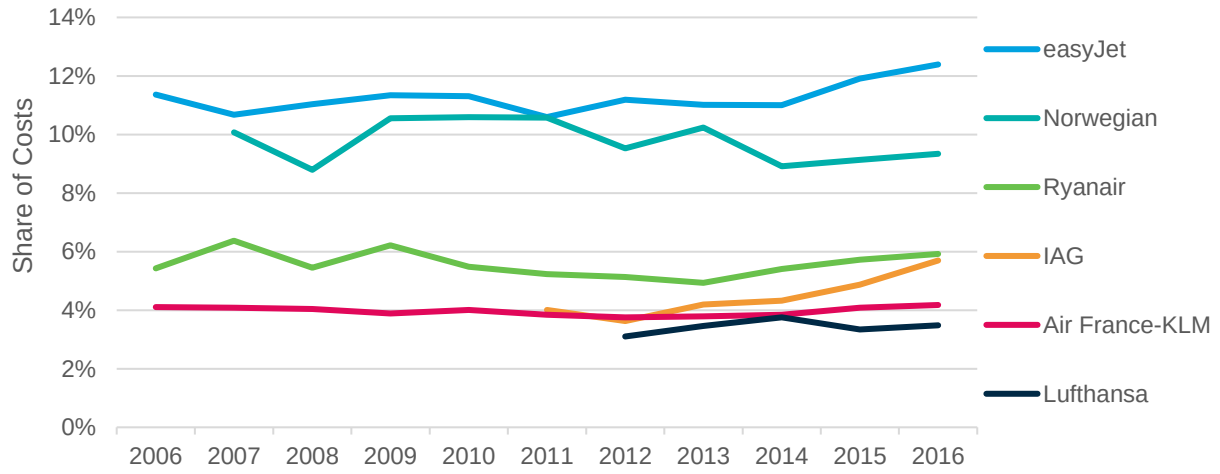
As clearly demonstrated above, for long haul operations airport charges are a small fraction of operating costs, even for LCCs (such as Norwegian).

4.4. Trends in Airport Charges over Time

4.4.1 Analysis of airline-reported data

Analysis of airlines' reported costs over time does not reveal a significant shift in the share of costs represented by airport charges. In fact, as the charts below demonstrate, both the share and the level of airport charges have remained relatively flat over the past decade. In the exhibits below, airport charges refer to payments made to an airport as detailed in Section 3.1.

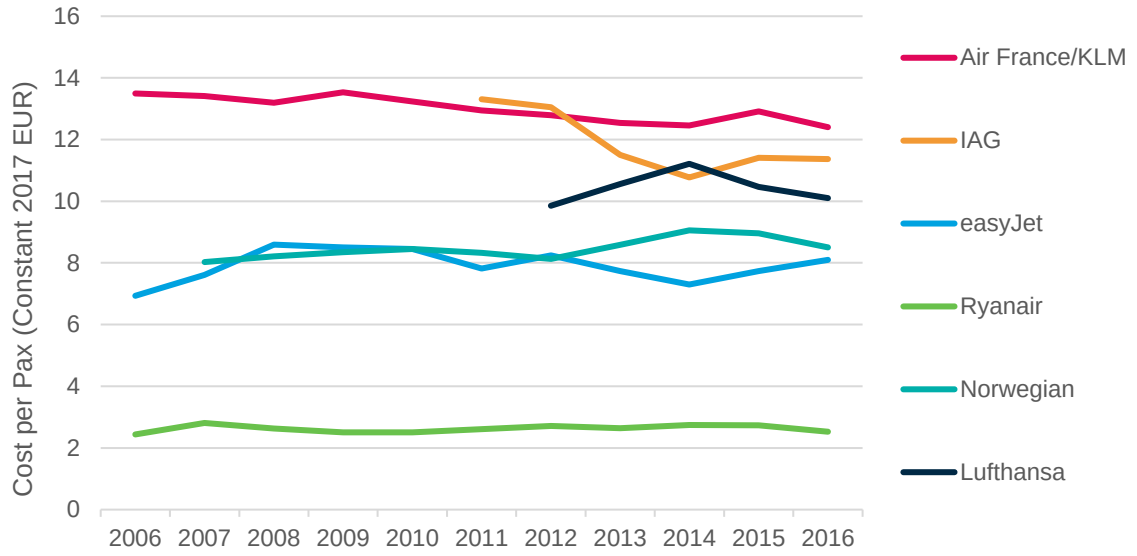
Exhibit 11: Estimated Share of Airport Charges by Airline (mainline and LCC airlines only)



Notes: Estimates are based on a share of the cost item containing airport charges as reported in the annual report of the airline. For Air France-KLM this is Landing and Air Route; Landing and Navigation for IAG; Airports and Ground Handling for easyJet; Airport and Handling for Ryanair; Airport Charges and ATC for Norwegian; Handling, Airport Charges and ATC for Lufthansa
TUI: Insufficient data to show time series of airport charges.
Source: Annual reports, ICF analysis

Historical trends in the level and share of airport charges are based on the trends observed in the airline-reported cost item that includes airport charges.

Exhibit 12: Estimated Real Airport Charges per Passenger by Airline (mainline and LCC airlines only)



Notes: Estimates are based on a share of the cost item containing airport charges as reported in the annual report of the airline. For Air France-KLM this is Landing and Air Route; Landing and Navigation for IAG; Airports and Ground Handling for easyJet; Airport and Handling for Ryanair; Airport Charges and ATC for Norwegian; Handling, Airport Charges and ATC for Lufthansa
Source: Annual reports, ICF analysis

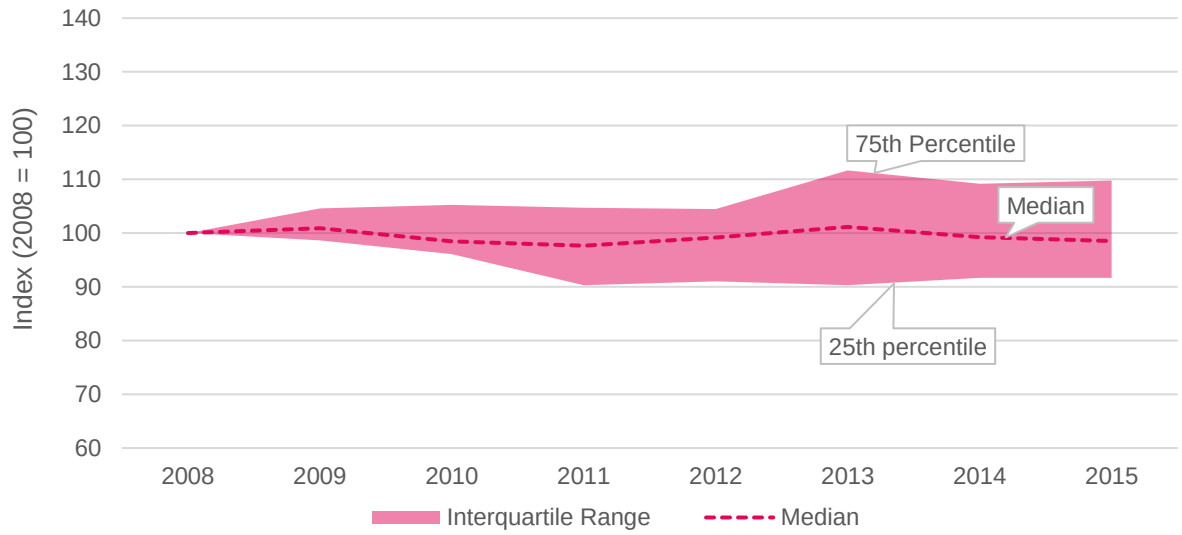
As far as we can tell from the data provided by, and reported by, airlines, airport charge categories are not trending significantly. Moreover, variances seem to be of the order €1 per passenger.

4.4.2 Analysis of airport-related data

To corroborate our analysis on the historical trends in airport charges we have also analysed airport-reported aeronautical yields (revenue per passenger). Other studies of this nature have focused on the evolution of published tariffs over time, but this approach ignores important factors such as discounts, incentives and rebates offered by airports, long-term airline deals (sometimes entirely independent of the published tariff) as well as the traffic mix that will influence the net result for an airport and airline.

Aeronautical yield analysis on the other hand more truly represents the prices that airlines pay (net of discounts, etc). We have based our analysis on the LeighFisher benchmarking studies and analysis of public annual reports of airports. Growth profiles for 22 of the largest airports in Europe are included in the analysis presented in Exhibit 13.

Exhibit 13: Indexed Real Aeronautical Yield Growth of Major European Airports



Airports & Airport Groups included: AENA, Aeroporti di Milano, Aeroporti di Roma, Aeroports de Paris, Amsterdam, ANA, Athens, Birmingham, Brussels, Copenhagen, Dublin, Dusseldorf, Finavia, Fraport, Geneva, London-Gatwick, London-Heathrow, London-Stansted, Manchester, Munich, Oslo, Stockholm, Swedavia, Vienna, Zurich
Source: LeighFisher, annual reports

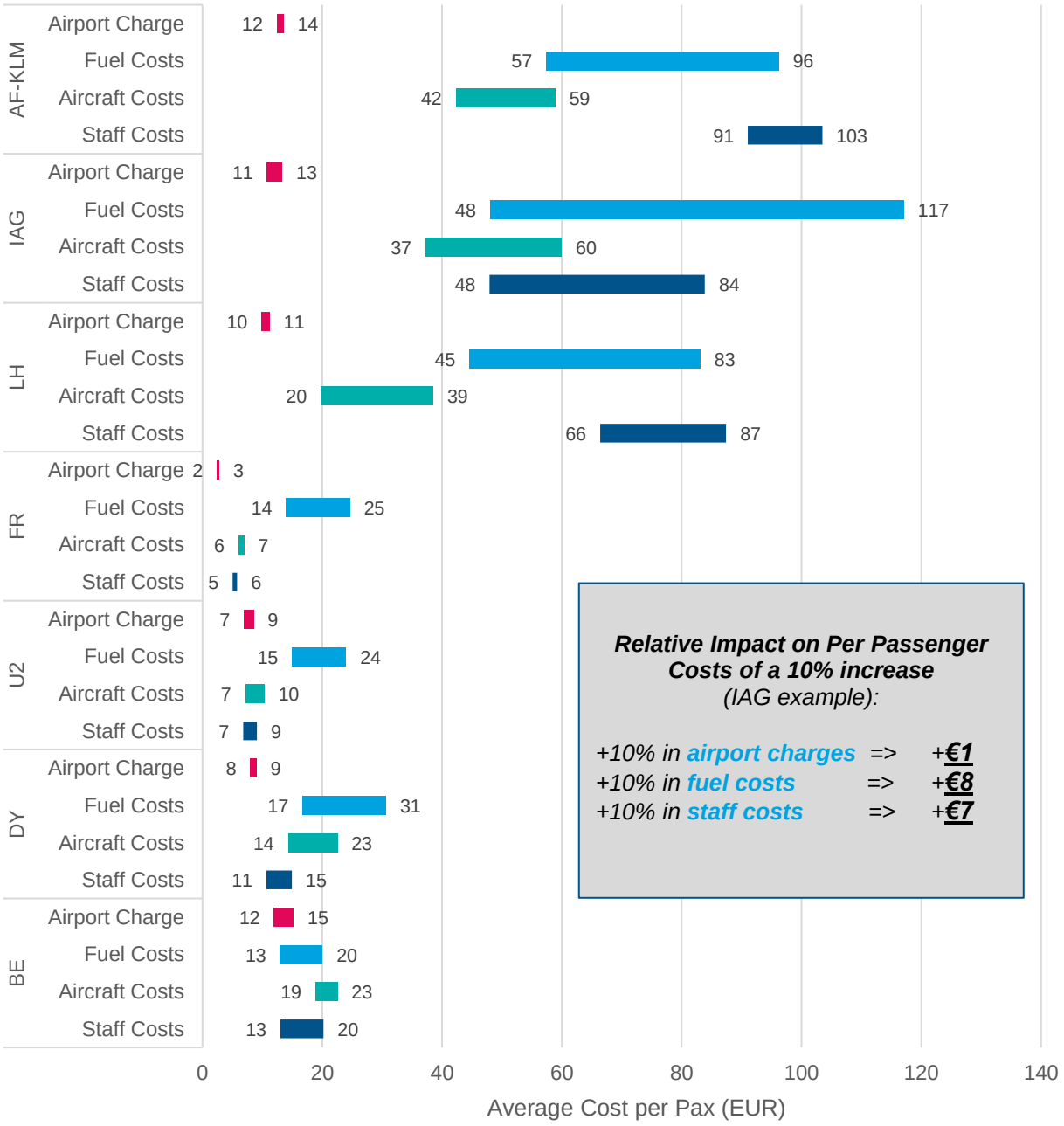
The median of aeronautical yields remained flat from 2008 to 2015. The interquartile range of aeronautical yields, within which half of the observed airports lie, is relatively narrow, between 92 and 110 index points by 2015. This range corresponds to a CAGR of -1.2% for the 25th percentile and a CAGR of 1.3% for the 75th percentile. The median shows a CAGR of -0.7% from 2008 to 2015.

4.4.3 Other airline cost lines are more significant and more volatile

We have shown that, in general, airport charges have remained relatively stable in terms of their share and in their level. This, combined with a relatively low share of costs in the first instance, mean that variations have been small in absolute terms, and demonstrates that airlines are not generally facing more costly access to airports.

This is in stark contrast to the level and volatility observed in the other components of an airline's cost base, as shown on the following Exhibit.

Exhibit 14: Variations over Time of Different Cost Items, Euros per Passenger (2016 prices)



Source: Annual reports, ICF analysis

This Exhibit shows the relative size of cost categories, and their volatility over the past 8-10 years. As demonstrated in the example above, a large change in a small category, such as airport charges, is unlikely to have a material impact on an airline's cost base. On the other hand, even small changes in a costly item, such as fuel, can have significant impacts on the total cost base. This pattern is particularly evident for the legacy carriers groups whose share of airport charge costs is well below the other cost items

The variations in the other cost components are also many orders of magnitude higher than for airport charges. Over the analysis period, for example, fuel prices have varied from $40 per

barrel to a peak of $130 per barrel, a peak to trough variance of over 300%. In other categories, airlines have continued to gain efficiencies in staffing levels, booked load factors and aircraft utilisation, which can help drive improvements in unit costs.

4.5. Airport-related Costs

Up to this point we have considered airport charges as a single item. They do, in fact, cover an assortment of charges which are incurred by an airline when using an airport. As would be expected from a business engaged in business-to-business service offering, and indeed similar to the disaggregated pricing menu of many businesses today, including airlines, airports use a variety of charging structures. They can generally be broken down into the following categories:

- Regulated Airport Charges
- Common Use Infrastructure Charges
- Security Charges
- PRM Charges
- ATC Charges

4.5.1 Airport charge categories

Landing & Take-off and Passenger Service Charges

The charges an airport can levy on an airline are subject to regulation. In Europe, regulated airport charges are governed by the Airport Charges Directive (ACD) issued in March 2009. The ACD defines these charges as “a levy collected for the benefit of the airport managing body and paid by the airport users for the use of facilities and services, which are exclusively provided by the airport managing body and which are related to landing, take-off, lighting and parking of aircraft, and processing of passengers and freight”.

Regulated airport charges form the largest component of the revenue derived from its airlines. These charges are typically structured in the form of a take-off and landing charge (sometimes including a noise or emission component), which pays for the airside infrastructure, and a per departing passenger charge, which covers operation and maintenance of the passenger terminal. The ACD requires these charges to be applied on a transparent and non-discriminatory basis. Airports must publish a list of the services and infrastructure to be provided, the methodology used for charge setting and a clear structure of the tariffs being levied. The actual approach taken in the economic regulation of airports varies depending on jurisdiction and the characteristics of the aviation market.

Common Use Infrastructure Charges

In addition to charges for use of the airside and terminal infrastructure, many airports provide common use facilities (such as check-in desks and boarding gate terminals) to their airline users. Historically, airlines would purchase their own passenger processing equipment for use in the terminal, resulting in poor asset utilisation. The business model gradually evolved to the current situation where airports own, operate and maintain this equipment in return for a

relatively small charge paid by the airlines based on usage. The airport will also levy additional demand-based charges on its users for the provision of utilities and baggage processing.

Security Charges
The cost of to the airport for providing passenger and luggage screening services has increased substantially in recent years due to regulation introduced following the September 11 attacks and subsequent terrorist plots. In a similar fashion to how airlines imposed fuel-related surcharges in addition to a base fare to compensate for the escalating oil price, some airports now impose a security charge in addition to the departing passenger charge. In these circumstances the objective of the additional security charge is to recover the opex and capex related to provision of these services.

PRM Charges
Persons with Reduced Mobility (PRM) request assistance to navigate through airport terminals and board or disembark the aircraft. These services are usually rendered by a third-party contracted by the airport who provides the necessary equipment and special assistance staff. Pursuant to EC Regulation 1107/2006 on the rights of disabled persons and persons with reduced mobility when travelling by air , the cost of providing these services is recovered through a charge levied on a per passenger basis. These charges are revenue-neutral for the airport, with all proceeds being used for service provision.

ATC Charges
Tower control services (as distinct from En-Route and Approach services) are sometimes charged separately, though this is not common in European airports.

4.5.2 Distribution of airport charge categories

The table below illustrates the range of charging levels seen in Europe for the different categories based on published tariffs. Whilst separate ATC charges are relatively rare, a majority of airports have a separate charge for security, common use infrastructure or PRM. Security charges – when differentiated – can be significant – on average they represent 23% of the total airport charge at the 37 airports that apply security charges. PRM charges on the other hand represent just 2% of total airport charges when applied.

Exhibit 15: Distribution of Airport-Related Costs

	Typical Charges per 2-way Pax (Min-Max; Avg[1])	Airports with disaggregated charge (out of 45)	Typical %* (for airports with a disaggregated charge)
Landing & Passenger Service Charges	€3.73 - €19.45; (€8.67)	45	72%
Security charges	€0.03 - €5.75; (€2.79)	37	23%
Common Use Charges	€0.02 - €2.45; (€0.78)	35	7%
ATC (Tower)	€0.47 - €1.25; (€0.80)	7	7%
PRM**	€0.06 - €0.61; (€0.27)	40	2%

Source: Airportcharges.com, based on charge per 2-way passenger for a B737-800 short haul international rotation in summer
* Note %s will not sum to 100% since the %s only refer to the airports which have differentiated charges for that category
** Note, PRM charges vary according to the amount of pre-notification provided to the airport – we have assumed the lowest per passenger charge

On average, the 'regulated airport charge' (Landing & Passenger Service Charges) represents 72% of the total airport charge. It can vary between almost 100% (e.g. major UK airports typically include ATC and security charges within the regulated landing and passenger fee) to 50-60% (e.g. the security charge at Paris airports is c. 40% of the total airport charge).

4.6. Section Summary

The levels of airport charges incurred by airlines varies significantly, from less than €3 per passenger to €14 per passenger depending on the airline (excluding regional carriers, this range is €3-€12 per passenger). This represents between 3% and 17% of an airline's total costs (3% and 12%, excluding regional carriers). For the majority of Europe's airlines, however, the share is no more than 6%, with the other end of the spectrum dominated by niche regional operators.

Moreover, evidence from both airline and airport financial reports suggest that Airport Charges have remained broadly flat in real terms. This is contrasted by observed trends in other cost categories including fuel, staff and aircraft related costs, which have shown far greater volatility.

Lastly, 'Airport Charges' cover more than just the landing & passenger service charges. Many airports have separate charges to cover specific services that are essentially pass-through costs. The proportion of these additional costs, from which the airport typically receives little to no margin, can be as high as 40%, and on average is 28%.

5. Drivers of Air Fares

In this section we explore the key drivers in determining the price of air travel. We will show that, in the most part, prices are driven by fundamental demand and supply side factors, and that prices show considerable variation over time that have little to no connection to underlying costs.

5.1. Components of Air Fares

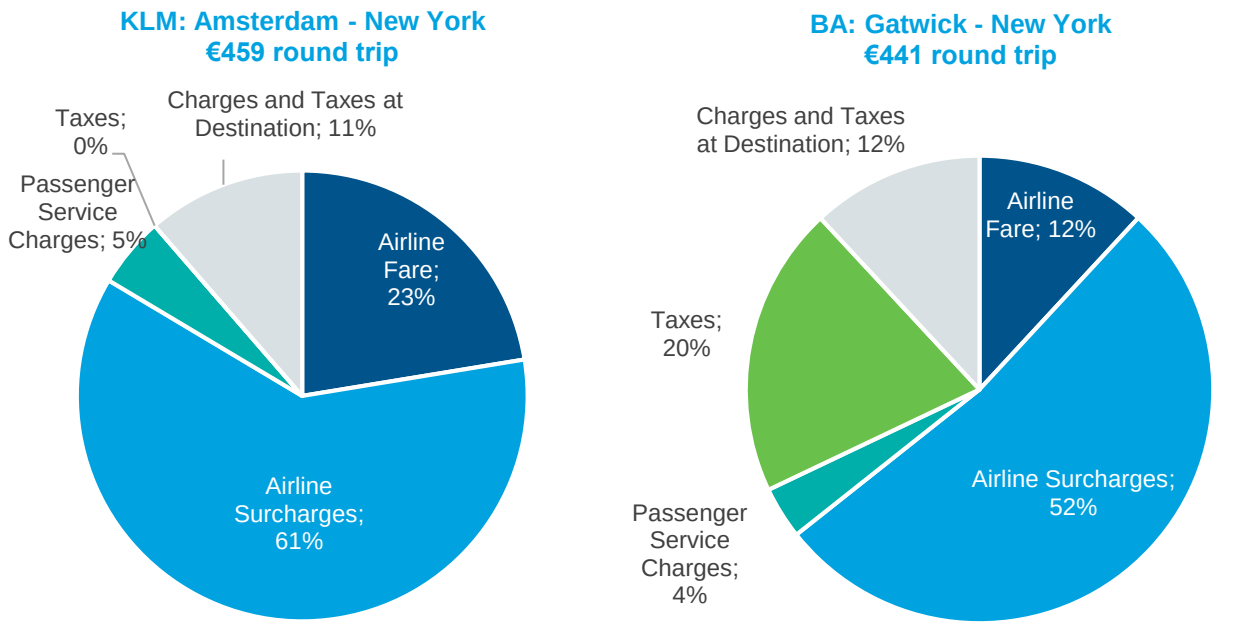
In Europe, airlines are legally obliged to advertise 'all-in' fares, which are in fact a combination of air fares, surcharges and taxes.

	Description	Airline Discretion
A. Airline Fare	Typically the dynamic portion of an air fare – airlines will manage this part of the price to optimise revenue	Yes
B. Surcharges	Some airlines will impose 'surcharges', for example fuel surcharges. However the airlines are (in most cases) free to set the levels, and are not obligated to ring fence this revenue to pay for a specific purpose (e.g. to pay for fuel).	Yes
C. Passenger Service Charges (or similar)	Some airlines (typically legacy airlines) include explicit fare components that are meant to represent the costs levied by airports. These fare components are essentially applied at the airline's discretion (for example two of Europe's largest airlines – Ryanair and easyJet do not have separate PSC charges), and are not necessarily reflective of the actual charges paid by the airline (due to airline deals, discounting etc)	Yes
D. Taxes	Airlines collect a number of taxes through ticket sales that are passed through to local and national government agencies. Airlines have no discretion in whether these are applied or their level, and they are not counted as revenue (they are pass-through costs). Examples include APD in the UK or Tax de Solidarite in France	No

Of the three main groups, categories B & C, whilst at the airline's discretion, tend not to vary dynamically. The 'Airline Fare' (A) is the element of the fare that is varied dynamically via the airlines' revenue management systems.

In addition to the components of air fares, airlines are increasingly benefiting from ancillary revenues. These are discretionary purchases by the passenger in addition to the core fare, and include items such as baggage fees, advanced seat selection, travel insurance, etc. As airlines continue to un-bundle fares, these ancillary revenues have become an increasingly large proportion of airlines' total revenues.

Exhibit 16: Typical Fare Structure for Long Haul Roundtrip Itineraries



Note: Shares based on round trip 5-Nov-18 to 12-Nov-18
Source: ita matrix

As illustrated in Exhibit 16, airline surcharges can represent a sizeable share of the price of an airline ticket, particularly for long haul flights. Tax regimes vary considerably by jurisdiction. In the UK, for example, the Air Passenger Duty comprises up to £78 for economy class fares (20% of the ticket cost in the example above). As a result, even though the total prices for the round trip itineraries are comparable the composition is significantly different, with higher taxes in the BA flight being offset by a lower airline fare component.

5.2. Airline Pricing

The role of managing the pricing algorithms (and therefore the price the customer sees) at an airline is typically performed by the Revenue Management and Pricing departments. The practice of airline revenue management is underscored by the principle that different passenger segments will pay different amounts for the same product – price sensitive leisure passengers tend to book early, while less price sensitive business passengers tend to book closer to departure. This is why prices for the same product (a seat) tend to increase as you get closer to departure.

Crucially, the role of the Revenue Manager is to optimise ***revenue*** on a given flight, not profit. The revenue manager cannot influence the costs, and so instead is tasked with striking the optimal balance of yield (prices) and volume (load factor). The revenue manager will perform this role based on actual and forecast performance on the route and competitor's pricing – there is little to no reflection in prices of any fluctuations in underlying costs. If this were the case, we would not see the levels of fluctuation in price on a given flight for the exact same product.

This is not to say that costs have no influence on pricing, but that there is often no direct linkage between costs and the price in the short-term. Airlines will consider route performance (profit) on a medium term basis and can redeploy capacity if a route is unprofitable.

5.3. Drivers of Air Fares

Much like any other commodity, the price an airline charges for an airfare is a reflection of demand and supply.

For a given air route, underlying demand will vary according to the following factors (not exhaustive):

- **Seasonality** – for example, many leisure destinations will see very significant peaks during school holiday periods (particularly summer, Easter and Christmas holidays)
- **Day of week** – depending on the destination, peaks could occur due to patterns of business travel (e.g. Mon-Fri) and leisure travel (e.g. Sat-Sat for example for resort holidays, or Fri-Sun for weekend breaks)
- **Time of day** – business travellers tend to require timings that allow them to maximise business hours at their destination (e.g. for short haul early mornings and evenings tend to be a peak, for long haul routes, overnight flights are preferred)

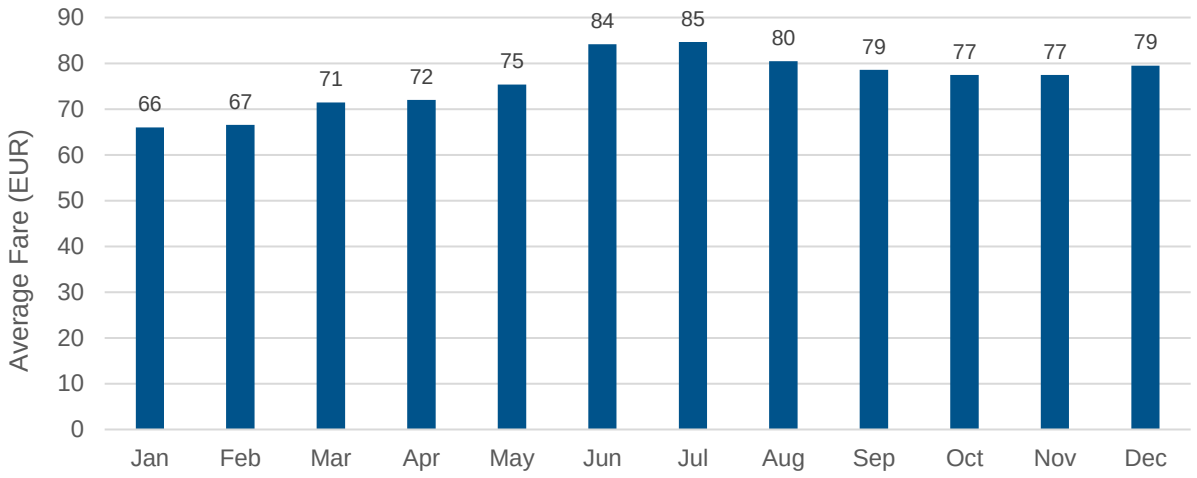
Unlike other commodities, airlines are selling a product that is finite (there are only so many seats on each flight) and difficult to substitute (if you need to travel from London to New York on a specific date and there are no seats left, your alternative options are limited). In periods of high demand, travel tends to be less elastic to price; in off-peak periods travel is often more discretionary and flexible which results in a more elastic relationship to prices. Moreover, due to the fact that aircraft are expensive assets that are typically bought or leased on a long-term basis, airlines cannot readily match their schedules to demand without incurring significant inefficiencies (e.g. grounding aircraft in off-peak periods). As a result, peak periods are often under-supplied and off-peak periods are often over-supplied.

The combination of these two factors means that air fares can vary considerable throughout the season, day of week and time of day.

5.3.1 Seasonality case studies

On Europe's busiest route, London-Dublin, the average air fare was 28% higher in July compared to January as illustrated in Exhibit 17.

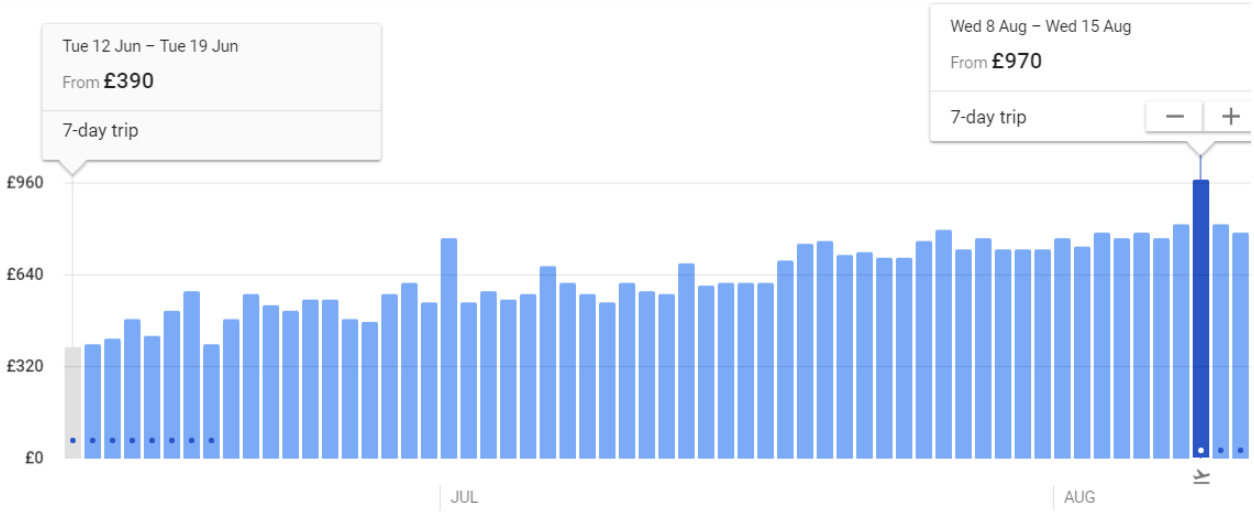
Exhibit 17: London-Dublin Average Fare by Month, 2017



Note: Fares represent average of economy class travellers
Source: IATA PaxIS

For leisure dominated destinations, seasonality fluctuations are even more accentuated. Exhibit 18 presents price variations for a roundtrip from London to Orlando, showing an increase of more than 200% from June to August, reflecting the higher demand in school holiday periods.

Exhibit 18: London-Orlando Lowest Fares, 12. June – 10. August 2018

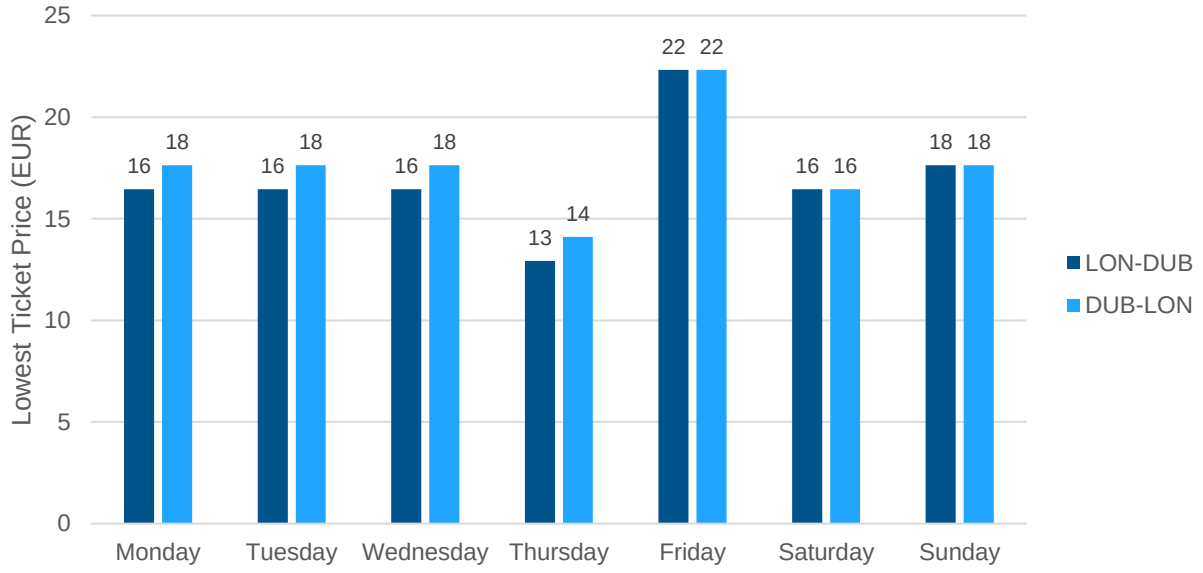


Note: Requested on 24. April 2018
Source: Google Flights

5.3.2 Day of week and time of day case studies

In addition to the seasonal variation, there is significant variation among the days of week. For the week of the 16th of April to 22nd of April, the most expensive day on the London-Dublin route is Friday the 20th of April with the cheapest ticket available for EUR 22 for both directions compared to EUR 13 and 14 the day before. Unsurprisingly, Friday is more expensive than days during the week, as it is a desirable day for business and leisure travel.

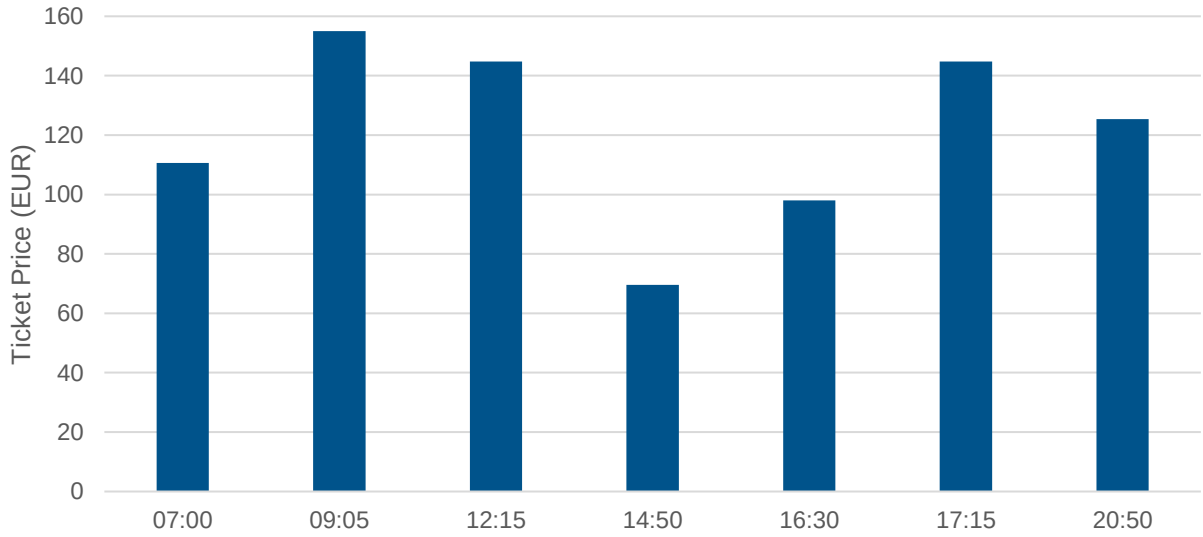
Exhibit 19: London-Dublin Lowest Fares for the Week 16. April to 22. April



Note: Fares requested on 3. April 2018
Source: Kayak

The price of a ticket is furthermore depending on the time of day. For Friday the 14th of June, Air France offers seven flights from Paris Charles de Gaulle to Madrid. For same day tickets, the range of prices is between EUR 70 and 155 as shown in Exhibit 20. The price variation observed for this day is reflective of passengers' preference for more convenient morning and evening travel as compared to midday or very early/late flights.

Exhibit 20: Air France Paris (CDG)-Madrid One Way Ticket Prices by Time of Day, Friday 14. June 2018

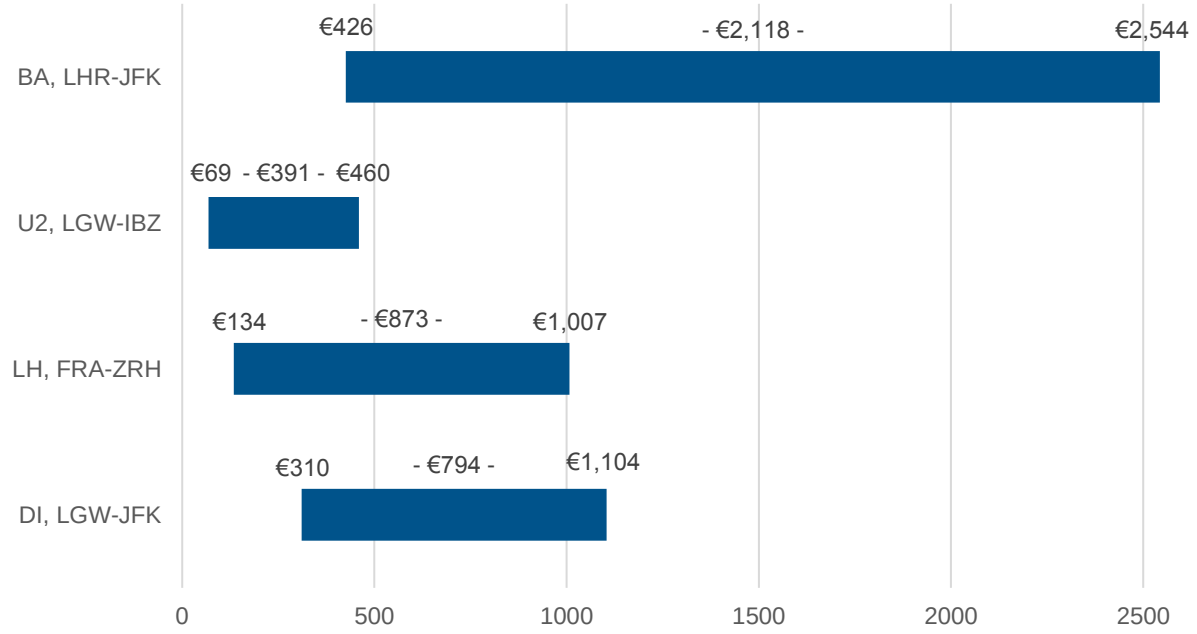


Note: Fares requested on 24. April 2018
Source: Air France Website

5.3.3 Ticket price volatility

As the previous exhibits show, seasonality, day of week and time of day variations are significant. Combining these factors, variations in ticket prices for the same product can reach 700% as Exhibit 21 shows.

Exhibit 21: Price Variations for Return Economy Class Tickets on Major Routes



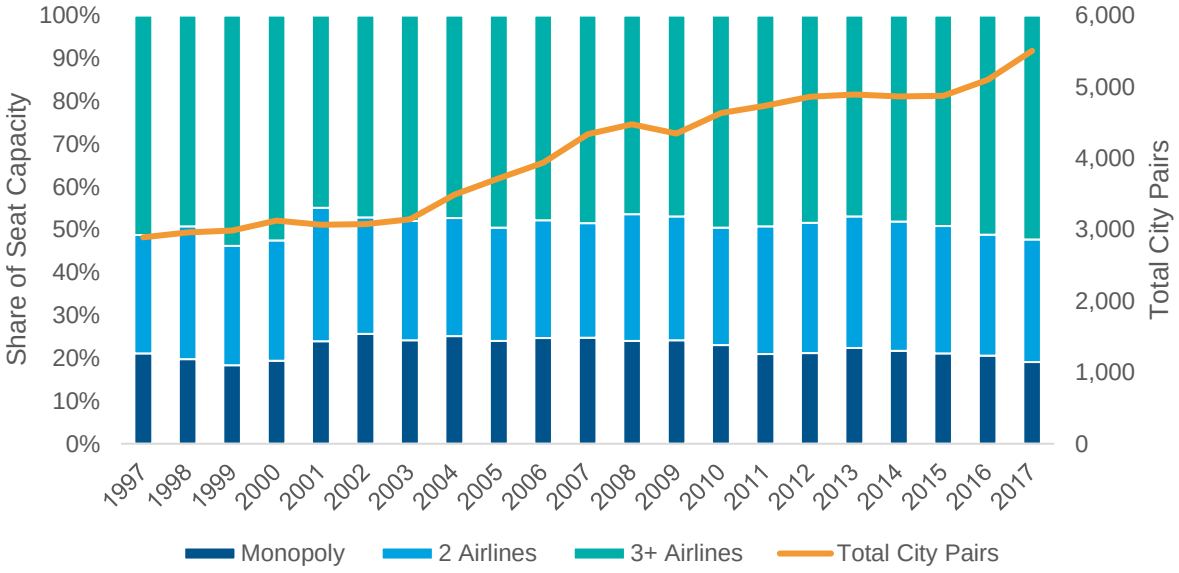
Source: Airline Websites
Note: Ticket prices shown are for the calendar year 2018 and were found in April 2018. The lowest fare cabin (i.e. economy) has been selected.

Clearly this range of prices is **not a function of costs**, which, for the most part, remain relatively static for a given airline/route combination.

5.4. Impact of Competition

As illustrated in the above case studies, demand (and price) naturally varies according to when people wish to fly. Competition is another factor that can significantly impact prices on a route. Much like any commodity, higher levels of competition tend to force prices down. As we will demonstrate, while LCCs have fundamentally changed the aviation landscape in Europe, there is still a significant share of capacity deployed on monopoly routes. Extra-European routes in particular contain a significant share of uncompeted routes. This can have a significant impact on the prices customers pay.

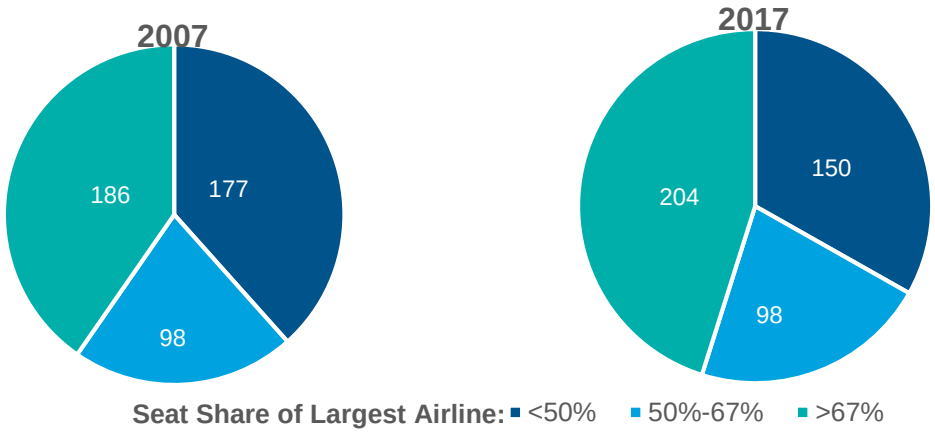
Exhibit 22: Intra-Europe City Pairs by Level of Competition



Source: OAG, airline-route must be operated at least 2x weekly to be counted
Notes: airlines within groups (e.g. IAG, Air France/KLM) are not considered to be 'competitors'. For example, if a route is operated by both Air France and KLM, then this would be counted as '2 airlines' pre-merger, and a monopoly route post-merger

Over the last 20 years, the number of Intra-Europe city pairs has almost doubled. Despite this growth the share of city pairs served by only one carrier has decreased slightly. This represents the combination of two trends – on the one hand the increasing penetration of LCC airline types, and on the other, a trend towards consolidation among (primarily, but not exclusively) traditional carriers. The trend of airline consolidation in the past decade has led to an increase in the number of airports whose dominant airline captures more than two thirds of seat capacity at the airport as illustrated by Exhibit 23.

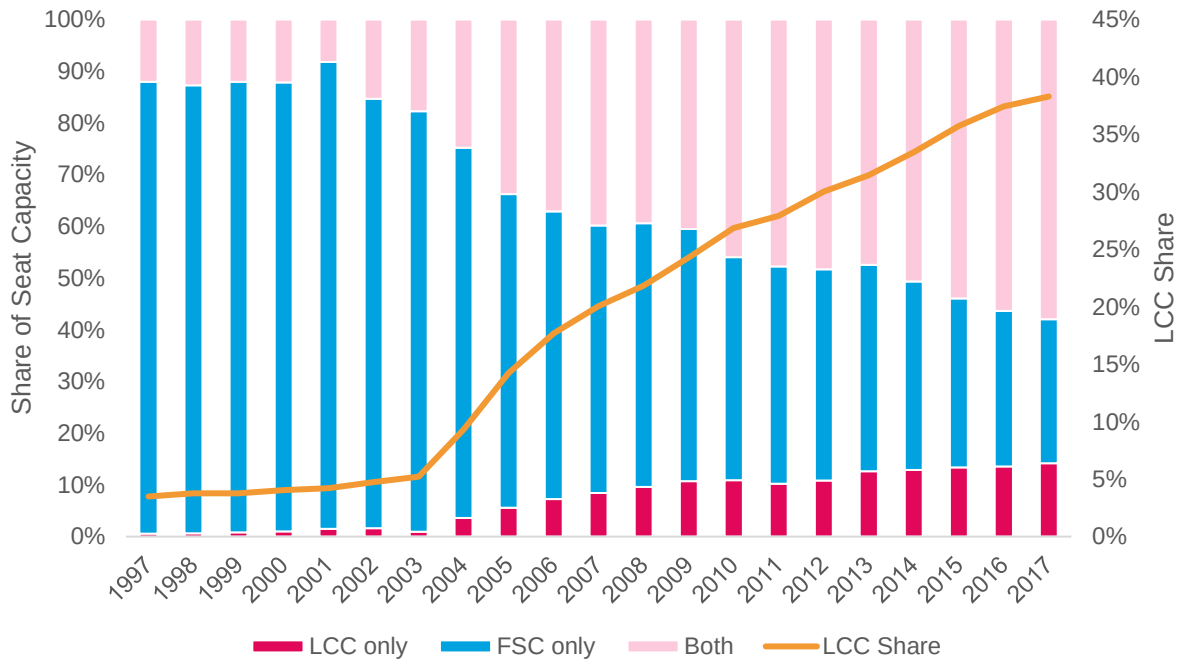
Exhibit 23: Number of Airports by Market Share of Largest Carrier



Source: OAG
Notes: airlines within groups (e.g. IAG, Air France/KLM) are not considered to be 'competitors'. E.g., if a route is operated by both Air France and KLM, then this would be counted as '2 airlines' pre-merger, and a monopoly post

Also notable is the increasingly significant role that LCCs are playing in intra-European markets. Since their introduction in the early 2000s, they have grown to the point where they account for almost 40% of total seat capacity on intra-European routes. As demonstrated in Exhibit 24, the vast majority of intra-European seat capacity is now deployed on city-pairs where there is some form of LCC option.

Exhibit 24: Intra-Europe City Pairs by LCC competition category



Source: OAG, airline-route must be operated at least 2x weekly to be counted
Notes: LCC = 'Low Cost Carrier', FSC = 'Full Service Carrier', Both = at least one LCC operating at one FSC carrier operate the city pair

One consequence of the increased exposure to LCC competition is a gradual blurring of the boundaries between what is considered a full service carrier and a Low Cost Carrier. One aspect of this is the growing prevalence of LCC subsidiaries (e.g. Vueling, Transavia) within full service airline groups, but even within the mainline airlines they are adopting LCC strategies like one-way pricing, baggage fees etc. At the same time, LCCs are increasingly trying to penetrate business markets that were once the preserve of full service carriers. This is evidenced by a move into more 'primary' airports, as well as the introduction of loyalty programmes and working with GDSs (Global Distribution Systems).

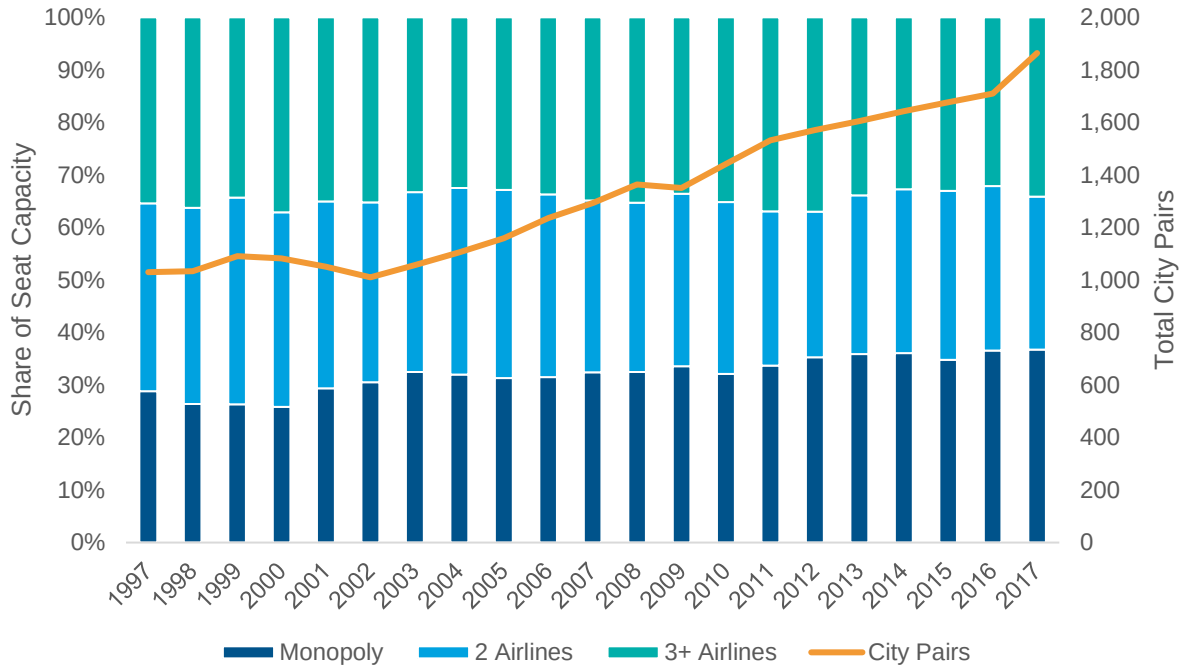
The impact of LCC penetration has generally been to put downward pressure on consumer prices. Abda (2012)[1] state that LCCs had a significant impact on decreasing average air fares. An IATA paper[2] estimated the effect of several cases of added competition on air fares. The study shows that in the US, the commencement of non-stop service by Southwest on a given

[1] Abda, Belobaba and Swelbar: "*Impacts of LCC growth on domestic traffic and fares at largest US airports*" Journal of Air Transport Management Volume 18, Issue 1, 2012.
[2] Brueckner, Lee and Singer: "*Key Policy Issue, Network vs. LCC Competition and Airfares: New Empirical Evidence from the US"* IATA, 2010.

route reduced fares by 27% to 29%. Furthermore, airlines do not only adjust air fares as a reaction to new airlines commencing service on a route but also do so as a reaction to a threat of entry as shown by Golsbee (2005)[3] in the case of Southwest in the US domestic market.

LCCs have had far less impact on routes between Europe and the rest of the world (RoW), and on these routes whilst the number of city pairs has grown, the share of these markets that are not competed has actually increased quite significantly (from 29% to 37%).

Exhibit 25: Europe-RoW City Pairs by Level of Competition



Source: OAG, airline-route must be operated at least 2x weekly to be counted
Notes: airlines within groups (e.g. IAG, Air France/KLM) are not considered to be 'competitors'. For example, if a route is operated by both Air France and KLM, then this would be counted as '2 airlines' pre-merger, and a monopoly route post-merger

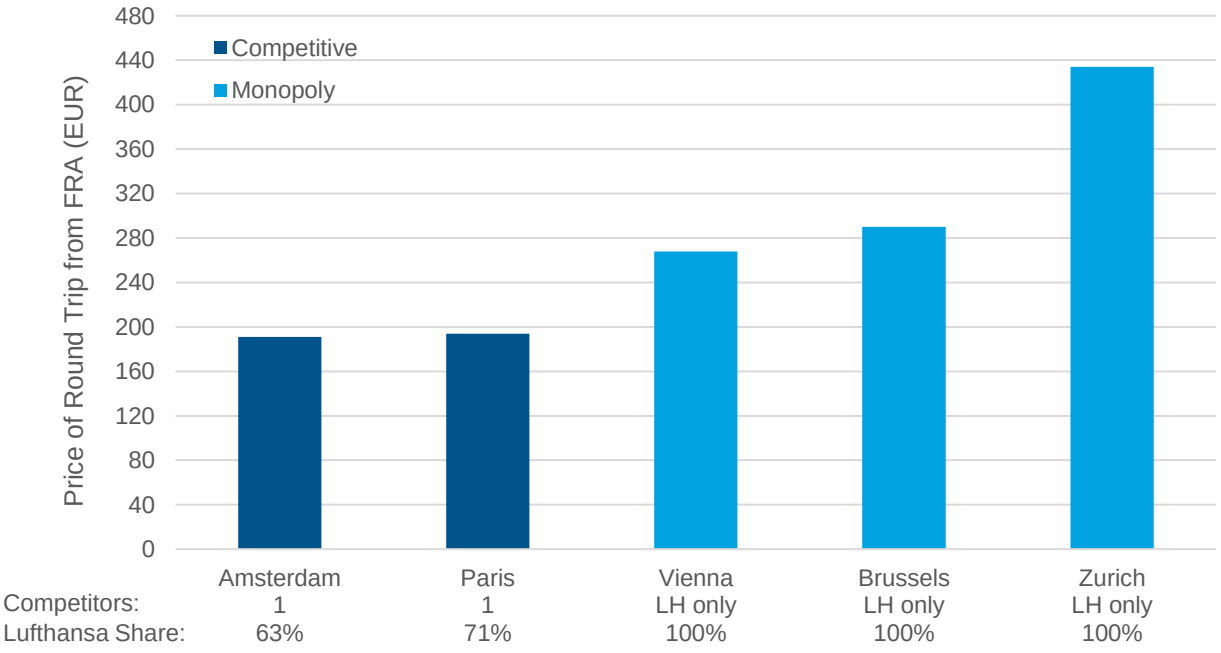
In the case studies below we look at the impact on air fares of the levels of competition.

[3] Golsbee, Syverson: "How do Incumbents Respond to the Threat of Entry? Evidence from Major Airlines" NBER Working Paper 11072, 2005.

5.4.1 Competition case study: Frankfurt

Frankfurt Airport is dominated by Lufthansa and Star Alliance partners and on some routes, the Lufthansa group faces no competition. This is the case for routes to Vienna (Austrian), Brussels (Brussels) and Zurich (Swiss). Amsterdam and Paris on the other hand are competitive with KLM and Air France not being part of Lufthansa or Star Alliance. Exhibit 26 shows that the price of a round trip from the 7th to the 11th of May 2018 for non-competitive routes is more than 70% higher than for competitive routes. This can furthermore not be explained by the distance of these routes as the average distance of the routes observed is not significant (415km for competitive routes versus 403km for non-competitive routes).

Exhibit 26: Lowest Price for a Return Ticket from Frankfurt



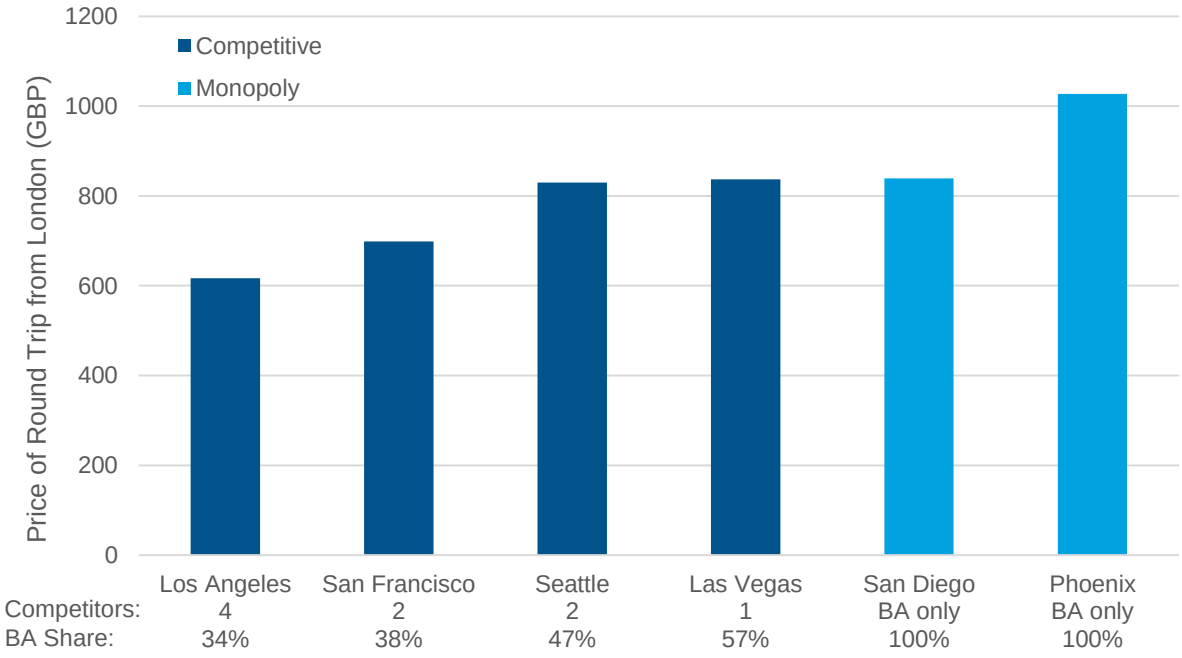
Source: Lufthansa Website, SRS Schedule Analyser
Note: Ticket prices shown are for an itinerary with an outbound flight on the 7th of May and inbound flight on the 11th of May 2018 and were requested on the 4th of April 2018.
Lufthansa share refers to its share of seat capacity on the route

This pattern is reflected in the average airline fares reported via IATA's PaxIS database, as shown in Appendix A1.

5.4.2 Competition case study: London-Western USA

In May 2018, British Airways serves Los Angeles, San Francisco, Seattle, Las Vegas, Phoenix and San Diego, all destinations in the West of the United States. For Phoenix and San Diego, BA is the only carrier offering direct service. Exhibit 27 shows that the price differential of a round trip from the 11th to the 20th of May 2018 for competitive versus non-competitive routes is around 25% on average for the considered sample.

Exhibit 27: Lowest Price for a British Airways Return Ticket from London



Source: British Airways Website, SRS Schedule Analyser
Note: Ticket prices shown are for an itinerary with an outbound flight on the 11th of May and inbound flight on the 20th of May 2018 and were requested on the 5th of April 2018.
BA share refers to its share of seat capacity on the route

Once again the pattern can also be observed using IATA's PaxIS database, as shown in Appendix A1.

5.5. Pass-Through

5.5.1 Factors affecting pass-through

As demonstrated in the previous sections, the price of an air fare can vary significantly due to the balance of demand and supply, and there is not a strong mechanism by which costs are transmitted to the ultimate price that consumers pay.

However, clearly costs do influence airline behaviours in the medium to long term. Airlines will be monitoring their costs at various stages of the planning and sales cycle and will consider their options in the wider context of their own business, the competition and the likely impact from their customers, i.e. passengers.

The importance of a change, which can be positive or negative, will of course have an impact on the reaction, as a change of a couple of cents per seat up or down will make a much smaller difference than say €5 or €10 overnight. For example, a 10% change in airport charges will represent a change in total costs of between €0.25 to €1.40 per passenger. By contrast, a 10% change in the fuel price could result in a change in total costs of over €5 per passenger.

Timing is also a factor – if a change in airport charges, for example, is announced a year or more ahead of the change being implemented, airlines will have much longer to consider their options and react, than if it is an overnight change.

Depending on the timing and the magnitude of the change, an airline may simply choose to absorb the change in costs, or they may choose to pass-through – as many airlines did via fuel surcharges, which still lingered on when fuel prices returned to pre-spike levels, illustrating the asymmetry in some pricing decisions. Airlines may alter capacity in the face of changing costs – they may reallocate aircraft from one base to another if the change is localised, they may add or remove a second or third daily frequency on a route or they may temporarily cut capacity to signal their dissatisfaction with a change, only to return again the next season when the overall economics of a route proves too compelling.

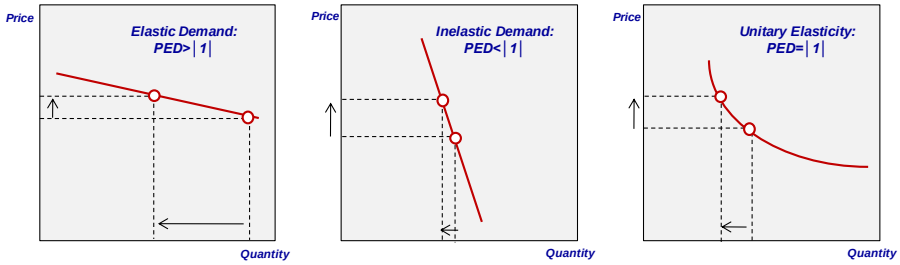
Exhibit 28 highlights just some of the factors that will impact the price elasticity and thus the pass-through decision of an airline, ranging from the highly generalised to the very specific.

In terms of likely outcomes, many cost changes go largely unnoticed by passengers, either because they are not passed through to fares or because they are relatively modest or occur at times or in markets where demand is price inelastic (during peak summer, for example, or first thing in the morning on a poplar business route). Sometimes, there are meaningful market changes – competition is increased as additional airlines are attracted by low costs of operating in a particular market, or fares overall increase following the imposition of security charges on all airlines. The key question underpinning how a change in airport charges, or any other airline cost, will impact air fares, is the airline's assessment of price elasticity of demand. And as we will see, this may be a simple concept but is far from simple to measure or predict.

In simple terms, the price elasticity of demand (PED) is measured as:

$$PED = \frac{\%\ Change\ in\ Quantity\ Demanded}{\%\ Change\ in\ Price}$$

Exhibit 28: Illustrative price elasticity charts



Higher Elasticity	Dimension	Lower Elasticity
One route, one airline	Market definition	All routes, all airlines
Short haul	Length of haul	Long haul
Leisure	Trip purpose	Business
Off-peak season	Seasonality	Peak season
Off-peak time	Time of day	Peak time
Lower income	Passenger income	Higher income

Between the extremes of perfectly elastic (increase price from equilibrium and demand will disappear completely) and perfectly inelastic demand (can increase price infinitely and demand will remain), there are varying degrees of sensitivity to price.

Elastic demand occurs when customers are highly sensitive to price levels, and a given percentage change in price elicits a proportionally greater response in demand. This can work positively and negatively. Faced with sensitive demand, suppliers are able to stimulate the market by lowering prices. Since the percentage increase in the quantity demanded will outweigh the percentage decrease in price, total revenue (price times quantity demanded) will rise. On the other hand, a small rise in average prices will lead to a proportionately larger decline in demand, reducing total revenues.

Inelastic demand occurs when demand is relatively insensitive to changes in price. This occurs in the case of necessities, for example basic food stuffs, and also in cases where the consumer is not directly responsible for the cost of the product or service, such as business travel. This means suppliers have relatively little ability to stimulate demand through lowering prices, but on the other hand they are able to raise prices with a proportionally smaller decline in demand and thus an overall increase in revenues, as shown in the middle chart in the charts above.

5.5.2 Pass-through case study: Airport charges

One way to analyse whether carriers pass-through differences in their cost base to their customers is comparing ticket prices of similar routes that have different cost characteristics. Exhibit 29 shows that the outbound airport charge for a trip from London to New York is only £13 at London Gatwick compared to £45 at Heathrow. However, this difference is compensated

by a higher air fare, resulting in almost the same ticket price. The same mechanism is applied on the London-Las Vegas route.

Exhibit 29: British Airways Pricing Comparisons

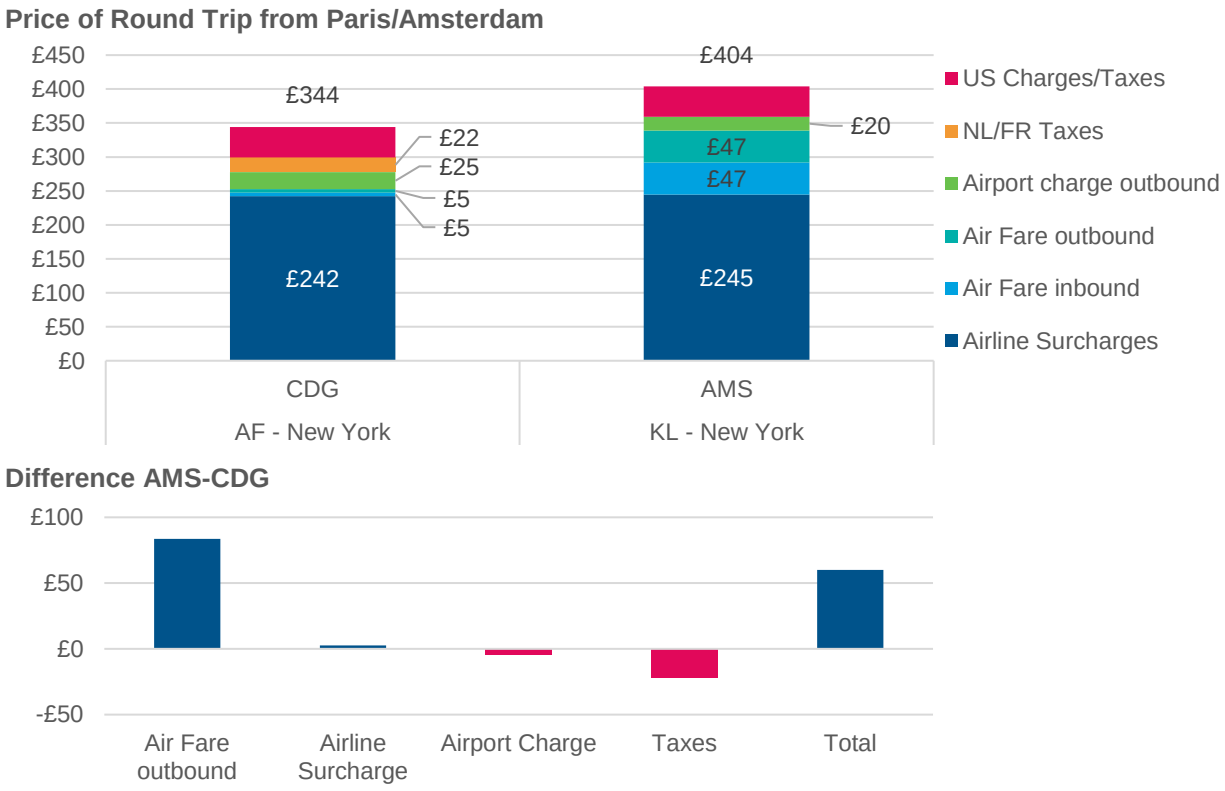


Source: ita matrix. Lowest available fare from May to June 2018 as requested on the 13 April 2018.

The example above is by no means unique. Below we present another two examples of airlines pricing to the market rather than reflecting relative costs. In the first example (Exhibit 30), we show the prices for a round trip to New York for Air France from Paris-CDG and KLM from Amsterdam. Despite, the fact Air France incurs higher taxes & charges at CDG, and generally higher unit costs than KLM, the lowest price to New York is considerably cheaper from Paris than from Amsterdam. A similar story can be seen in the short haul example presented in Source: ita matrix. Lowest available fare from May to June 2018 as requested on the 13 April 2018.

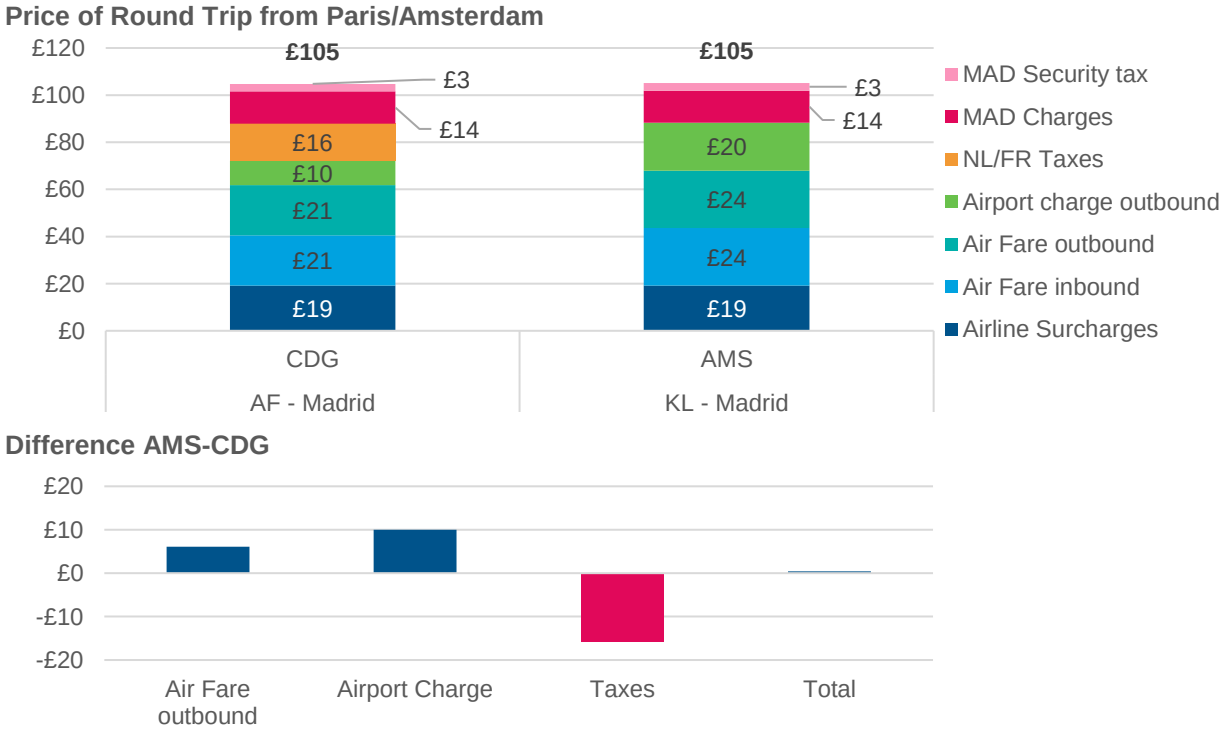
Exhibit 31.

Exhibit 30: Air France-KLM Pricing Comparison



Source: ita matrix. Lowest available fare from May to June 2018 as requested on the 13 April 2018.

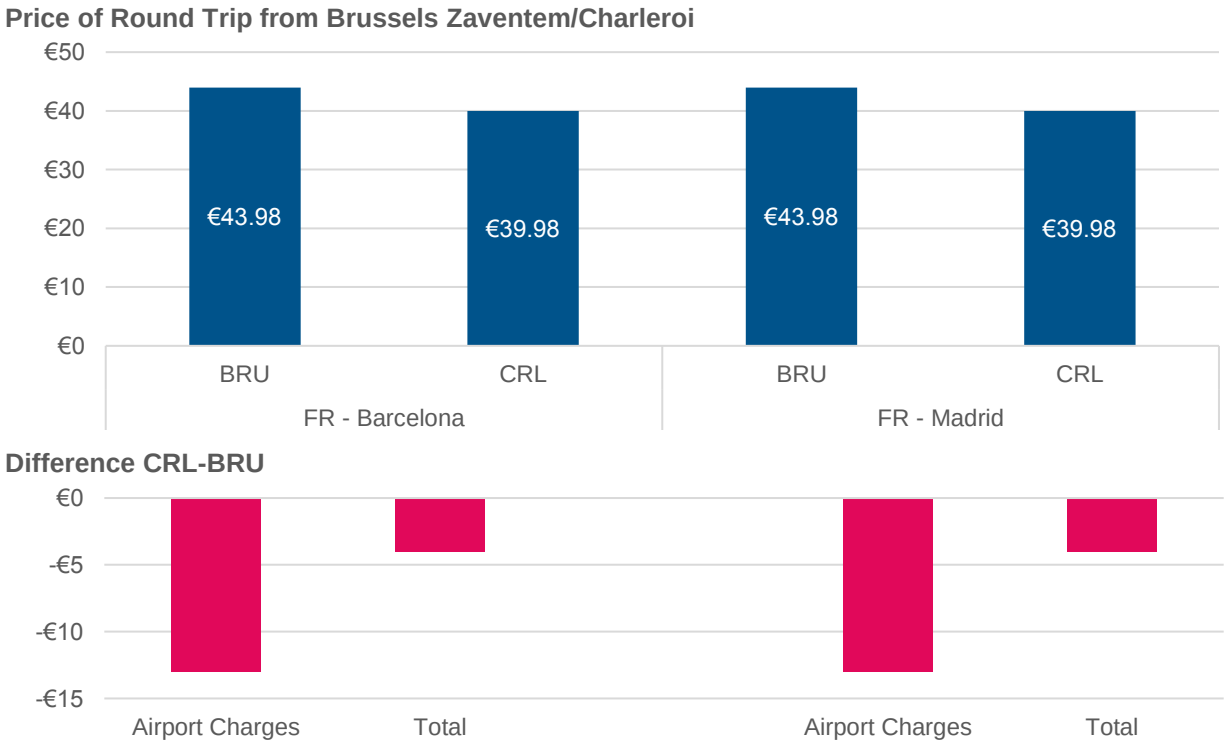
Exhibit 31: Air France-KLM Pricing Comparison – Schengen Example



Source: ita matrix. Lowest available fare from May to June 2018 as requested on the 13 April 2018.

A similar pattern can also be observed for LCC Ryanair. The airport operates out of both Brussels-Zaventum (BRU) and Brussels-Charleroi (CRL). Despite significantly higher costs at Brussels Zaventem compared to Charleroi (based on reported aeronautical yields, the difference in airport charges is approximately €13 per passenger), the fare difference for a return ticket to Barcelona or Madrid is only €4 as presented in Exhibit 32.

Exhibit 32: Ryanair Pricing Comparison



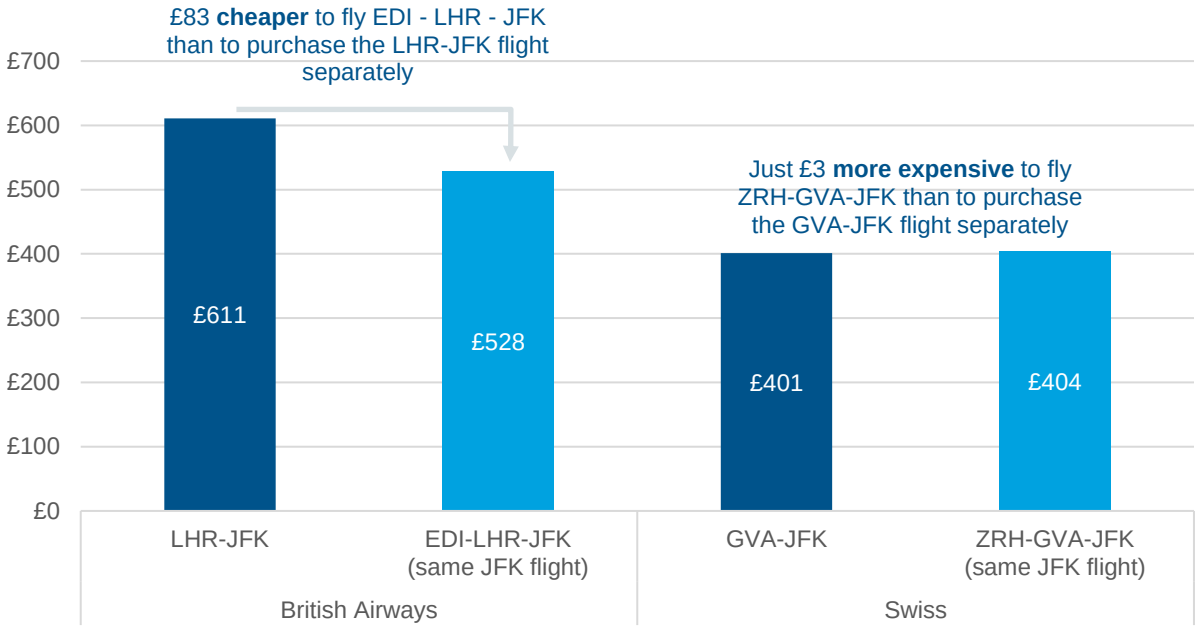
Source: Ryanair Website. Barcelona fares requested on the 20th of April 2018 for a trip from the 19th of June to the 26th of June 2018. Madrid fares requested on the 23th of April 2018 for a trip from the 13th of June to the 20th of June 2018.

5.5.3 Pass-through case study: Cost of connecting itineraries

Counter-intuitively, adding another leg to an itinerary can actually *lower* the price of a ticket. This is a consequence of a practice known as 'O&D Pricing' whereby airlines price connecting itineraries differently to the sum of the two legs. Clearly, the marginal cost of carrying a passenger on two flights is greater than for a single flight, but in order to attract business, airlines will heavily discount connecting itineraries. The other driver is a reluctance by airlines to set precedents of low prices in their core ('home') markets, thus keeping up prices in markets where they rely most heavily on for their traffic. We present two examples below: Firstly, a British Airways ticket from Heathrow to New York is more expensive than a ticket from Edinburgh to JFK connecting onto the same LHR-JFK flight, despite the additional cost of the Edinburgh-Heathrow flight and additional airport charges and taxes of GBP 14. Secondly a Swiss ticket from Geneva to New York is only GBP 3 cheaper than a ticket from Zurich to JFK,

connecting onto the same GVA-JFK flight, despite the additional cost of the Zurich-Geneva flight and additional airport charges and taxes of GBP 36.

Exhibit 33: Ticket Price Comparison with an Additional Flight Leg



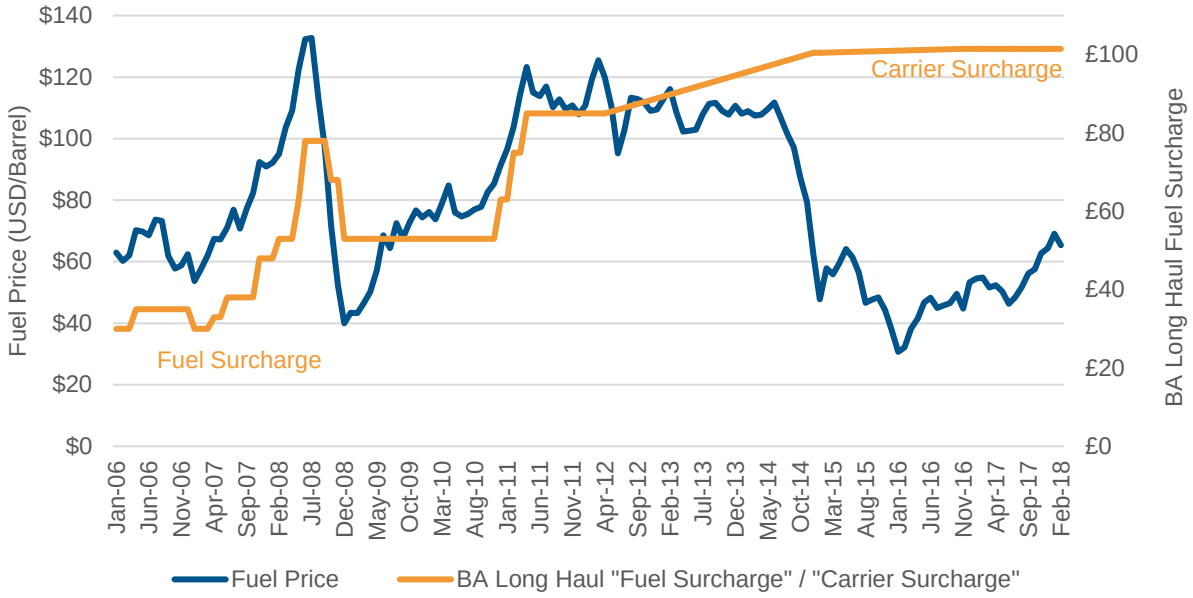
Note: Fares were requested on 25. April 2018. The British Airways flights are for a roundtrip form 13.-20. June 2018. The Swiss flights are for a roundtrip from the 11.-18. June 2018.
Source: Google Flights, ita matrix

5.5.4 Pass-through case study: Fuel

Many carriers introduced fuel surcharges in 2004 and these increased rapidly as fuel prices rose in the 2004-2008 period. BA increased their surcharge from £2.50 to nearly £80 per passenger in summer 2008. As fuel prices declined, a corresponding reduction in surcharges did not occur. Fuel returned to around $70 a barrel in 2010 however surcharges remained nearly double the levels in 2006/07 when fuel was at a similar price.

Today, airlines often refer to the surcharge as a ‘carrier’ surcharge to include a wider array of charges (than just fuel) in an attempt to justify their continuing existence now that fuel prices have fallen to more ‘normal’ levels.

Exhibit 34: British Airways Fuel Price & Surcharge history



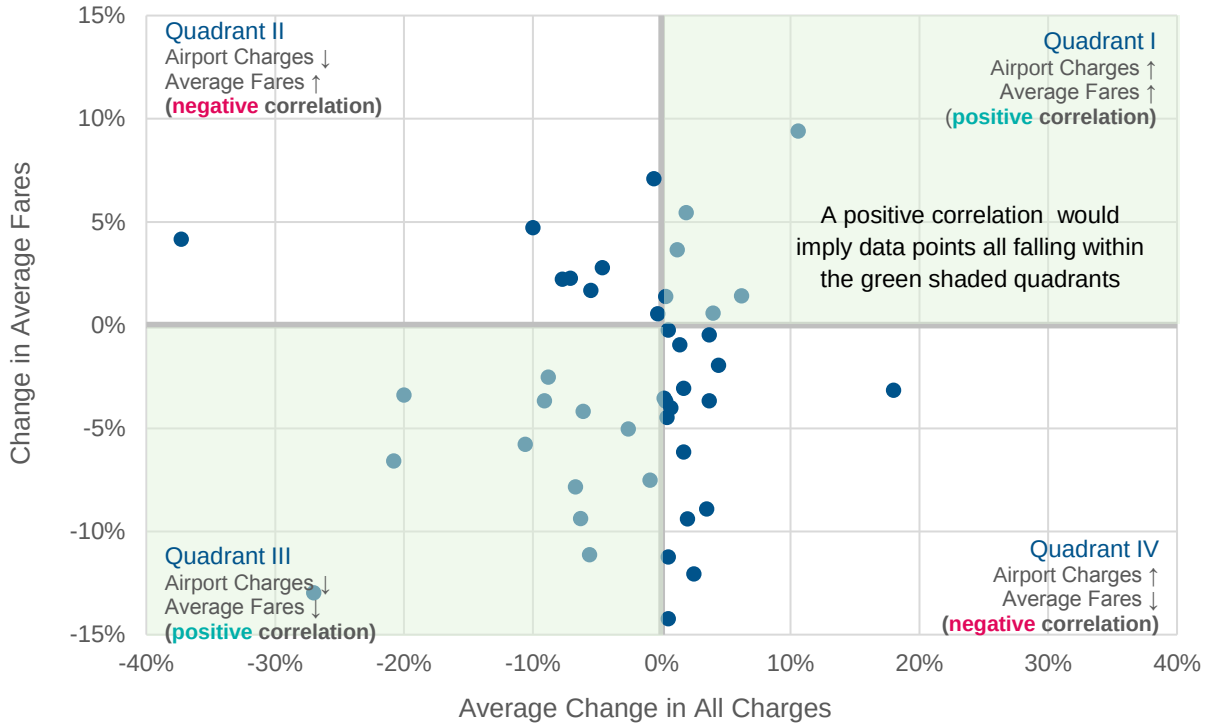
Note: surcharge interpolated between 2012 and 2015
Source: EIA, BA, press announcements

5.5.5 Pass-through case study: Effect of adjusted airport charges on fares

Comparing changes in airport charges and changes in airfares gives some indication of how much air fares vary with airport charges. Exhibit 35 presents an analysis of specific case studies in which airports have adjusted their charges, and the impact that has had on airline fares (based on IATA PaxIS data). The percentage changes of average charges, for the year in which the change was implemented, are shown on the horizontal axis. The corresponding percentage changes in average fares observed at this airport are shown on the vertical axis.

There appears to be very little correlation between changes in air fares and changes in airport charges. There are more observations showing a negative than a positive relationship between airport charges and airfares (25 data points lie in quadrants II and IV, 18 data points lie in quadrants I and III). This analysis suggests no clear evidence of pass-through, at least not in the short term.

Exhibit 35: Changes in Airport Charges vs. Changes in Average Fares



Note: Scatter Plot shows observations where a change in charges occurred. The airports observed include Amsterdam, Brussels, Gothenburg, Helsinki, Ljubljana, Sofia, Stockholm, Vilnius, Warsaw, Zagreb and Zurich from 2010 to 2017. A given airport can account for multiple data points corresponding to different years.
Source: ACI EUROPE airport charges survey, IATA PaxIS

5.6. Section Summary

Airline ticket prices are driven by demand and supply factors. Revenue managers set ticket prices largely without cost mind. Instead, airlines use complex pricing algorithms to maximise revenue on a flight-by-flight basis.

Several factors drive volatility in air fares; the resulting variations cannot be explained by the underlying costs. Seasonality, day of week and time of day can lead to variations for the same product of more than 700%. The level of competition on a given market is another major driver of fares. Despite the impact of LCCs on the European aviation market, there is still a significant share of capacity that is served by only one airline group. In chapter 5.4, we provide evidence that airline groups do exercise their market power if they have the ability to do so.

Whether an airline will pass through changes in costs to consumers depends on a number of factors, and there are multiple instances where airlines will choose to absorb cost increases or benefit from cost decreases. We showed this on the example of fuel surcharges as well as airport charges. As illustrated in chapter 5.5.5, changes in airport charges do not always lead to changes in air fares in the same direction, suggesting that there is no strong connection between charges and fares.

6. Conclusions

6.1. Summary of study findings

This study by ICF has clarified the significance of airport charges to airlines operating at European airports. We have covered a range of representative airline business models and airports of all sizes, using traceable, consistent data sources.

What we have found from this analysis is the following:

Airport charges represent a relatively small share of airlines' costs

Based on statistics reported by a sample of European airlines, airport charges (excluding taxes and ground handling) account for between €3 and €14 per passenger, which equates to between 3% and 17% of total costs. Weighted by passenger volume, almost 80% of passengers are carried on carries for whom airport charges represent 6% or less of their cost base

These charges have been flat or decreasing over the past decade

We have presented evidence, based on the actual aeronautical yields reported by airports, which demonstrate that on average charges are flat or decreasing. Airline annual reports also confirm that this cost item has not been (in most cases) growing – in absolute or as a share of costs – over time.

There is significant variation by airline type and haul

The type of airline and the nature of the route (specifically, the distance) influence the significance that airport charges play. It is vital that future studies in this area consider the full spectrum of airline model rather than simplify to a one-size fits all analysis.

In terms of the linkages between these airport charges and the air fares faced by passengers, we have observed the following:

Airlines price air fares according to market fundamentals

Numerous case studies demonstrate that the price of a seat can vary significantly depending on when the ticket is booked, time of travel and the levels of competition on the route. These variations in price are primarily driven by demand and supply factors, not the cost of operating the flight.

There are numerous factors that influence how an airline will respond to changes in costs

Airlines will monitor their costs at various stages of the planning and sales cycle and will consider their options in the wider context of their own business, the competition and the likely impact from their customers, i.e. passengers. In terms of likely outcomes, many cost changes go largely unnoticed by passengers, either because they are not passed through to fares or because they are relatively modest or occur at times or in markets where demand is price inelastic.

Airlines do not always pass on cost changes to passengers

We present a number of case studies in this report that demonstrate occasions where changes in costs are not being passed through to passengers, whether positive or negative. In these situations, the airlines have taken a conscious decision to price to the market while absorbing small changes in operating cost base.

Airport charges play a relatively small role in determining the price of an air ticket

Historically, airport charges have been both less significant and less volatile than fuel, staff or aircraft-based costs. As such, these other costs have a greater influence on airline cost bases. However, even these costs are not directly linked to air fares paid, as carriers play a sophisticated game in optimising prices to respond to demand and competitive conditions. That is not to say that airport charges do not play any role, only that their significance should not be overstated relative to other factors

6.2. Where next?

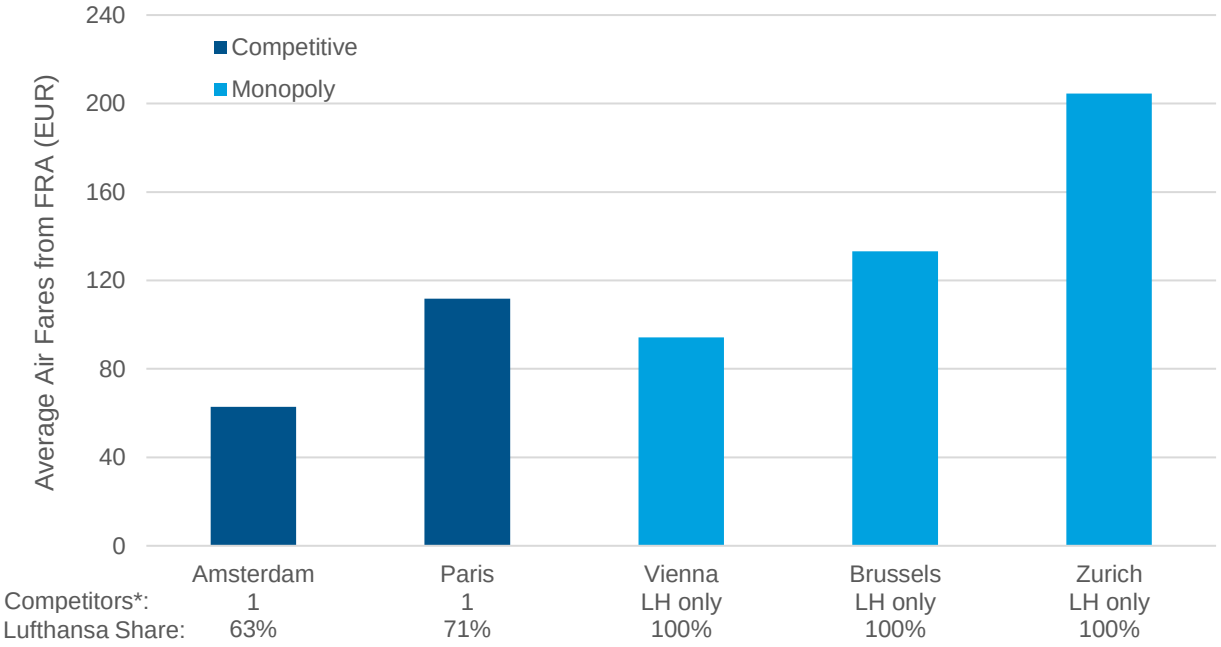
Airports are a critical part of the air transport ecosystem but – as we have seen – not a costly one, and a relatively small share of most airlines' costs. Having said that, particularly for low cost, short haul operators, these costs are not insignificant and can certainly influence capacity decisions.

Responding to the demands of their customers, and mirroring some of the variable pricing principles of airlines, we are seeing some greater differentiation of airport charges according to season, time of day etc. The removal of winter landing charges to encourage out of season demand at Gatwick is one such example.

Some airlines and airports are also entering into longer term commercial deals – still within the parameters of the Airport Charges Directive – reflecting the mutual benefits of a more collaborative, commercial relationship.

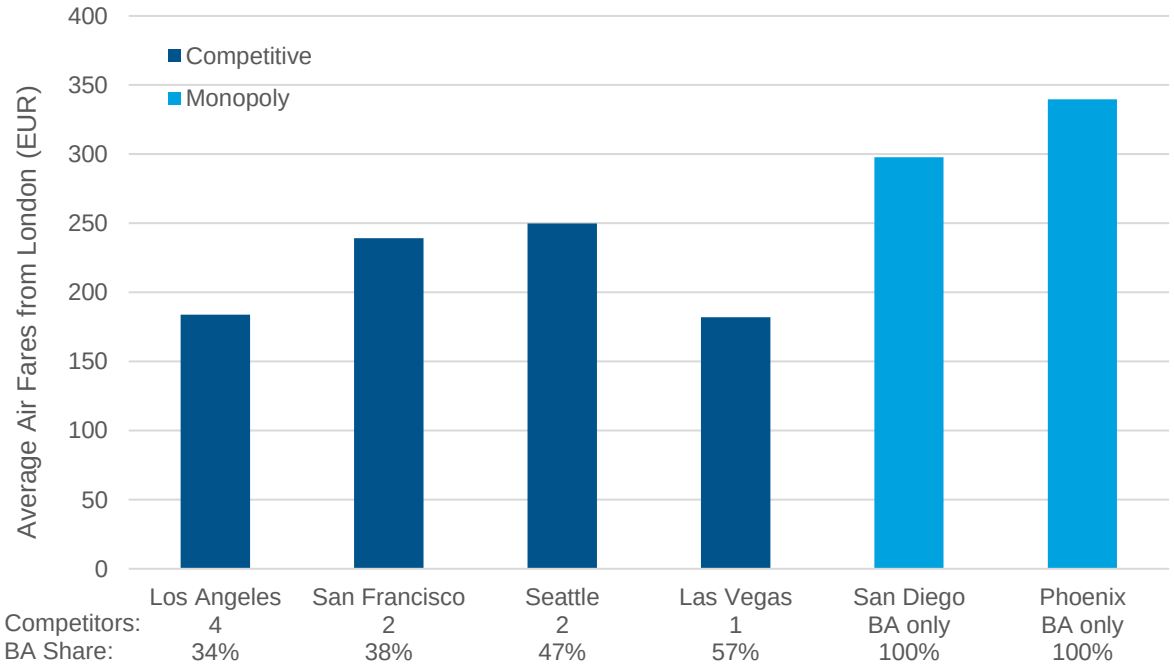
7. Appendix A1

Exhibit 36: Average Air Fares from Frankfurt, January 2018



*Note: Competitors with daily service
Source: IATA PaxIS

Exhibit 37: Average Air Fares from London, January 2018



Source: IATA PaxIS

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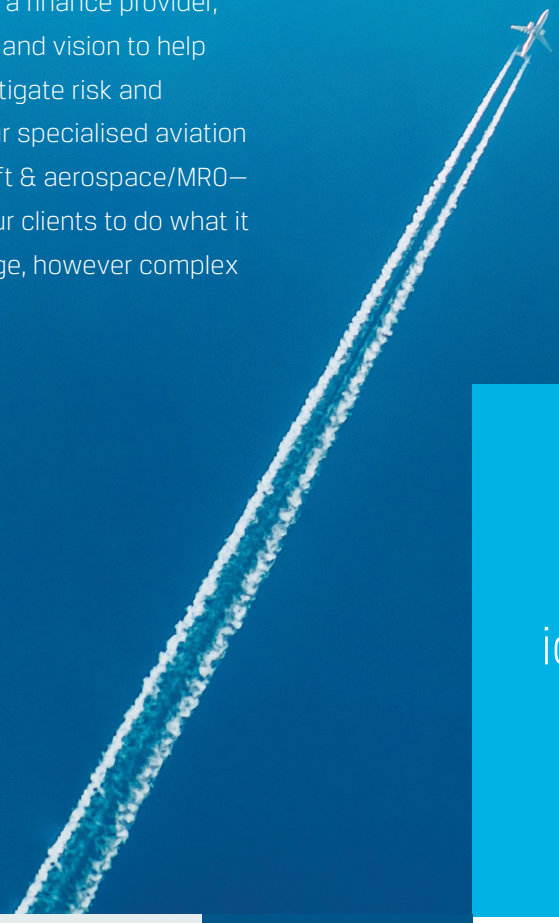
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