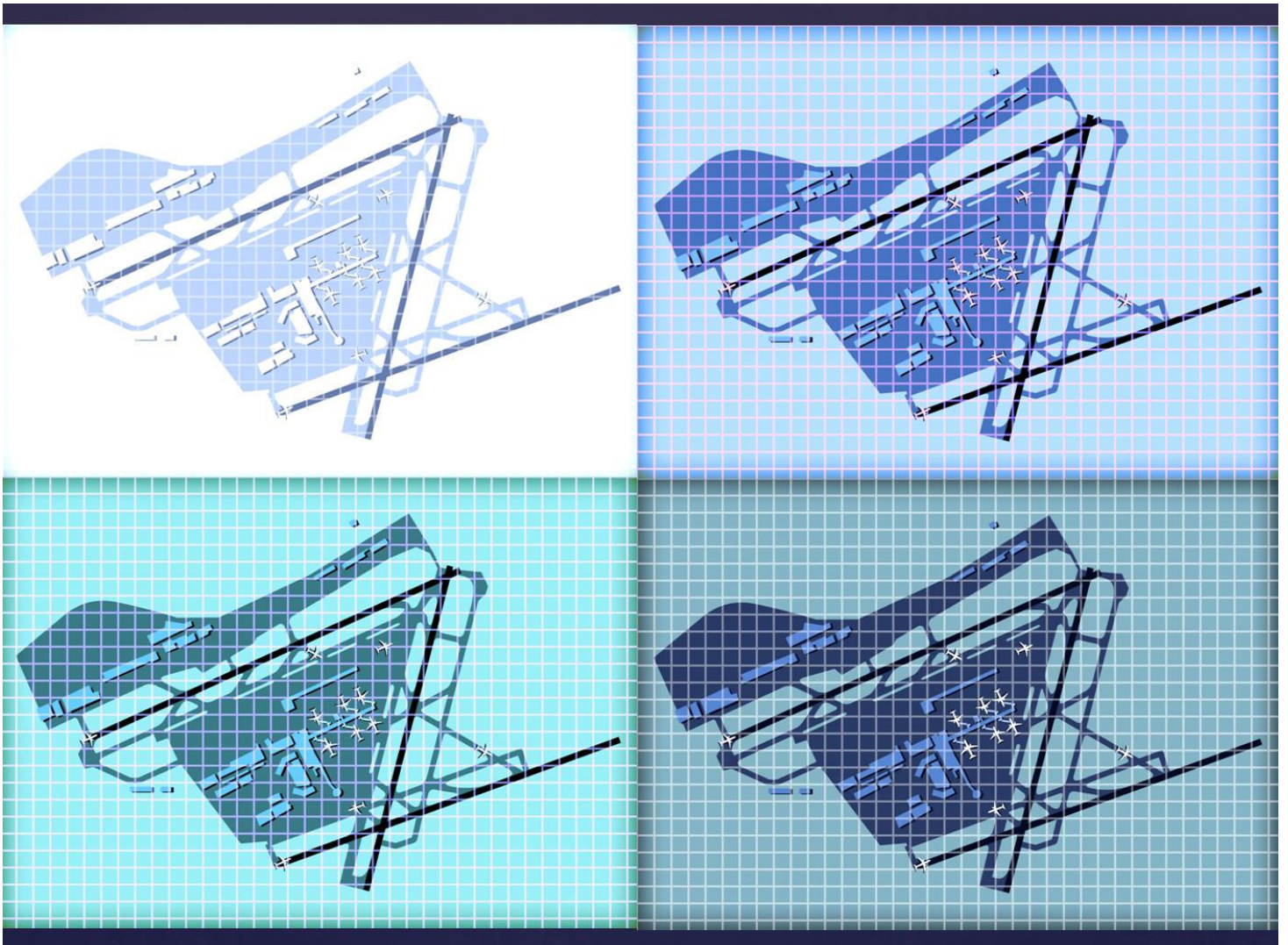


Airport Competition in Europe



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Authors:

Partner Martin Hvidt Thelle
Managing Economist Torben Thorø Pedersen
Economist Frederik Harhoff

Preface

ACI EUROPE has commissioned Copenhagen Economics to provide a study with an evidence based assessment of:

- the nature of competition between European airports and of the competitive constraints upon them, differentiating between the major categories of airports where appropriate but recognizing the interactions between them;
- the development of such competition and constraints over time;
- the impact of such competition and constraints on airports and their business model, but also on their customers, both airlines and passengers;
- how far airports can, in light of such developments, be regarded as possessing monopoly characteristics with concomitant market power; and
- the implications of the development of competition for the economic regulation of airports.

The study is prepared by Copenhagen Economics. The research team has also included Dr. Jan Veldhuis and Dr. Guillaume Burghouwt of SEO Economic Research in Amsterdam, the Netherlands and Dr. Mike Tretheway of InterVistas Consulting in Vancouver, Canada.

The research team has benefitted from the comments and suggestions provided by peer reviewer, Prof. David Starkie and from Dr. Harry Bush, who has acted as steering director for the project.

Disclaimer

This report has been produced independently by Copenhagen Economics (CE) on the request of ACI EUROPE (Client). The views expressed in this report are not necessarily the views of the client or its members. The information, statements, statistics and commentary (together the 'Information') contained in this report have been prepared by Copenhagen Economics from publicly available material, specialised models and databases and from discussions held with stakeholders. Copenhagen Economics does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the parties that provided the information or any conclusions reached by those parties.

Foreword

When I first became involved ten years ago with the airport sector, as economic regulator at the UK CAA, the EU's liberalisation of the airline market was already in full swing but its impact on the airport market was yet to become evident. There were already voices questioning how far airports, with their high fixed costs and commercial incentives to expand traffic, could be regarded as classical monopolies and therefore requiring heavy handed economic regulation. There was also some recognition of the costs and difficulties with economic regulation, reflected in Australia's move from price controls to light touch monitoring. But the concept of airports competing with one another, while nascent, was at the margins of regulatory and policy discussion and mainly confined to the issue of overlapping catchment areas.

The development of more flexible air-line businesses in Europe - mainly point-to-point but not now exclusively so - able to move capacity from airport to airport; better informed passengers through the internet; and more commercially focussed airports operating either in the private sector or at arms-length from Government has fundamentally changed the airport market.

These developments have yet to be properly reflected in the thinking of regulators and policy makers. Fundamentally cautious, and often beset by contending commercial interests, they have tended to anchor their thinking in market

models which predate airline liberalisation in Europe. They have also sometimes lacked evidence, particularly at the European level.

This is where Copenhagen Economics' study can so powerfully contribute to policy debate. It has assembled from a variety of sources and perspectives enough evidence to suggest that the old presumptions need to be reversed. Airports can and do compete. Which is not to say that no airport has market power, nor that regulation is never required. But the proof needs to rest with those who wish to do the regulating. Most airports should not require economic regulation. And where they still do, regulation needs to take full account of the competitive constraints that already exist and of the potential for competition to develop further. Otherwise, regulation risks obstructing the development of the very competitive forces that are most likely to benefit passengers and airlines long term.

Finally, it is worth reflecting that, at a time when Europe is under much pressure, the creation of a single market in aviation has been one of its greatest achievements. Not only, as it turns out, has it created a competitive airline market but it has also assisted the development of a more competitive airport market. And it would be fitting next instalment to this story if Europe now contributed positively to both the curbing and refashioning of regulation that this development now requires.

by

Dr. Harry Bush
Former Group Director
Economic Regulation,
UK Civil Aviation Authority

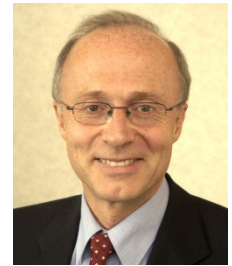


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Executive summary

This report shows that the flexibility and choices available to airlines and passengers now constrain the commercial behaviour of airports. Airports now have to compete with one another to retain and attract the traffic they need. This marked development of airport competition in Europe leads us to question how far specific economic regulation of European airports is still required. We recommend that policy makers review the need for such economic regulation. In most cases airports should, as with other businesses, be subject to competition law alone. Where a measure of economic regulation is still required, it needs both to be justified case by case and designed to take better account of evolving competitive pressures.

Airports used to be considered as something akin to natural monopolies. Twenty years ago European airports still operated in an environment where, with few exceptions, national and state-owned airlines were strictly regulated, with limited freedom to compete across borders. Much has changed since then, with the liberalisation and extension of the European aviation market standing out as one of the clearest success stories of a single European market.

Fierce airline competition for passengers has implications for airports too. Airports must now compete with each other for both passengers and airlines which have significantly more choice than in the past. Airports have had to become more commercially focussed. The result is a more competitive and dynamic airport market. However, airports are still too often regarded as monopoly infrastructure providers when the commercial reality is evidently very different.

European policy makers and regulators have yet properly to appreciate the extent of the changes that have taken place. This is partly a matter of catching up with a still fast moving market but it is also because the data have not been brought together in a comprehensive way at the European level. That is the aim of this report. It sets out some of the key economic drivers of the competitive airport business but also seeks to quantify from a variety of different perspectives the passenger and airline behaviours that are now apparent in the market and how airports have had to respond to these.

A rapidly changing environment

Chapter 2 shows just how wide ranging the changes to the aviation market have been over the last twenty years, encompassing deregulation of airline markets; more cost focussed airline business models; technological developments which have increased the operational flexibilities of airlines as well as the information and choice available to passengers; and more commercially focussed airports, often privately owned or run at arms-length from government.

The resulting competitive pressures on airports have to be seen in the context of the economic nature of those businesses. Airport costs are largely fixed, partly a result of investment in infrastructure but also because of associated operating costs, including those on safety and security, which vary little with scale of traffic. This gives airports a natural incentive to attract traffic to defray those costs, an incentive which has been accentuated by the growing importance of commercial revenues e.g. from airport retail or car parking (now almost as important overall as aeronautical revenues). Airports are indeed two-sided businesses, engaging in a commercial relationship with both airlines and passengers. The profitability of an airport is therefore crucially dependent on traffic volume as revenues increase in proportion to passenger numbers while costs increase more slowly because of the high fixed cost element. Airports therefore have to respond to increased passenger and airline choice by competing to both retain and attract traffic.

While their geographical position may confer some advantage relative to consumers who live nearest the airport, most airports cannot achieve the desired scale of passengers by attracting only those very close to the airport. Therefore, competition will play out amongst the increasing number of those passengers who have a choice between airports and amongst airlines, the latter now free to fly between any two points in Europe. As a result, airport behaviour is constrained by the presence of competing airports and by the willingness of sufficient passengers and airlines to take their business elsewhere if price or quality is not satisfactory. While this sensitivity of consumers to changes in price or quality, and any associated assessment of market power, will vary from airport to airport there is substantial evidence that the competitive pressures on airports generally are increasing, with a disciplining effect on their behaviour.

This study has therefore tested the strength of – and trends in – the competitive constraints on airports using empirical data and models for the European aviation market. We see three main changes driving competitive constraints on airports: more footloose airlines, more choice for passengers and more active responses from other airports.

More footloose airlines

Chapter 3 shows that airlines are making use of the freedom they have to fly between European airports. They have become more footloose, both able and willing to switch away from airports if conditions are not right. Analysis of all scheduled airline capacity in Europe between 2002 and 2011 shows a high degree of switching by airlines:

- **Many routes open and close:** Around 2,500 new routes were opened in 2011 while 2,000 were closed (in both cases around 500 more than in 2002).
- **A high degree of churn:** Openings are around 20% of the total stock of routes while some 15% of existing routes close every year.
- **Route closures mean durable traffic loss:** Traffic is not usually readily replaced when routes close, particularly where the airport has been dependent on a single carrier to operate a route. Even where multiple carriers have operated a route the withdrawal of one usually leads to a continuing traffic loss for many years. As a result airport profitability suffers.
- **Bases and hubs:** Airlines do not only open and close individual routes. Airlines also open and close bases – or vary their size – at individual airports. Such changes in airport bases have even greater impacts on airports than the gradual and

continuous churn of routes. So, while only few hub and base closures occur in an average year, airports need to be ready to compete both to defend existing base and hub operations but also to win additional based aircraft.

These findings demonstrate the increased flexibility of today's airline business models. That flexibility is particularly apparent among point-to-point carriers but the growing trend towards consolidation of hub carriers is giving them more choice than in the past as to where to base their capacity. These findings are also consistent with the publicly declared policies of many airlines. Perfectly understandably, they seek to optimise the profitability of their networks and are prepared to move their aircraft to do so. This proven willingness to switch means that the threat of switching has a credibility which gives such airlines a degree of buyer power relative to airports which is emphasised where they account for a high proportion of an airport's overall traffic. At 8 out of 10 of Europe's top 250 airports the largest resident carrier delivers more than 40% of capacity.

More passenger choice

Chapter 4 shows that passengers have more choice than in the past. With the rapid development in new routes, a large proportion of today's passengers have a choice between two or more airports. We have undertaken a variety of analyses to demonstrate the degree of choice now available to passengers and how it has increased over recent years. This choice is apparent in:

- **A large geographic overlap:** Nearly two-thirds (63%) of European citizens are within two hours' drive of at least two airports. This gives significant scope for airports to compete for passengers.
- **More choice for local departing passengers:** The increase in the number of routes flown means that an increasing number of passengers can find a comparable service at a nearby airport: on average around half of European airports' local departing passengers on intra-European routes have a choice of more than one reasonably attractive substitute airport for their chosen route, and that choice has increased significantly since 2002. The choice for departing passengers has increased at all of the ten largest European airports.
- **More choice for transfer passengers:** between 2002 and 2011, the share of transfer passengers with a realistic transfer alternative increased from 57% to 63%. In addition, the share of transfer passengers having the option of at least one direct alternative increased since 2002.
- **More price-sensitive and better informed passengers:** Not only are passengers becoming more price sensitive, in large part due to the internet but the most price sensitive passenger segment, namely leisure traffic, has grown the most. This means that, overall, the market is more price sensitive than even a few years ago.
- **Destination switching:** The greater share of leisure travel increases the scope for destination switching as holiday makers and airlines are willing to switch one destination for another. As a result, resort airports in Spain, for example, are in competition with airports in Greece or Italy. City break alternatives also compete with one another.

The combination of these factors suggests that passengers have both a significant and increasing degree of choice over which airport to fly from; and that their propensity to exercise this choice, informed by easily accessible information on the internet represents a competitive constraint on European airports which increasingly have to make themselves attractive to passengers.

Airport responses

Chapter 5 shows how airports have responded to these changes. Europe's airports are now more commercially focussed. Their ownership and governance has been transformed over the last few decades. In total, 80% of Europe's airports have been corporatised. Most publicly owned airports now operate as commercial entities at arms-length from government, while private ownership is a feature of the largest airports: nearly half of European passenger journeys now start at an airport with private shareholders. It is not surprising therefore that airports now undertake greater marketing and route development activities: 96% of all European airports, small or large, are actively marketing their airport to airlines. And there is evidence of increased marketing spend. Airports have also, through incentive schemes and targeted investment, sought to differentiate their products so as to cater for different airline types. New airports have also entered the market. There were 81 more airports in Europe with commercial jet services in 2008 than in 1996. And, at others, there have also been significant increases in capacity. This is all evidence of airports both spurring competition and responding to it in a market where customers have choice.

Challenging the old presumption about market power

Chapter 6 brings the evidence together and provides an assessment of the overall degree and direction of airport market power. Five indicators are applied to assess the strength of identified competitive constraints. Applying these indicators to data for 2011 across the 250 largest airports in Europe shows that a majority of airports in all size categories are affected by at least one of these constraints, and in many cases by several competitive constraints with a cumulative impact on market power. We find that these constraints are increasing, and market power therefore weakening across the board. This applies to all categories of airport, with many of the largest airports subject to significant competition for transfer passengers as well as to airline buyer power deriving from choice of hub by multi-hub carriers. Amongst smaller airports, constraints emanate more from passenger departure choice and airline buyer power, as well as, in some cases, destination switching. Airports of all sizes and categories are therefore subject to many competitive constraints, increasing over time; and the cumulative impact these competitive constraints is likely to be significant in many cases. While this cannot amount to a determinative view on the market power possessed by European airports there is sufficient evidence to challenge the old presumption of airports having significant market power. Rather, the starting point as elsewhere in the economy should be that the existence of market power needs to be proved rather than assumed.

From presumption to fact-based assessments of market power

Chapter 7 assesses the implications of enhanced airport competition for regulation and policy, and the need for policy makers and regulators to incorporate continuing market developments into their thinking.

Against the evidence we have assembled, some of the thinking around airport regulation looks more appropriate to the 1980s or early 1990s before airline markets had been liberalized, airline business models had become as flexible as they are today, and passengers had the information and choice they now have. There is now significantly more airport competition which suggests that the approach to airport regulation needs to be rethought. We have two recommendations:

- i) **Avoid economic regulation of airports** in areas where competition is already effective. Retaining regulation in these circumstances is likely to distort behaviours and outcomes to the detriment of customers; and
- ii) **Rethink economic regulation of airports** in areas where competition has yet sufficiently to develop to take more account of the competitive constraints that already exist and the potential for competition to develop further in line with current trends. There is a strong case for the regulator standing back and allowing the commercial parties to negotiate commercial outcomes subject only to limited regulatory recourse. The Australian example shows that such arrangements can work successfully even in more monopolistic circumstances than now prevail in Europe.

A glossary of terms used in the report is found at the back of the report.

A technical annex is available on ACI EUROPE's website.

Chapter 1

Introduction

Over the past 20 years, liberalisation of the aviation market in Europe has been one of the most fundamentally changing factors to the commercial environment within which Europe's airports operate. The emergence of hubs outside Europe and the use of the Internet have added to the process of changing the commercial environment for European airports. The freedoms and operational flexibilities that airlines now have, alongside the information and enhanced choice available to passengers, means that airports are increasingly subject to competition from other airports, and in particular when it comes to retaining existing - and attracting new - traffic.

Aim of the report

European regulators have yet properly to appreciate the extent of this change. This is partly a matter of catching up with a fast moving market but it is also because the data have yet to be brought together in a comprehensive way at the European level. That is the aim of this report.

This report brings together numerous data on the competitive constraints on European airports, and assesses the general development of these constraints over time. This can help inform the debate over how far regulation may be needed - if at all. But it should also serve as relevant background to competition assessments of individual airports, although it cannot replace an individual assessment of airport market power where it is necessary.

Assessing airport competition

Airports with their high fixed cost bases and traffic dependent income streams have natural incentives to attract traffic and to compete for airlines and passengers from other airports. Nevertheless, we need also to assess to what extent users of airports can respond to unreasonable price-service offerings by taking their business else-where. If users of airports can switch their business away from poorly performing airports to a sufficient degree that it harms the business of those airports, then competition will have a disciplining effect on their behaviour. Consequently, we test the strengths of – and trends in - the competitive constraints on airports using empirical data and models from the European aviation market.

Empirical analyses performed

To this end we have performed a number of empirical analyses and gathered relevant facts that capture general tendencies and can be applied across many airports at the same time (rather than aiming for a precise determination of market power of individual airports). We address both the change over time and the cumulative impact of competitive constraints today. We then ask the question whether competitive forces have gained so much power that they have general implications for airport policy making, airport regulation and for the application of competition law to airports.¹

¹ The guidance paper on assessment of airport market power from the UK Civil Aviation Authority provides a useful framework, at: www.caa.co.uk/docs/5/Final%20Competition%20Assessment%20Guidelines%20-%20FINAL.pdf

Our assessment has taken a comprehensive approach by investigating many different sources of competitive constraints. This is because the relevant issue for defining the extent to which airports, either in general or individually, are likely to have market power is the cumulative effect of these competitive constraints. In some cases a single individual constraint may be sufficient to discipline an airport but, even where it is not, in combination with others the result could be a step change in the overall competitive position.

1.1 An evidence-based approach

We apply an evidence-based approach and have used several economic tools and data to assess airport competition and its development over time.

There is no single method or indicator for assessing the degree of competition between airports or the competitive constraints on airports. We have therefore applied a range of different analyses where we combine pan-European data and models with surveys, case-study interviews and other available evidence.

We compare the year 2002 with 2011, since this is the longest time span for which comparable data and models are available. This period does not fully capture the change that has taken place since the beginning of the European air transport liberalisation in the mid-1990s, but it is a sufficiently long time to detect a clear trend, albeit one that is likely to underestimate the true change since the mid-1990s.

Analysis of the evolution of the European aviation market and trends

As an important background to assessing the development and sources of airport competition, we have identified the key trends within three broad areas: airline business models, technology, consumer behaviour and policy and regulatory changes. This is found in Chapter 2.

In subsequent chapters we identify the key sources of competitive constraint and the airports' responses to the resulting market environment.

Airline switching analysis

In the airline switching analysis we investigate how airlines are reallocating their capacity to different routes in response to expected profitability. This provides an assessment of entry and exit of airlines at the route level. Based on detailed airline schedule data, we quantify churn rates of routes and seat capacity by airport and we assess the general trend across the different types of airports and for different types of airlines, demonstrating the flexibility of current airline business models. This analysis is found in Chapter 3.

Catchment area analysis for O/D markets

Through catchment area analysis we assess competition in the geographical area around each airport. We perform a range of quantitative measurements of the choice for passengers at European airports and how this has evolved over time. As a novel feature, we take the actual route network at each airport into account and assess how the resulting airport overlaps have developed over time. The analysis covers the 250 largest European airports, differentiated by size. This analysis is found in Chapter 4.

Hub competition analysis

The above catchment area analysis is focused on local departures. In a subsequent analysis we also consider transfer passengers and the competition between hubs. Again we have applied quantitative techniques to assess the development of passenger choice over time for a large sample of European airports and the transfer markets within which they are competing. This analysis is also presented in Chapter 4.

Airport response

The above analyses suggest a significant degree and development of airport competition. We address how airports have responded to these changes in terms of both the attraction of new business to existing airports but also new airports coming into commercial use and so increasing competition. We have assessed new entry over the past 10 years, distinguishing between the opening of new airports and expansion of existing airports. Our analysis of the airport response is found in Chapter 5.

Assessment of the cumulative impact of the identified changes

Having analysed airline switching, changes in passenger choice and how airports have responded to, and fostered, these changes we then assess their cumulative impact. We draw some general conclusions about the strength of competitive constraints on airports of different sizes and the implications for any presumption of market power. This analysis is found in Chapter 6.

Assessment of airport regulation

Finally, we assess the implications of the changes to airport competition for regulation and policy. This is found in Chapter 7.

A technical annex is available on ACI EUROPE's website.

1.2 Analytical approach

We have used the following data and models to perform the analyses identified above:

- *OAG data*: SEO Economic Research have analysed airline capacity data for all airlines operating at European airports between 2002 and 2011.
- *SEO Netcost catchment area model*: Calculates generalized travel cost in a passenger choice model for estimation of departure airport, arrival airport, airline and itinerary choice for local departures between an origin region in Europe and destination airports in Europe. Model simulations are performed for 2002 and 2011 in a way that allows for comparison over time.
- *SEO Netscan connectivity model*: Measures the number and quality of connections from/to and via (with a transfer at) the 16 largest European airports². Again model calculations are performed for the year 2002 and for 2011 such that consistent comparisons can be made over time. The model captures 35,000 connection possibilities.

² Quality of connections depends on the transfer, in-flight and detour time relative to a theoretical direct flight. The Netscan model has been applied in numerous studies, including the IATA connectivity monitor, and academic publications (see e.g. Burghouwt et al, 2009, *Journal of Airport Management*, 3(4), pp. 394-400).

In addition, we have relied on a number of specialised data sources which are identified in the relevant chapters.

As quantitative data and models will not suffice to assess the changes in airport competition we have conducted a number of case studies to provide business information. Case study interviews have been conducted with the airports of:

- Bergamo
- Munich
- Frankfurt
- Stockholm (Arlanda and Bromma)
- Copenhagen
- Palma de Mallorca

Chapter 2

A rapidly changing environment

In this chapter we summarise the main developments affecting the market within which airports operate and describe how airports in Europe have increasingly to compete for passengers and airlines.

Main findings

- **Wide ranging changes** to the European aviation market have taken place over the last twenty years, encompassing:
 - deregulation of airline markets allowing any European airline to fly from any European airport;
 - emergence of new pan-European airlines through both mergers of hub carriers and the emergence of new point-to-point carriers with a much more flexible model for deploying aircraft to the most profitable routes.
 - more cost focussed airlines;
 - technological developments that have increased the operational flexibilities of airlines and the information and choice available to passengers; and
 - more commercially focussed airports, often privately owned or run at arms-length from government.
 - **The market today** is characterised by
 - More footloose airlines
 - More choice for passengers
 - More active airports
 - **Assessments of airport market power** need to take these changes into account as well as the fundamental economics of airports.
 - **Airports are fixed cost businesses** requiring major investments in runways, terminals and equipment, and a large share of operating expenses varies little with scale. This means that airports need continuously to attract new airlines and more passengers. For many airports it only takes a change of a few aircraft to markedly affect profitability.
 - **Airports are two-sided businesses.** The positive synergies between airlines, retail and passengers, leverages the incentives for airports to compete for traffic and passengers as both aeronautical and non-aeronautical revenues (e.g. retail revenues) are at stake.
 - **Airports are geographically fixed.** This means that for some passengers, those nearest the airport, geographic proximity is likely to be a determining factor in airport choice. But they will be protected by the competition playing out amongst those who do have choice. And that choice will be increased as airports seek to widen their catchment areas and customer base.
- Airports used to be considered as something akin to natural monopolies. But airports must now compete with each other for passengers and airlines which have significantly more choice than in the past. Airports themselves have become more commercially focussed. The result is a more competitive and dynamic airport market.**

Section 2.1 describes the major developments leading to a rapidly changing environment. Section 2.2 introduces the concept of market power and its application to airports. Section 2.3 goes on to describe the competitive constraints and how airports can compete.

We complete the chapter in section 2.4 by summarising the main implications of these changes for airports and the resulting competitive constraints upon them.

2.1 Major developments leading to a changed market

The change to the environment within which airports operate has a number of sources. It is partly grounded in the policy and regulatory changes which liberalised the European airline market and cleared the way for airlines to operate across and within the countries of Europe, but it has also been profoundly impacted by commercial and technological change as well as changes in consumer behaviour. The development of low cost, point-to-point airline models created more mobile, cost focussed and demanding airlines at the same time as technology developments increased the flying options available to airlines. In parallel, the combination of growing incomes and lower airfares have allowed for greater spending on air travel with more frequent and more discretionary journeys. This has also led to a deeper market with more opportunities for entry and competition. Globalisation has also introduced new travel needs and new travel options. Furthermore, the Internet means that more and better information is available to passengers about the choices available to them. The cumulative impact of these developments has been a change to the competitive environment within which airports operate and which has reduced and often eliminated airport market power.

These main developments are described below.

Policy and regulatory

- Liberalisation has created a single European aviation market, making it possible for any EU airline to operate from any EU country and beyond (see Box 2.1)
- Open skies and liberalisation of external air transport has done the same for many intercontinental routes and non-European carriers
- Privatisation of some airports, and corporatisation of many others, combined with the redevelopment of military and other airfields previously little utilised, has instilled a more commercial focus into airport management and enabled the entry of more competitors into the market

Box 2.1 EU market opening in air transport

Before 1987, protected and fragmented aviation markets existed across Europe. In order to create a single market for air transport, the EU liberalised its air transport sector in three stages:

- The *first "package"* of measures adopted in December 1987 started to relax the established rules. For intra-EU traffic, it limited the right of governments to object to the introduction of new fares. It gave some flexibility to airlines concerning seat capacity sharing.
- The *second "package"* in 1990 opened up the market further, allowing greater flexibility over the setting of fares and capacity-sharing. It also gave all EU carriers the right to carry an unlimited number of passengers or cargo between their home country and another EU country.
- The *third "package"* gradually introduced additional measures starting from January 1993. It introduced the freedom to provide services within the EU and, in April 1997, the freedom to provide "cabotage": the right for an airline of one Member State to operate a route within another Member State.

The single market was extended to Norway, Iceland and Switzerland in the following years creating the European common aviation area.

The "full package" market integration removes all commercial restrictions on airlines flying within the European aviation market

- removes restrictions on the routes
- removes restrictions on the number of flights
- removes restrictions on the setting of fares
- removes restrictions on ownership and control of airlines.

As a result, all European airlines may operate air services on any route within the European common aviation area.

Source: European Commission, DG Move.

Airline business models

- The development of the low cost carrier (LCC) model, and the resulting pan-European airlines providing point-to-point services, created a more dynamic market with airlines both deploying additional aircraft and churning existing routes on a European-wide basis.³
- LCCs are less demanding of facilities, therefore making it cheaper to develop/expand airports, so reducing entry costs in the airports market.
- More point-to-point traffic has enabled passengers to bypass hubs, putting pressure on hub airports, in particular secondary hubs.⁴
- The development of airline alliances, consolidation of hub carriers and the increasing number of multi-hub airlines are all increasing the commercial options available to network carriers, even while they mainly remain focussed on their

³ 50-60% of Ryanair routes in any given year are new routes not operated the previous year (based on OAG data for 2007-2011). Ryanair has approx. 500 route openings per year, and approx. 300 closures. Analysis by *Anna Aero* 18 April 2012 shows that for Summer 2012: "schedule data reveals that despite launching a total of 269 new routes between August 2011 and August 2012, Ryanair has also dropped 130, leaving a net gain of 139"

⁴ LCCs supply around 40% of intra-European seat capacity and transport around 50% of intra-European air passengers, the difference largely explained by the higher load factors of LCCs.

hub bases. It also gives the larger and consolidated hub airlines a stronger negotiation position vis-a-vis the airport, resulting in stronger airline buyer power.

- The rise of hubs in the Middle East and in countries neighbouring Europe has resulted in increased competition for European hubs.

Technology

- Aircraft technology (advanced turboprops and regional jets as well as new series of mid-size short and long-distance aircraft from Airbus and Boeing with improved fuel efficiency) has reduced the minimum efficient scale for operating viable routes. This can increase the options for hub-bypassing whereby secondary airports connect directly instead of connecting via a hub.
- The development of high-speed rail has increased competition for short-haul intra-European travel.
- The development of road network infrastructure and rail connections to airports has increased airport catchment areas and the degree of competitive overlap.

Consumer behaviour

- General income growth and lower airfares have made air travel more of a routine activity, resulting in more frequent and more discretionary trips (e.g. city-breaks or mini-vacations)
- Internet bookings have reduced search and switching costs for passengers, and so reduced the costs of entry for airlines into local (geographic) markets
- Lower airfares have led to the growth of more price-sensitive and time-insensitive traffic (the so-called commoditisation of air travel) and with lower airfares passengers are generally willing to travel longer distances by surface transport to reach a certain (low cost) airport which in turn leads to larger and more overlapping catchment areas (at least for time-insensitive leisure travellers)
- The development of tourism has led to an increasing proportion of foreign originating airport passengers – inbound tourists - who have a wide choice of destinations to fly to, so that airports across many tourist destinations will tend to compete for them, not just airports in close geographical proximity to one another.

Airports

- New airports have entered the market and existing airports have expanded capacity by investing in new runways, terminals and equipment. These have taken the form both of facilities designed to meet the requirements of low cost business models, and of investments designed to improve the operation of hub airlines. The availability of such capacity has increased the options for airlines to substitute one airport for another and thereby increased airport competition.
- The development of airport retailing and other passenger-facing revenue-generating activities by airports has leveraged the gains and losses from changes in passenger numbers. It is no longer just aeronautical revenues that are gained or lost by (in)decreased airside activity. Non-aeronautical revenues are also affected.

It is likely that many of these developments, considered alone, would have significantly impacted the competitive environment within which airports operate. However, cumulatively they suggest a profound – and continuing – change in the dynamics of the industry. This has occurred at a time of considerable growth in the aviation market overall which has enabled change to occur much more rapidly than it would otherwise have done.

Box 2.2 European aviation market and main developments

Air transport makes a key contribution to the European economy, with more than 150 scheduled airlines, a network of over 450 airports, and 60 air navigation service providers. The aviation sector employs more than 4.5 million people. Airlines and airports alone contribute 1.5% to the European GDP. Some 800 million passengers departed or arrived at European airports in 2010, according to the European Commission.

More Intra-EU routes + 140% increase between 1992 and 2010

More Intra- EU routes with more than two competitors + 310% increase between 1992 and 2009

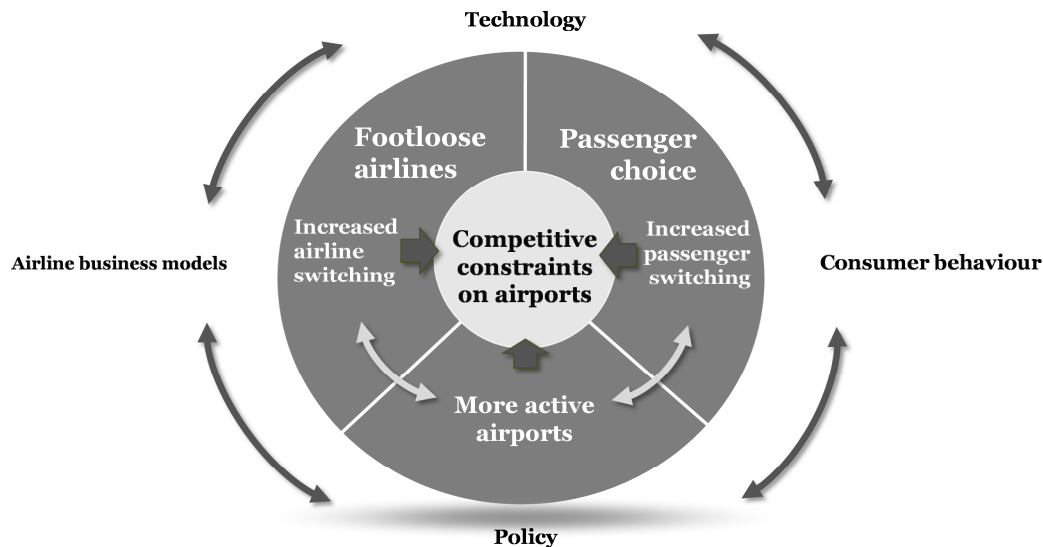
Emergence of point-to-point carriers Around 40% of total Intra-EU scheduled capacity by 2011

Note: Latest figures as provided European Commission. Point-to-point carrier share calculated by Copenhagen Economics.

Source: European Commission, DG Move.

All in all, developments in the European aviation market have meant that airports face *more footloose airlines*, that are willing and able to take their business elsewhere if service, price and market conditions are more favourable. This is how airlines seek to achieve a better return on their mobile assets (this is further documented in chapter 3). Airports also operate in an environment *where more passengers have greater choice* between airports and airlines (as shown in chapter 4). In addition, *airports are more active*, operating more commercially in responding to competitive pressures by attracting passengers and airlines (which is addressed in chapter 5). In sum, the airport market has become much more dynamic and competitive as illustrated in Figure 2.1.

Figure 2.1 A dynamic airport market in Europe



Source: Copenhagen Economics

In the following paragraphs we introduce the concept of airport market power and outline how airports can compete in the market environment described above.

2.2 Airport market power

Market power may derive from a number of sources, depending on the industry concerned. In some industries, it may result from an exclusive right to particular technologies. In others, like airports, location may confer an advantage amounting to a degree of market power. However, many businesses have some locational market power. A bakery or a supermarket has some advantage vis-a-vis consumers living nearby, but the bakery or the supermarket cannot be insensitive to the prices and quality offered by other bakeries or supermarkets, and their behaviour is constrained by the presence of competitors and by the willingness of consumers to switch and take their business elsewhere if price or quality is not satisfactory.

A business is said to have significant market power when it can profitably raise and maintain prices above the level that would prevail in a competitive market.⁵ The assessment of market power is therefore ultimately an assessment of the sensitivity of consumers to changes in price or quality.

Market power is not an absolute term but rather a question of degree, and needs to be assessed in the relevant markets where the airport competes. Airports may be found to have very little or negligible market power in one market, e.g. local departing origin-destination passengers, while having some market power in another, e.g. transfer passengers. The assessment of airport market power should therefore focus on the strength of

⁵ Formally, in order to identify market power, the European Commission requires that: "the undertaking's decisions be largely insensitive to the actions and reactions of competitors, customers and, ultimately, consumers".

the competitive constraints on airports in all of the different markets in which it may be competing.

The impressive traffic growth in the European aviation market has led to capacity constraints at some airports. Competitive constraints may, however, also apply where an airport is capacity constrained. Capacity constraints do not of themselves equate to market power. While such constraints may in some circumstances limit the need for an airport to attract traffic, that is not universally the case. The very dynamism of the airline industry means that different business models come and go, and in response airports need to adapt to fill capacity previously occupied by declining segments of the industry. Airports may also aim continuously to increase the quality of their traffic in terms of aircraft size, load factors and contribution to retail revenues. Even an apparently full airport may still want to compete to attract or retain higher quality traffic. Moreover, constraints on capacity have encouraged entry by other airports. The increased recognition given to slot trading under the EU's revised rules should assist in further increasing the flexibility of constrained capacity.

Even where an airport, as with any other business, is found to possess some degree of market power that may not in itself be a problem. Rather, it is the abuse of such market power that is problematic since it can harm consumers, lead to inefficient use of resources, and stifle investments and innovation. In the airport case there are a number of features of the business, explored in the following section, which as well as tending to magnify the impact of competition will also work against airports abusing market power that they may hold.

2.3 Competitive constraints and how airports can compete

Even in cases where airports have some degree of locational market power or market power in a particular segment, there are likely to be constraints on how far they will be able, or wish to, exercise it. Even for airports with no competing airport around, the increasingly footloose nature of airlines can still discipline that airport by threatening or actually moving away from the airport. Footloose airlines are one source of competitive constraints on airports.

More generally, the greater the competitive constraints on an airport arising from competition with other airports, from the availability of alternative means of travel or from airline buyer power, the more likely it is to be sensitive to the needs of its customers whether airlines or passengers.

In any industry, and also in the case of airports, competitive constraints are likely to arise from three main sources:

- *Actual competition*: other airports or other actors that compete to attract passengers, airlines or other airport users
- *Potential competition*: the threat that new players, or existing players expanding their capacity or product range, could start competing to attract passengers, airlines or other airport users

- *Buyer power*: existing airport users with a strong negotiating power that might derive from their ability to switch to other airports, their concentration at the airport or the information and practice they gain from bargaining across a number of different airports.

The generic sources of competitive constraints listed above are all very relevant to airports. In addition there are certain features of the airport which affect and magnify the impact of competition. In particular, airports are:

- Fixed cost businesses
- Two-sided businesses
- Geographically fixed

These three features are described in the following.

Fixed cost businesses

Airports have high fixed costs. They are capital-intensive businesses, requiring major capital investments to finance new infrastructure and modernize existing facilities. In 2010, capital costs for European airports amounted to €9 billion, representing 31% of total costs.⁶ Operating expenditures account for 65% of total costs.⁷

Many of these operating expenses are fixed or vary little with the scale of operations. Estimates of the marginal costs with respect to additional aircraft movements indicate that marginal costs are around 10% of total costs, meaning that up to 90% of the costs are largely invariant to scale.⁸ The relative fixity of operating costs is also confirmed by the UK Competition Commission which assumes that airport operating costs only move by 30% of the change in traffic⁹, and we recall from above that operating costs, on average, are about 65% of total costs.

The fixed cost nature of the airport business and the low, sometimes very low, marginal costs of adding an additional passenger or aircraft movement, mean that airports will aim to maximise returns on that fixed asset base by continuously trying to attract new airlines and more passengers. This means that marginal decisions by airlines have a large impact on airport profitability, and for many airports it only takes a change of a few aircraft to affect markedly an airport's profitability.

⁶ According to *ACI Europe Economics Report 2011*. Given that airport investments are often large-scale infrastructure projects, high capital intensity is required over a long period of time. Furthermore, a first return on capital for investors may take as long as 10-20 years in some cases.

⁷ Operating expenses consist of airport security (27% of operating costs), terminal and landside operations (29% of operating costs), airside operations (20% of operating costs), administration (16% of operating costs), sales and marketing (4% of operating costs) and other (4% of operating costs), according to *ACI Europe Economics Report 2011*. Taxes and other fees almost tripled from 2009 to 2010 and accounted for 4% of total costs in 2010.

⁸ See Link et al (2004) who estimate a cost function for Helsinki airport and find a marginal cost of €22 for an extra aircraft movement, corresponding to 11% of total costs. Morrison and Winston (1989) find a similar estimate for US airports of \$22 per aircraft movement when adjusted to 2000-euros corresponds to €32 per aircraft movement.

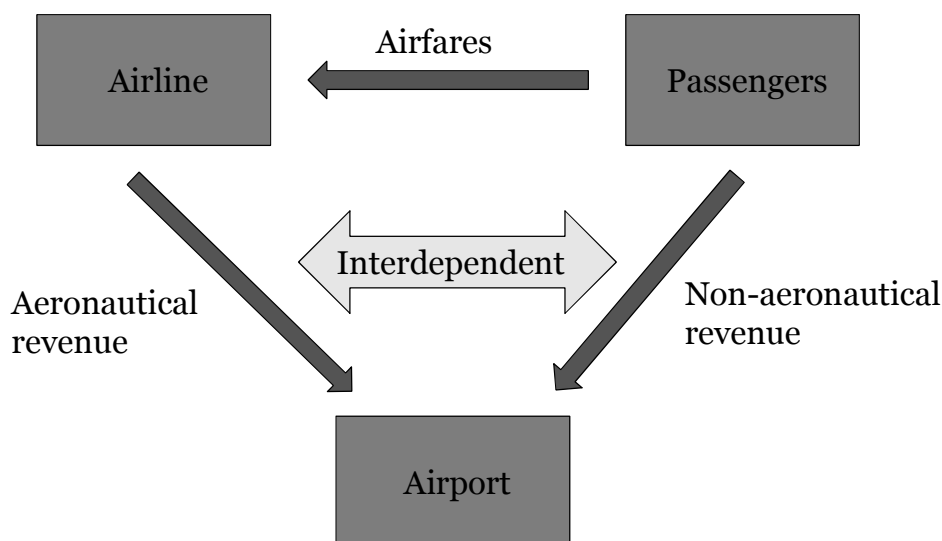
⁹ See UK Competition Commission (2008), "Stansted Airport Ltd – Q5 price review", report Presented to the UK Civil Aviation Authority, 23 October 2008, accessed at: <http://www.caa.co.uk/docs/5/ergdocs/ccstansted.pdf>, or the parallel review of Gatwick using the same assumption: <http://www.caa.co.uk/docs/5/ergdocs/ccreport.pdf>

Two-sided businesses

Some observers have seen airports as public entities serving the needs of airlines. However, airports have been considering passengers as an important customer and source of revenue independently from airlines for years. European airports have significant non-aeronautical revenues and in 2010 these revenues (€13.8 billion) almost equalled aeronautical revenues (€14.8 billion)¹⁰. This means that airports increasingly rely on commercial revenues to generate the necessary funds for the operation of, and the investments in, their infrastructure. Airports are therefore seen as platforms between airlines and passengers working to bring the two sides together¹¹, cf. Figure 2.2.

This implies that airports, airlines and passengers are linked by positive interdependencies. If passengers stay away, airlines will suffer and consider leaving the airport. If airlines leave, or reduce route coverage or frequency, that will deter passengers compounding the impact on the airport and its retail revenues.

Figure 2.2 Airports as a two-sided platform



Note: Passenger-related airport charges are paid by the passenger via the airline ticket to the airport. Aircraft related charges are paid by the airlines to the airport. Ground handling services, either offered by the airport or by an independent third party handler to the airline are not shown. Furthermore, commercial relations with retail outlets or other operators at the airport are not shown.

Source: Copenhagen Economics

¹⁰ According to *ACI Europe Economics Report 2011*.

¹¹ See Gillen, D. (2009), "A New View of the Airport Business – Two-sided Platforms", Airneth Fellow Column, April 2009, accessed at: www.airneth.nl/index.php/columns/a-new-view-of-the-airport-business-two-sided-platforms.html. The seminal work showing how complementary retail revenues ameliorate aeronautical charges will be found in Starkie, D. (2001), "Reforming UK airport regulation", *Journal of Transport Economics and Policy* 35 (2001), pp. 119–135.

While there are continuing discussions as to whether airports should be viewed as two-sided platforms¹², this feature is very important for the analysis of market definition and market power as well as for decisions regarding airport regulation. This is because airports, even with market power on the aeronautical side of the business, would have less incentive to use it because of the complementarity between airside and non-airside revenues¹³.

This has implications for how airports compete. The positive synergies between airlines, retail and passengers, combined with the fixed cost nature of airports, leverages the incentives for airports to compete for traffic and passengers as both aeronautical and non-aeronautical revenues (e.g. retail revenues) are at stake. This might lead the airport to discount its aeronautical charges to increase passenger volume in order therefore to increase turnover in other 'sides' of its business such as retailing.

This means that airports with unconstrained capacity will have a natural incentive to maximise profits by attracting more airlines and more passengers. It also implies that airports with some capacity constraints will also seek to attract those airlines most likely to add not only the greatest number of passengers but those able to add most also to commercial revenues. Consequently, spare capacity is not a prerequisite for competition to function.¹⁴

Geographically fixed

Airports are geographically fixed. This means that for some passengers, those nearest the airport, geographic proximity is likely to be a determining factor in airport choice. But competition for passengers will, as in other markets, play out amongst those who have the greatest choice and, as long as there are sufficient of them, that will protect those passengers with less choice. It is not necessary for every passenger to have equivalent choice for there to be effective competition.

Moreover, the geographical fixity of the asset will itself drive competitive behaviours in relation to both passengers and airlines. Most airports cannot achieve the desired scale of passengers by attracting only those very close to the airport. They need to go further afield to achieve a profitable scale of operation and in doing so will increasingly attract passengers from other airports' catchment areas.

As a consequence, airports seek to cover their high fixed costs (but low marginal costs per passenger) by pursuing volume which, in view of the inability to discriminate between passengers, means keeping passenger charges low thus extending their catchment areas¹⁵.

¹² See Karsten Fröhlich, "Airports as two-sided markets? – a critical assessment", 2010, accessed at: <http://www.wip.tu-berlin.de/typo3/fileadmin/documents/infraday/2010/paper/Fr%C3%B6hlich-Airports%20as%20two-sided%20markets%20A%20critical%20contribution.pdf>

¹³ See Starkie, D. (2001), "Reforming UK airport regulation", *Journal of Transport Economics and Policy* 35 (2001), pp. 119–135.

¹⁴ The housing market in London is capacity constrained, but that does not mean that there is no competition in the housing market. Different real estate agents compete between themselves, and all of them compete with real estate agents in other cities (often internationally), targeting the same potential tenants or buyers.

¹⁵ Airports set a single charge for different types of operations. Even if airports, for some reason, wanted to discriminate between different passengers according to their willingness to pay, they would not be able to do so because they do not have access to the information.

2.4 Main impacts on airports

If sufficient airlines and passengers have alternatives this will create competitive pressure on airports. As we will show in the remainder of this report, developments in the market and in business models – both airline and airport – mean that across Europe a significant – if varying – degree of airport choice has developed. The trends are such that choice and the competitive pressures it brings, has been increasing over time and is likely to increase further with business and technological developments and with further liberalisation of traffic rights beyond Europe. As a result, compared to the situation 10-20 years ago the market today is characterised by:

- More footloose airlines
- More choice for passengers
- More active airports

These developments are the focus of the following three chapters.

Chapter 3

More footloose airlines

This chapter looks at airline switching and it demonstrates how airlines have become more footloose.

Main findings

- **Today's airports** are serving airlines that are both able and willing to switch away from the airport if conditions are not right. Thereby airlines exert a competitive constraint on airports.
- **Point-to-point carriers** are particularly willing and able to switch. Their business model allows them to do so, and actual switching figures confirm that they are active in switching both routes and bases. With a large and increasing share of overall capacity at European airports, the rise of pan-European point-to-point carriers increases overall switching.
- **Hub carriers** are less flexible by nature, but they are also becoming more flexible. Mergers and alliances have turned many into multi-hub carriers, so new traffic especially is no longer bound to the historical hub. Hub airlines are also switching the spokes in their networks.
- **High churn:** As a result, around 500 more routes are opened and closed each year today compared to 2002. Roughly 2,500 routes are now opened per year whereas roughly 2,000 routes are closed per year, meaning that **new** route openings correspond to around 20% of the total stock of routes while some 15% of existing routes are closed every year.
- **The market is growing** and 54% more routes and 41% more capacity was offered in 2011 compared to 2002. Much growth is on new unique routes. This means that airlines are increasingly competing to establish new routes, rather than competing on existing ones. More single carrier routes make airports more vulnerable to airline switching because the traffic is more likely to be lost.
- **Traffic is not readily replaced** when routes are closed. For single-carrier routes, less than 20% of pre-closure capacity is regained three years after closure. For multi-carrier routes, 40% of pre-closure capacity is regained three years on. This shows that airports are vulnerable to closures, resulting in loss of traffic and reduced airport profitability.
- **High dependence on large carriers:** A large number of airports have a significant degree of dependence on a single carrier. At 8 out of 10 airports the largest carrier delivers over 40% of capacity. In combination with increased switching, airlines can in many instances exert a credible threat on airports.

Overall we show that the European aviation market is very dynamic with a high degree of switching by airlines and with a high degree of churn. A sufficient share of traffic can shift away and airlines can exert a competitive constraint on airports.

In section 3.1 we describe how airlines are able to switch. In section 3.2 we assess airlines' propensity to switch. In section 3.3 we present the evidence on actual switching by European airlines over the past 10 years. Finally, section 3.4 looks at airline buyer power and we assess the extent to which airports are facing an additional source of competitive constraint.

3.1 Ability to switch

The threat of airline switching provides a direct and powerful competitive constraint on airports. If an airport loses an airline customer to a competitor, it can incur both a loss of aeronautical revenue and of non-aeronautical revenue as fewer passengers visit the shops and other retail facilities or use car parks at the airport. An airport is largely a fixed cost business, comprising not only fixed assets that have to be remunerated (return on capital and depreciation) but also many operating costs that are unavoidable, particularly in the short term, because of operational requirements, contracts and other commitments. Consequently, revenue losses translate disproportionately into reduced profitability. The strength of this pressure depends on the degree to which the traffic is replaced by another carrier – a point we shall revert to later in this chapter.

It is important to note that airlines do not actually have to switch to put competitive pressure on airports. The threat of switching may be enough to generate a competitive response from the airport

Who can switch?

Aircraft are by definition mobile assets that can be moved between airports, and airlines are constantly reviewing their route network and service frequencies, and their allocation of aircraft to bases. The route program is traditionally reviewed twice a year to establish winter and summer schedules. In addition, airlines are increasingly using so-called dynamic capacity allocation whereby service frequencies and different aircraft types are reallocated continuously throughout the season to optimise capacity utilisation.

Airlines with different business models serving different segments of the market can adjust seat capacity at a particular airport in a number of ways:

- *Firstly*, airlines can adjust the seat capacity offered on a given route by changing the aircraft type or the frequency of service.¹⁶ This type of switching can be exercised at very short notice and without changing the overall route program. Both hub airlines and point-to-point airlines do this.
- *Secondly*, hub carriers can change a spoke in their network by opening a new destination from their hub airport and closing another (usually at the end of the season). If that latter destination is an “end-point” with no beyond traffic it can be switched more easily. A spoke to the hub of an alliance partner may be more difficult, but not impossible, to change. Similarly, point-to-point carriers can switch capacity to a new route, e.g. by adding a new destination from one of their existing base airports. This type of switching can also occur with fairly short notice and with great flexibility.¹⁷
- *Thirdly*, point-to-point carriers can reallocate capacity between their bases, and they can open and close bases. Point-to-point carriers typically have several bases

¹⁶ Some carriers, especially in the point-to-point segment, have standardised fleets. For these carriers, adjusting the seat capacity on a route by changing aircraft type is a less feasible option.

¹⁷ The effect on the origin airport of such destination switching can be mixed. It may gain or lose passengers depending on the popularity of the new destination relative to the previous destination. For destination airports the effect is obvious: the new destination gains passengers while the previous destination loses passengers.

from which they staff and maintain a large number of aircraft. Over time, the location of such bases can be changed or capacity between them adjusted by shifting aircraft and readjusting staff accordingly. The more radical the switching envisaged the greater the issues in terms of labour hiring, commercial negotiations, marketing and network. But a good deal of switching can be achieved through altering the relative sizes of existing airport bases rather than wholesale closures and openings.

- *Finally*, while hub carriers may generally be constrained to remain at their hubs, they can change their allocation of capacity between hubs. Consolidation amongst network carriers is increasing the opportunity for this as the merged groups will have greater choice as to where to focus their business and in particular any growth potential.¹⁸

For their part, airports will have different compositions of based aircraft relative to feeder services provided by aircraft based elsewhere. Smaller airports with no “home carrier”, receiving only inbound point-to-point traffic, face a very footloose market. At the other extreme, a hypothetical airport with the vast majority of capacity delivered by a one-hub carrier will face a less footloose segment of the market. In reality, most mid-size and large airports face a mix of these segments, and, as we will show, the more footloose of them make up a larger share of overall capacity today than in the past.

It is important to note that, just as in analysing passenger choices,¹⁹ competitive constraint arise from those airlines that are most responsive to changes in price or quality at an airport.²⁰ As long as there are sufficient airlines able to downscale or move capacity in response to the airport raising prices or reducing the quality of service, the airport will effectively be constrained from doing so generally. The less flexible airlines are thereby protected by the more flexible airlines’ constraint on the airport’s behaviour.²¹ In the section on observed switching we will show the magnitude and development of switching behaviours. But such demand-side behaviours have been facilitated by supply-side changes affecting both airports and airlines. On the airport side, the entry of new airports and expansion of airport capacity have increased the switching options for airlines while developments in aircraft technology have enabled airlines to operate routes between airport pairs that would previously have been unprofitable.

¹⁸ For example, Willie Walsh, former CEO of British Airways (BA), stated in 2010 that “BA will be able to access [...] growth because our assets are mobile and we can focus on developing Madrid rather than [...] London”, cf. Starkie, D. (2012) “European airports and airlines: evolving relationships and the regulatory implications”, *Journal of Air Transport Management*, Volume 21, Pages 40–49.

¹⁹ This is further analysed in Chapter 4.

²⁰ As will be pointed out below, switching does not necessarily entail exiting an airport or closing a route. An adjustment of seat capacity through e.g. fewer departures on a route is also an adjustment that can impact an airport.

²¹ If an airport can discriminate between routes/airlines/groups of airlines when determining terms and quality, the competitive pressure arises from the most responsive aircraft/airlines within each group that the airport can discriminate between. In practice, limited information and insight by the airport into the viability/profitability of different routes/services operated is likely to prevent such discrimination. Also, rules for determination of published charges and passengers switching between airlines and routes will weaken the potential for discrimination. Moreover, there is no evidence of such discrimination taking place in practice.

New airport entry increases switching opportunities

Europe has experienced significant airport entry and airport expansion over the last two decades. New airports,²² and new airport terminals²³ and runways which have increased capacity at existing airports,²⁴ have increased the options available to airlines. Using OAG data, Reynolds-Freighan has determined that there were 81 more airports with commercial jet services in Europe in 2008 than in 1996.²⁵ Our analysis has shown that this larger number of airports with services has been maintained in spite of the severe economic downturn since 2008.²⁶ According to Eurocontrol, the increase in capacity is expected to continue in the future, as European airports have planned to increase their capacity by 41% by 2030.²⁷

Aircraft technology further strengthens switching ability

For both point-to-point and hub carriers switching potential has been assisted by the development of aircraft technology, described in Box 3.1, which has increased the range of routes – both short- and long-haul – that can be flown from secondary and smaller airports, so increasing the choice available to airlines.

²² E.g. new Athens International Airport (opened in 2001), New Weeze Airport (opened in 2003), New Berlin Brandenburg Airport (opening in 2013), and New Warsaw Airport (opened in 2012).

²³ E.g. Hamburg Airport Terminal 1 (completed in 2005), Dublin Airport Terminal 2 (completed in 2010), and London Heathrow Airport Terminal 5 (opened in 2008).

²⁴ E.g. Amsterdam Airport Schiphol (new runway opened 2003) and Frankfurt Airport (new runway opened in 2011).

²⁵ A. Reynolds-Freighan (2010), “Characteristics of airline networks: A North American and European Comparison”, *Journal of Air Transport Management*, Vol. 16, pp. 121-126.

²⁶ The OAG data used for this study show that the number of airports offering scheduled commercial routes has stayed roughly constant since 2008. According to the OAG data on scheduled intra-European traffic with at least 50 departures per year, the number of airports in 2008 was 616 while the number had decreased slightly to 611 in 2011.

Box 3.1 Aircraft development and ability to switch

The evolution of aircraft has also had a role in facilitating a greater switching ability. Regional jets and advanced turboprops have enabled direct services to and from small airports, often on new point-to-point routes that bypass hubs. New medium body aircraft with extended ranges are enhancing the scope of services from hubs, extending the hubs' market penetration to new secondary airports, while allowing secondary airports to enjoy a wider range of non-stop services. Airports which formerly had no intercontinental services (for example, Hamburg) now enjoy an increasing number of such connections.

More can be expected in the next ten years. The new large capacity A380, that allows hub airports to achieve efficiencies in the use of congested airspace and lower seat costs on heavily travelled and hub-to-hub routes, will be used more widely.²⁸ New engine technology on larger regional jets (e.g., Bombardier CS-100) will improve the competitiveness of the regional jet vis-à-vis traditional narrow body aircraft. The Bombardier CS-100, with the geared turbofan, is poised to be a major development in the 100-130 market. It provides greater capacity at the same block hour cost of the current 90 seat aircraft, with seat costs equal to the A319/737-600. Likewise, the Boeing 787/A350 will improve the economics of intercontinental services from 2nd tier European airports, as well as extending the scope of services to new intercontinental markets from existing European gateways. Further liberalisation (more air transport agreements) is, however, a precondition for making use of the new technology in the long-haul market, particularly at regional airports previously excluded from bilateral agreements.

Source: Copenhagen Economics

3.2 Propensity to switch

Choice is irrelevant if it cannot credibly be exercised. Airlines need to be willing to downscale operations at an airport to constrain airports' behaviour. Changes in the mix of point-to-point and network carriers have increased the propensity of airlines to switch airports.

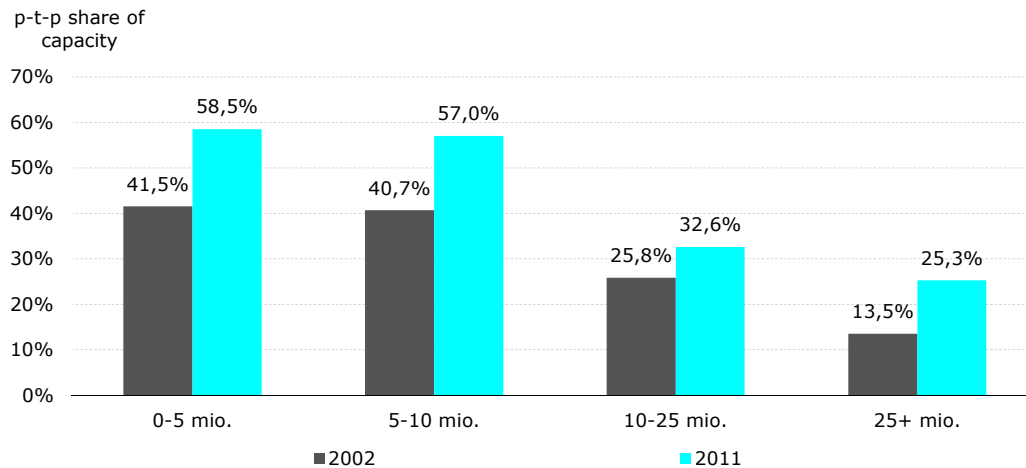
Changing airline-type mix

From 2002 to 2010 point-to-point carriers increased their share of capacity on intra-European routes from 27% to 41%.²⁹ This has given point-to-point carriers a share of almost 60% of the intra-European capacity at small and medium-sized airports, cf. Figure 3.1.

²⁸ The airline Emirates has e.g. ordered 90 Boeing A380, cf. airbus orders and deliveries 2011, Airbus website. Many of these will presumably be placed on routes to/from Europe.

²⁹ This is based on a categorisation of carriers according to whether they operate a hub network or not as shown in the technical annex.

Figure 3.1 Share of point-to-point carriers' capacity at airports



Note: The figure shows point-to-point carriers' total share at different airport sizes in 2002 and 2010. Airport sizes are categorised according to actual total passenger figures in 2002 and 2010 using ACI data.

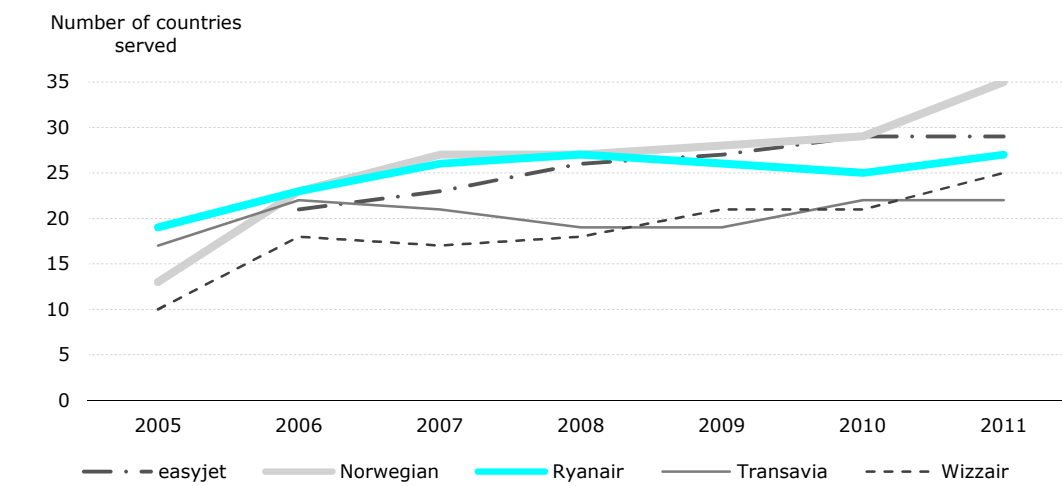
Source: Copenhagen Economics and SEO Economic Research based on OAG data and ACI airport passenger figures.

Point-to-point carriers tend to be cost-focused and, not operating a hub-and-spoke model, can be more active in changing their route network in response to changing profit opportunities. As they have increased their share of the market, so a larger proportion of airports' customer base is capable of switching between airports.

Point-to-point carriers

The recent growth of point-to-point carriers has seen the development of genuinely pan-European carriers with networks which give them a large range of options as to where they can both base and fly their aircraft. This development is illustrated in Figure 3.2 that displays the number of countries served by selected point-to-point carriers. In 2005, these carriers served between 10 and 19 countries; in 2011 they served between 22 and 35 countries.

Figure 3.2 Number of countries served by selected point-to-point carriers, 2005-2011



Note: Figures are for January 2005 and June of all other years.

Source: All figures are taken from the European Low Fares Airline Association (ELFAA) website, <http://www.elfaa.com/statistics.htm>.

Among point-to-point carriers, a number of different models have emerged. Klopheus et al.³⁰ distinguishes between four types of business models, namely

- Pure LCC (e.g. Ryanair)
- Hybrid carrier with dominating LCC characteristics (e.g. easyJet)
- Hybrid carrier with dominating full service airline characteristics (e.g. Norwegian)
- Full service airline

This characterisation is based on a list of LCC criteria of which ‘Pure LCC’ carriers live up to all or almost all whereas ‘Full service airlines’ only live up to a few.³¹ The ‘Pure LCC’ firms have e.g. a high degree of fleet homogeneity, a widespread use of secondary airports, only point-to-point traffic, no code sharing, and no frills on the flights.

In addition to the product offered, the point-to-point carriers are distinguished by the flexibility in their business model. All of these carriers rely on a flexible disposition of their assets in their business model. This is often openly communicated, see Box 3.2.

³⁰ Klopheus et. al., “Low cost carriers going hybrid: Evidence from Europe”, Journal of Air Transport Management 23 (2012) 54-58.

³¹ This characterisation also emphasises the grey area in the distinction between hub carriers and point-to-point carriers. Some carriers have features of both point-to-point carriers and hub carriers. In our analysis, Air Berlin is e.g. characterised as a hub airline although it also has point-to-point carrier features.

Box 3.2 Point-to-point carrier quotes on switching

Ryanair

"It is central to our philosophy of flexibility [...] that we have the right to move aircraft around between bases, we have the right to move people around between bases, and we will continue to do so"

(quote from CEO Michael O'Leary)

easyJet

"One of easyJet's strengths is its flexibility in asset allocation; we can and do move aircraft around our network to ensure we are generating the best possible return on our investments"

(quote from easyJet annual report 2009)

"Base location is constantly under review. For example, we have increased the number of aircraft based in Italy from three to 16 since 2006 and in France from 11 to 14 in the last 12 months. At the same time, we have reduced capacity at under-performing bases such as Luton"

(quote from easyJet annual report 2009)

Wizzair

"Wizz Air is in constant negotiations to establish a network of operations at more airports to provide low-cost air transport for Central and Eastern Europe."

(quote from Wizzair website, April 2012)

Note: The first three quotes are taken from Gatwick Airport, "Airport competition: Competing to grow and become London's airport of choice, An initial submission from Gatwick Airport to inform the CAA's review of airport competition", <http://www.caa.co.uk/docs/5/GatwickSubmissionOnCompetition05122011.pdf>. The last quote is taken from http://wizzair.com/about_us/company_information/?language=EN.

Hub carriers

The major hub carriers, which tend to offer both short haul and long-haul services, have been under increasing competitive pressure, not least from point-to-point carriers. As a result, they have had to focus increasingly on costs and efficiency which has become evident in a number of ways.

First, many hub carriers have sought directly to cut costs, for example by decreasing wages, cutting jobs, using temporary crew, and changing route frequencies or routes. Second, some hub carriers have launched their own low cost subsidiaries, for example Iberia's low cost arm, Iberia Express, in March 2012.³² Third, some hub carriers have begun to compete with low cost carriers by launching cheap short-haul routes from secondary hubs, for example Lufthansa's routes out of Düsseldorf and Hamburg.³³ Another example is Air France's opening of regional bases in Marseille, Toulouse, Bordeaux and Nice in early 2012.

Such considerations – route switching, low cost initiatives and use of secondary hubs/regional bases – all mark an increase in the willingness of hub carriers to respond flexibly relative to the "old" regime with exclusive hubs and few low cost alternatives.

³² Iberia Express was launched on 25 March 2012. It shares flight number range with Iberia but will operate under a different IATA code name (I2 instead of IB). Some of Iberia Express' routes replaced Iberia routes while other routes were either new or operate alongside Iberia's routes.

³³ See e.g. <http://www.dw.de/dw/article/0,1801220,00.html>.

Even in the core network business there will increasingly be the potential for strategic choices especially where hub carriers have multiple hubs. Hub carriers will not, given their network structure and historical country ties, become as footloose as the point-to-point carriers but market and ownership developments are creating degrees of freedom to move capacity that were not there even a few years ago.

3.3 Actual switching

Actual switching figures show that a large and increasing number of routes are opened and closed every year. While many of these route changes will reflect experimentation with different routes rather than the commercial interplay between airlines and airports, what they do indicate is the degree of flexibility now inherent in airline models and the scope for this to be used. Actual switching does not have to be observed to put pressure on airports - the threat of switching is enough - but frequent actual switching makes the threat of switching more credible. Switching has demonstrably been used in the past to discipline airports (or their local partners) where the airline has a substantial disagreement with their management style, charges or service, see Box 3.3.

Box 3.3 Example of airline switching

In May 2012 Ryanair announced that it would close all routes to Kos and Rhodes due to disagreement over a marketing campaign. According to Ryanair, the local mayor and development association had failed to honour an agreement with Ryanair about a joint marketing campaign to promote Ryanair's summer routes to the two Greek destinations. Ryanair would otherwise have operated 82 weekly flights to Kos and Rhodes. Ryanair estimated that the flights resulted in the loss of over 23,000 tourists and over €18 million tourism revenues for Kos and Rhodes.

Note: Ryanair press release 17/05/2012, "Ryanair Cuts All Rhodes & Kos Flights From October 2012 As Ministry Of Tourism Reneges On Promotion Agreement", <http://www.ryanair.com/en/news/ryanair-cuts-all-rhodes-and-kos-flights-from-october-2012-as-ministry-of-tourism-reneges-on-promotion-agreement>.

Approximately 500 more airline routes were opened and closed in 2011 compared to 2002. Roughly 2,500 airline routes are now opened per year whereas roughly 2,000 airline routes are closed per year, meaning that new route openings correspond to approximately 20% of the total stock of routes while some 15% of existing routes are closed every year.

Evidence of switching is also apparent in the closure, or downgrading, of hubs and bases.

Overall switching activity in the last 10 years

The quantitative analysis in this chapter relies primarily on an OAG data set. This data set is described in Box 3.4.

Box 3.4 Data and definitions of opening and closure

The data set used in this study contains annual information on all carrier, origin, destination, frequency, and seat capacity for all scheduled intra-European routes in the period 2002-2011. The data set does not therefore include non-scheduled traffic and extra-European traffic. To filter out noise from infrequent departures, only routes with at least 50 annual departures are included in the analysis. Throughout the analysis a closure (an opening) in year T is defined as a route that was (was not) in existence in year T-1 but is not (is) in existence in year T.

Note: The full description of the data set is available in the technical annex.

Source: Copenhagen Economics and SEO Economic Research.

The data show that significantly more routes are opened than closed per year, as would be expected in a growing market. In relative terms, however, the share of opened routes to total routes has decreased by about 5 percentage points per year relative to 2002, while the share of closed routes has stayed roughly constant. This tendency reflects the slower growth of the market in more recent years. These developments are illustrated in Figure 3.3.

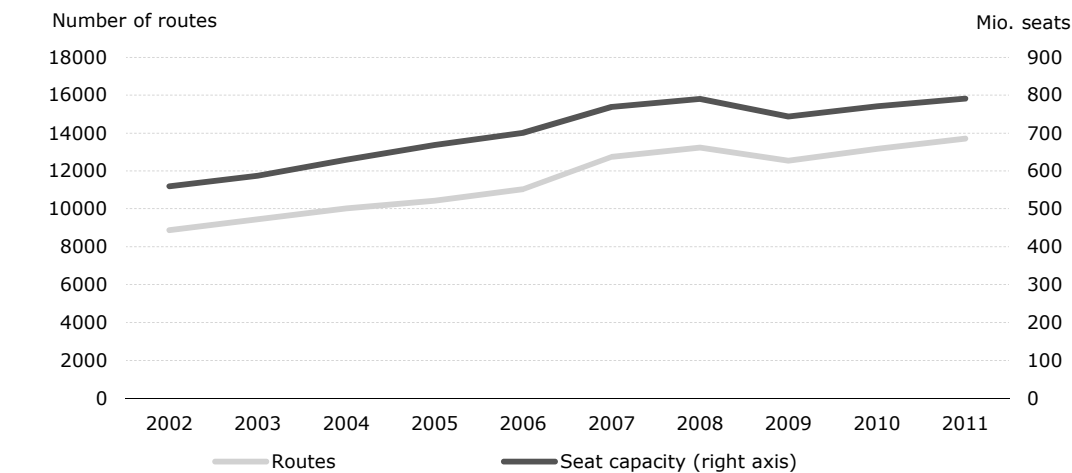
Figure 3.3. Number and share of routes opened and closed, 2002-2012



Note: The figures show the total number and share of intra-European scheduled routes that were opened and closed in 2002-2010. The trends are the linear trends across the period.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Over the period considered, the large number of openings has caused a steady increase in the number of routes and the total capacity offered. 54% more routes and 41% more capacity were offered in 2011 relative to 2002. Only in 2009 did capacity and the number of routes experience a setback due to the financial crisis, cf. Figure 3.4.

Figure 3.4 Development in routes and capacity, 2002-2011


Note: The total number of intra-European scheduled routes is illustrated on the left axis while the total seat capacity is illustrated on the right axis.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Throughout the period, a large proportion of routes has been served by one carrier. Such single-carrier routes made up 70% of total routes in 2002 and 74% in 2011. The increase over the period highlights the increased entry and use of regional airports which paved the way for many new (unique) routes to be offered.

This means that airports have increasingly been competing to establish new routes, rather than simply competing more on existing routes to the same destination. However, such unique routes make airports more vulnerable to airline switching. A larger proportion of airports will lose a destination and all its passenger traffic when an airline withdraws from such a route.

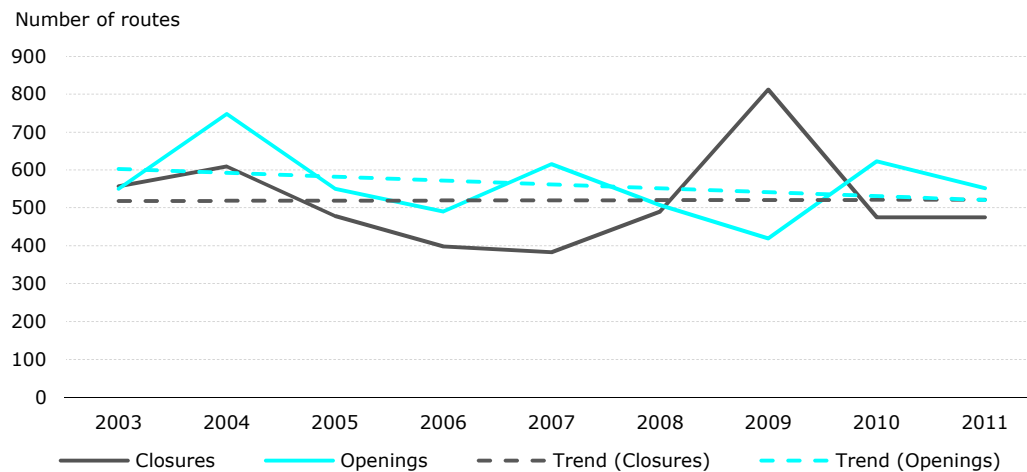
Both the absolute and the relative developments in switching patterns are better explained by examining hub and point-to-point carriers separately as their development has been very different.

Hub carriers

Hub carriers have been under pressure from point-to-point carriers,³⁴ resulting in only a slight increase in the number of routes offered during 2002-2011. Therefore, the significant growth in capacity in 2002-2011 described above cannot be attributed to hub carriers, cf. Figure 3.5.

³⁴ European hub carriers also face increasing inter-continental competition from Middle East and US hubs. Since this chapter focuses on intra-European traffic, we will not cover this issue further here.

Figure 3.5 Route Openings and closures by hub carriers, 2002-2011



Note: The figures show the total number and share of intra-European scheduled routes that were opened and closed in 2002-2010. The trends are the linear trends across the period.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

There have also been a number of hub closures since 2000. This de-hubbing, caused by bankruptcies or downsizing/restructuring (cf. Table 3.1), emphasizes that hub carriers have been under pressure in the period. While such de-hubbing has been largely motivated by economic necessity rather than strategic choice, de-hubbing or scaling down of the hub operation is a threat that can be used when negotiating with airports. The financial difficulties of hub carriers can thereby constitute a credible threat to many airports – if terms are not improved, the airline may have to pull out or reduce its use of the airport.³⁵

³⁵ Research of a large number of de-hubbing cases from the EU and the US shows that on average, airports that lost a hub conceded a 20% drop in traffic after five years, cf. Redondi, R. (2009), "Is de-hubbing reversible?", Airneth Workshop, The Hague, 22 September 2009.

Table 3.1 De-hubbing in Europe since 2000

Airport	Airline	Year	Reason
London Gatwick	British Airways	2000	Downsizing/restructuring
Basel	Swissair	2001	Bankruptcy
Brussels	Sabena	2001	Bankruptcy and restart
Geneva	Swissair	2001	Bankruptcy
Zurich	Swissair	2001	Bankruptcy and restart
Nice	Air Littoral	2001	Bankruptcy
Birmingham	British Airways	2003	Downsizing/restructuring
Clermont-Ferrand	Air France	2004	Downsizing/restructuring
Glasgow	British Airways	2006	Downsizing/restructuring
Barcelona	Iberia	2007	Downsizing/restructuring
Milan Malpensa	Alitalia	2008	Downsizing/restructuring
Athens	Olympic Airlines	2009	Bankruptcy and restart
Manchester	British Midland	2009	Downsizing
Barcelona	Spanair*	2012	Bankruptcy
Budapest	Malev	2012	Bankruptcy

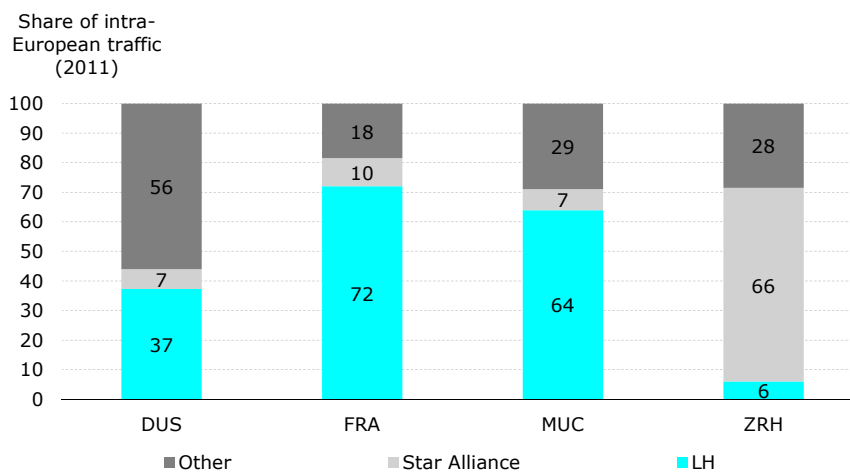
Note: *) Spanair closed their operations in Barcelona even though it was not a hub in the traditional sense.

Source: SEO Economic Research and Redondi (2009).

For hub carriers, de-hubbing is not the only way to exert pressure on hub airports. A hub carrier can open more hubs and adopt a longer term strategy of allocating additional capacity to the hub airport that best suits its needs. Such dynamics can be illustrated by the Lufthansa multi-hub case in Box 3.5.

Box 3.5 Case – Multi-hub competition

Lufthansa (LH) currently has four hubs: Frankfurt, Munich, Zurich and Dusseldorf.³⁶ Frankfurt and Munich are the biggest LH hubs and LH constitutes 72 and 64 per cent respectively of their intra-European traffic in 2011. Zurich has a different hub structure with a very small LH share and a large Star Alliance share:



Frankfurt airport is the primary Lufthansa hub. Frankfurt is by far the busiest airport in Germany with 56.4 million passengers in 2011. The close co-operation with Lufthansa has lasted for years and has resulted in, amongst other things, an exclusive LH area in Terminal 1, a LH First Class Terminal, an Airbus A380 maintenance facility to cater for LH's new A380 aircraft at Frankfurt, and an extension of Terminal 1 at the request of LH. Frankfurt is further expanding with a new Terminal 3 projected to open in 2016 with a final capacity of 25 million passengers. According to current plans, a yet to be completed Terminal 3 will primarily serve point-to-point traffic.

Munich airport became a Lufthansa hub in June 2003 after massive investment in a new terminal. 1.3 billion Euros was spent on new Terminal 2, exclusively used by Star Alliance members. The Terminal was built by a joint venture with Lufthansa (which owns 40% of Terminal 2). Lufthansa was in negotiation with many airports for a new hub. Munich guaranteed to meet Lufthansa's requirements, including 25 million capacity, minimum connecting time of 35 minutes, modern infrastructure, placement of lounges etc. The Terminal was designed to meet Lufthansa's detailed requirements.

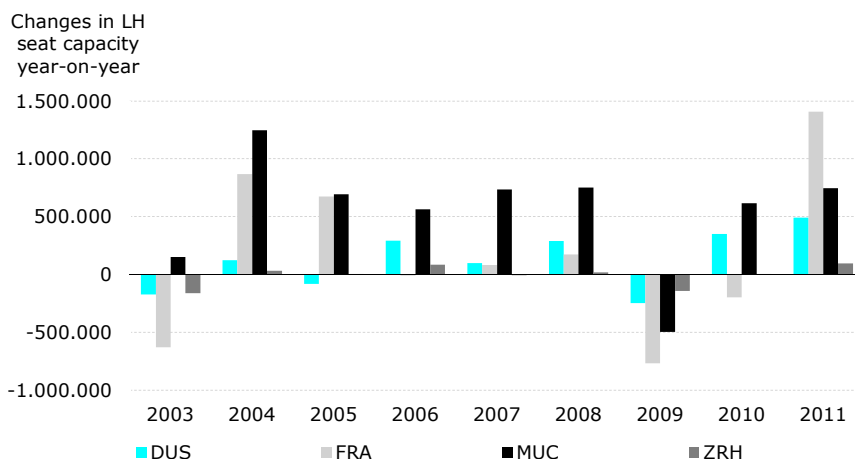
A "race" to offer better terms and facilities. The hubs compete for traffic by offering tailored infrastructure. One of the hubs describes it as a race to offer better infrastructure to Lufthansa. When Munich built Terminal 2, Frankfurt reacted by extending a terminal finger. When Frankfurt built a 4th runway, Munich launched plans to build a 3rd runway (an on-going project). There are on-going negotiations with Lufthansa to give them better terms and facilities. All the airports constantly monitor a series of key performance indicators (KPIs) that they compete on: connecting time, left behind index, delays inbound and outbound, winter service etc. For Lufthansa and partners, the most important issue is quality but charges are also in focus. MUN, FRA and ZRH

³⁶ According to Lufthansa, see <http://www.lufthansa.com/us/en/Our-hubs-in-Frankfurt-Munich-and-Zurich>. Note that for Lufthansa Cargo, Frankfurt, Munich, and Vienna are hubs, see <http://lufthansa-cargo.com/index.php?id=706>.

monitor development in charges at the other hubs and try to ensure that any charge increases do not render them uncompetitive. However, charges are considered as part of longer term strategies. For example, FRA emphasises that development of charges in future years is primarily oriented towards the need for re-financing the expansion program. Currently, there are charge increases of 2-3% pr. year. As a response to competition with Frankfurt over Lufthansa traffic, Munich airport has gradually increased the share of charges that is variable.

Hubs compete most fiercely for new traffic. When Lufthansa considers a new route it effectively puts it out to competition between a number of relevant airports which need to make an offer to obtain the route. Lufthansa, however, also considers the balance between routes at airports (e.g. there needs to be an appropriate number of feeder routes for long-haul routes). Lufthansa negotiates itself to attract feeder routes to its hubs from Star Alliance partners. Airports have aviation marketing teams that carry out market analyses and marketing initiatives. Since Lufthansa and Star Alliance partners comprise a significant share of traffic at all airports, a larger proactive effort is used towards LH.

Our calculations on intra-European capacity show that Munich has been most successful in attracting more LH traffic in most years. Frankfurt did, however, account for the largest increase in LH traffic in a year, 2011, due to the new runway and new A380 LH aircraft.



Shortly, Berlin will be another LH hub competitor. LH has announced that it will open a new hub at Willy Brandt Berlin Brandenburg Airport when it opens. The start-up of this hub will be huge with 15 A320s based at Berlin, 30 new routes from day one, and a reported \$630 million investment by LH in new equipment and facilities.

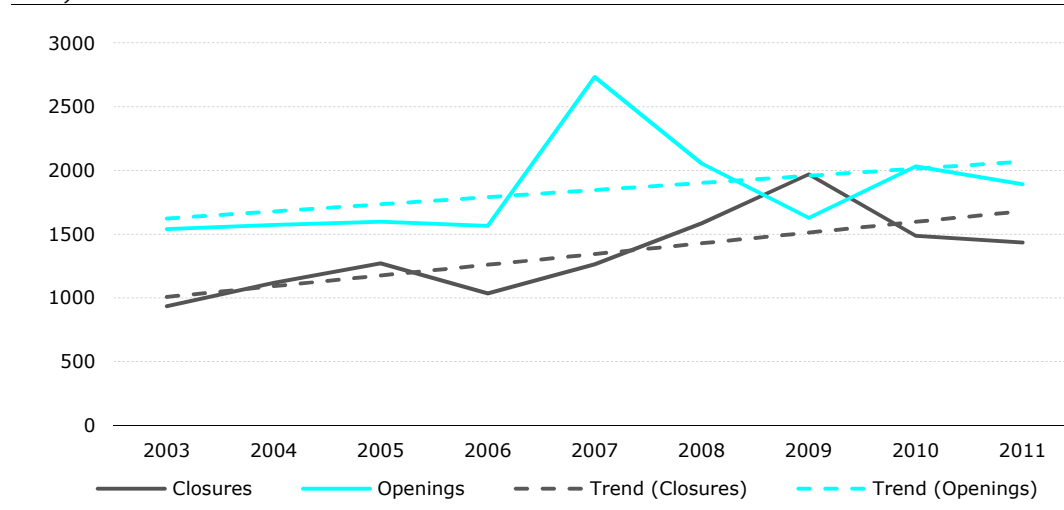
Note: The figure is based on OAG data for capacity on scheduled, intra-European departures.

Source: Interviews with Munich airport, Frankfurt airport, Routes Online website (<http://www.routesonline.com/news/36/the-hub/131918/lufthansa-announces-major-growth-at-berlin/>), and calculations by Copenhagen Economics and SEO Economic Research based on OAG data.

Point-to-point carriers

Despite the increase in the absolute number of switched routes, the relative share of switched routes has not increased over the period.³⁷ This is primarily due to the growing maturity of the market. Many of the point-to-point carriers that initially had growth rates of more than 50% per year, for example German Wings, Norwegian and Ryanair, have now established themselves in the market. They do not show the same relative switching rates as in the initial growth phase, but remain very footloose.

Figure 3.6 Route openings and closures for point-to-point carriers, 2002-2011



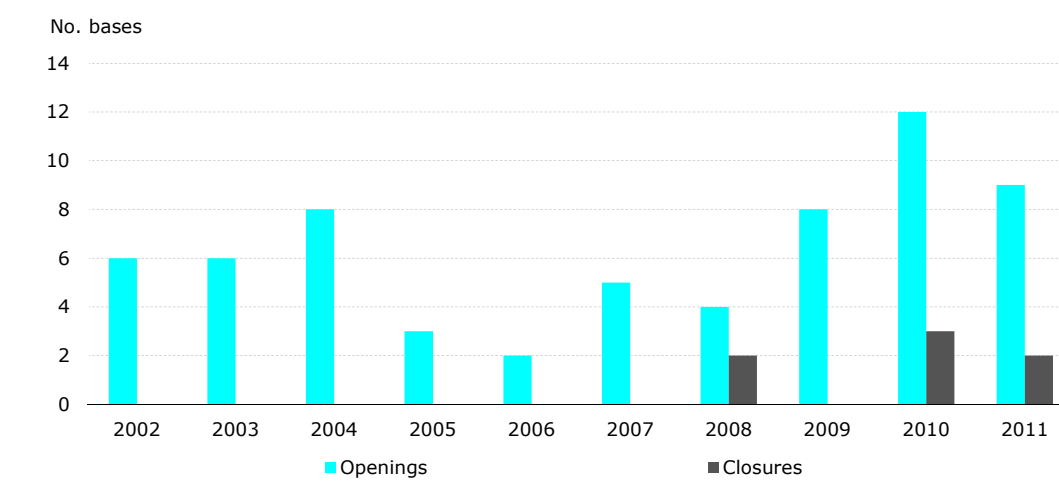
Note: The figures show the total number and share of intra-European scheduled routes that were opened and closed in 2002-2010. The trends are the linear trends across the period.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Point-to-point carriers have also been active in base switching. Figure 3.7 below considers the base openings and closures for three of the largest point-to-point carriers in Europe. It shows that after a period of massive growth, including widespread base openings up to 2007, the point-to-point carriers also started closing bases from 2008 and onwards.

³⁷ I.e. the number of switched routes and the total number of routes have both increased but the ratio switched routes/total routes has stayed roughly constant.

Figure 3.7 Base openings and closures for Ryanair, easyjet and Wizzair, 2002-2011



Note: The lists of base openings and closures for the three airlines are available in the technical annex.

Source: SEO Economic Research.

These closures were carried out in a period where other bases were opened. For point-to-point carriers closing a base is often a strategic choice that reflects higher profitability or financial and marketing support at other airports. A prominent example is Ryanair's closure of its Valencia base in 2008 due to disagreement over local marketing funds. When the local tourism minister promised to provide marketing support to Ryanair in 2010, Ryanair reopened a base at Valencia. Another example is easyJet's exit from Dortmund in 2008. The combination of strict operating hours, weakening demand and higher fuel expenses made easyJet close the base in 2008, only four years after opening it.³⁸

The ability of point to point carriers to influence their base airports is not restricted to all-or-nothing openings or closures. Their flexibility extends to adjustments of the number of aircraft at a base.³⁹ The tendency for point-to-point carriers to have bases across many countries increases the possibilities for reallocating aircraft between such bases. For example, Ryanair cut back its UK flights by 16% in the winter of 2010 due to a UK aviation tax. Ryanair announced that it would "switch these London based aircraft to other European bases where governments have scrapped tourist taxes and reduced passenger charges".⁴⁰ Another example is Wizz air's decision in April 2011 to reallocate an Airbus A320 from Cluj Airport to Tirgu Mures Transylvania Airport in response to new airport charges.⁴¹

³⁸ <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aziY22DquGLk>

³⁹ A related point that adds to the flexibility of airlines is leasing of aircraft. The more flexible the leasing arrangements of an airline (or the more aircraft are leased by an airline), the more flexible it is when it comes to route switching/closures.

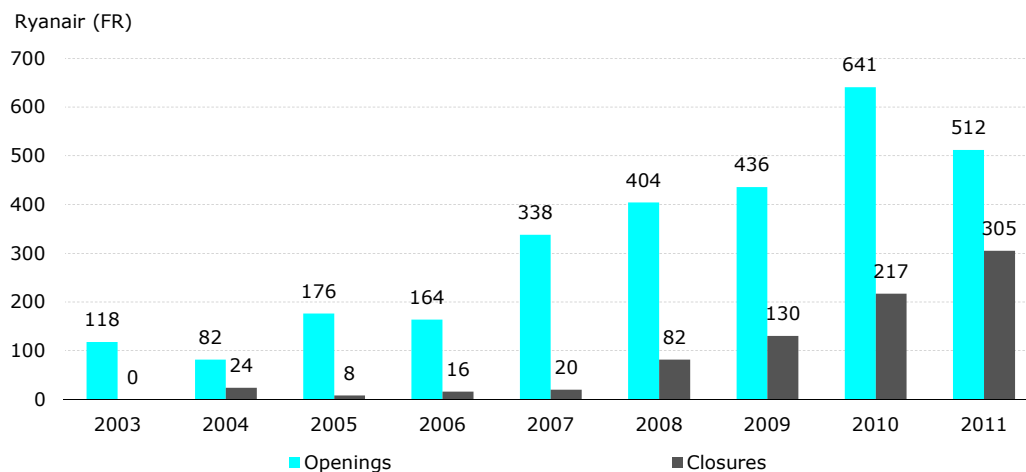
⁴⁰ Ryanair press release 29/06/2010, "Ryanair Cuts UK Winter Capacity by 16%", see <http://www.ryanair.com/en/news/ryanair-cuts-uk-winter-capacity-by-16-percent>.

⁴¹ Wizz Air press release on 14/4/2011, "Wizz Air cuts back its Cluj operations and moves flights to Tirgu Mures", see http://wizzair.com/about_us/news/#wizen076.

Ryanair appears to be the most footloose airline. A large part of the explanation lies in Ryanair's growth. From 2002 to 2011 Ryanair increased its intra-European capacity by 342%. Measured by intra-European capacity, it is now the largest single carrier operating 11% of all capacity and 16% of all routes.⁴²

In 2010 and 2011, Ryanair opened more than 500 routes per year, cf. Figure 3.8. In comparison, easyJet never opened more than 160 routes in a single year in the period considered.

Figure 3.8 Ryanair openings and closures, 2003-2011

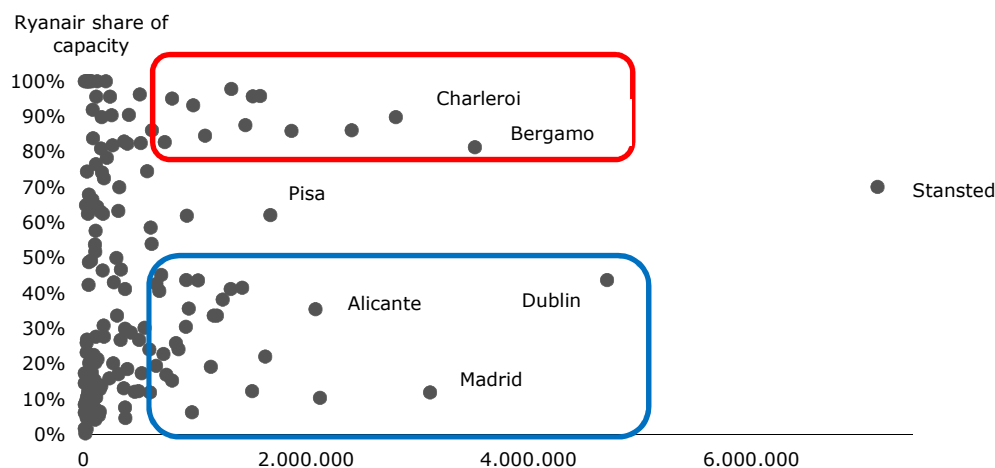


Source: Copenhagen Economics and SEO Economic Research based on OAG data.

⁴² Cf. Copenhagen Economics and SEO Economic Research based on OAG data.

Ryanair's growth has created two different groups of Ryanair airports. The first group comprises small and medium-sized airports where Ryanair accounts for the vast majority of traffic (see red area in figure below). These airports depend, almost exclusively, on Ryanair's presence, and Ryanair is in a good position to exercise considerable buyer power vis-a-vis these airports. The second group of airports comprises larger, typically main city, airports where Ryanair accounts for a smaller share of traffic (see blue area in figure below). These airports presumably face the challenge of how best to accommodate both point-to-point carriers such as Ryanair and hub carriers. The two groups are illustrated in Figure 3.9.

Figure 3.9 Ryanair's share of capacity at airports, 2011



Note: The figure displays Ryanair's scheduled, departing intra-European seat capacity compared to Ryanair's (share of) the equivalent total capacity at each of the European airports where Ryanair is present in 2011.

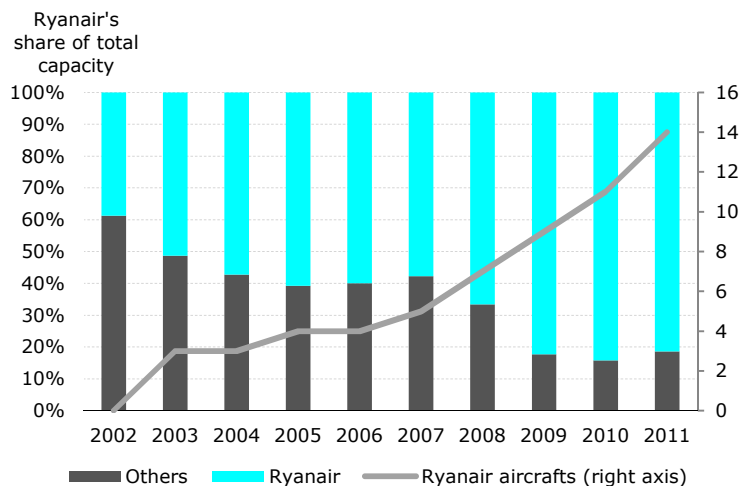
Source: Copenhagen Economics and SEO Economic Research based on OAG data.

An example of a typical Ryanair airport in the first group, where Ryanair accounts for the majority of traffic, is Milan Bergamo airport which is further described in Box 3.6.

Box 3.6 Case – Market power of dominant LCC and competition between airports in the same catchment area

Caravaggio Airport Bergamo Orio al Serio (BGY), 45 km from the centre of Milan, is the fourth busiest airport in Italy measured in terms of annual passengers (7.7 million passengers in 2010). There are many other airports in the same area, notably Milano Malpensa (19.0 million passengers) and Linate (8.3 million passengers) in the Milan area, and Verona airport (3.4 million passengers) in the Verona area.

BGY has been a base for Ryanair since 2003 and has since seen an increase in Ryanair's share of seat capacity, from around 40% in 2002 to 80% in 2011. Over the period Ryanair has steadily increased the number of aircraft based at BGY from 0 in 2002 to 14 in 2011.



Tough initial negotiations with Ryanair. Ryanair's constant goal is to find ways to reduce costs and this means that negotiations with the carrier (including those for BGY) can become tough. After extensive negotiations, Ryanair began flights from the airport in 2002 and wanted to establish a base in 2003. BGY found it easier to negotiate about the base than to find an agreement with Ryanair in the first place. Negotiations between Ryanair and BGY are now initiated on an ad hoc basis when elements of the contract need to be renewed or when Ryanair changes its practices. The presence of Ryanair at the airport helped the airport grow as more airlines looked towards BGY. This also forced BGY to develop the infrastructure at the airport. The airlines there generally do not take part in infrastructure development, but the airport is aware of the needs of its biggest customers and takes these into account.

While being an opportunity and a source of growth, BGY also sees the high volume of Ryanair traffic as something to follow with attention. As for any other airport with a large share of flights from a single airline, the situation certainly has pros and cons.

The difference in negotiating with different carriers is becoming smaller. Hub carriers are much more cost-focused in negotiations today than they were 10 years ago. BGY interprets the development as hub carriers having learned from point-to-point carriers and now having stricter requirements on services, guarantees and marketing incentives. In negotiations airlines often reveal that they are negotiating with other airports as well.

BGY is in close competition with nearby airports. Milano Malpensa, Linate, and Verona (another Ryanair destination) are geographically the closest competitors, but the airport also sees competition from other cities that can offer Ryanair a good mix of market potential and charges. These need not be other regional airports, but can also be big city airports, e.g. in Budapest or Barcelona. In Italy airport charges are decided by the government. This removes the flexibility to compete on charges with other airports. Instead, BGY tries to highlight market potential in the Milan area and the specific terminal characteristics (such as a brand new terminal, short turnaround and taxi time) at BGY. At the same time the airport tries to be flexible with e.g. marketing options when trying to attract new routes/airlines to the airport.

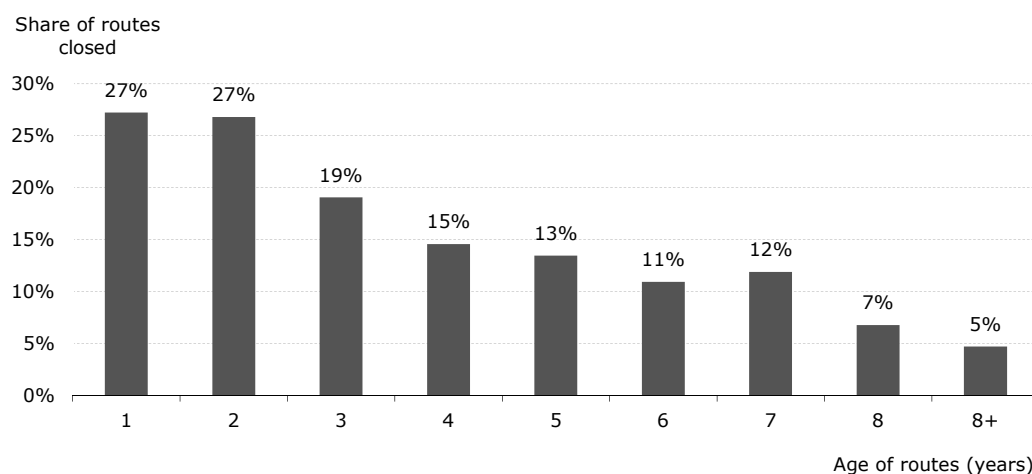
Note: There is some seasonality in the number of Ryanair aircraft over the course of the year. The figures in the text refer to the maximum number of aircraft based at Bergamo in the course of a year.

Source: Interview with Bergamo airport.

Switching by route maturity

Observed switching incorporates the normal process of experimentation with new routes. Some will quickly be found to be unprofitable and will therefore be withdrawn. So, Figure 3.10 shows routes opened within the last two years to be 5 times more likely to be closed than routes that have existed more than 8 years. However, what the figure also shows is the degree of churn in the 3-7 year category, underlining the extent to which point to point carriers are willing to call into question even well-established routes.

Figure 3.10 Closures by route maturity, 2002-2011



Note: The number of observations varies depending on the age of the route. There are eight years for which we can observe whether a route that opened last year was closed again the following year, namely for the years 2004-2011. However, there is only one year for which we can observe whether a route that has been open for more than 8 years was closed (2011). The figure displays the share over all observations for all years.

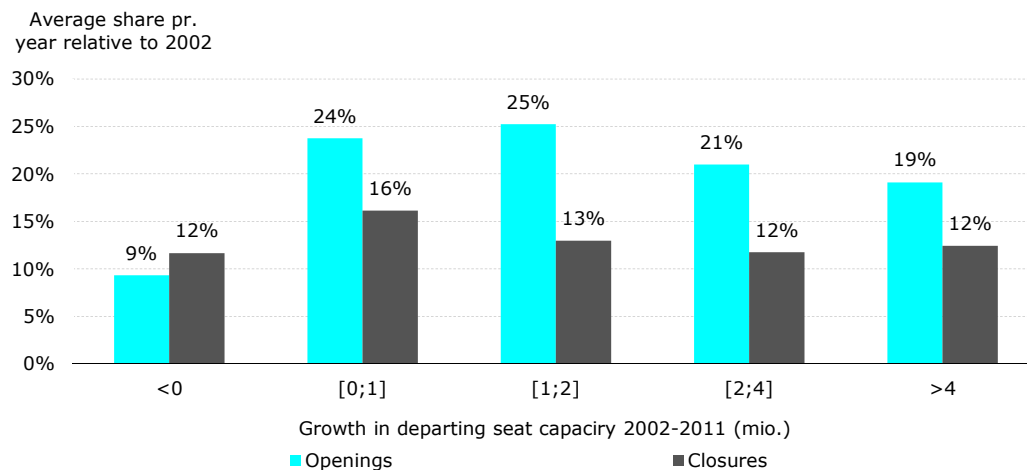
Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Switching analysed by airport size and growth record

Analysis of switching by airport type suggests that it has the potential to impact on all sizes of airport. It is not restricted to those at the smaller end of the scale, or only those with particularly high growth rates. In this section we review the number of routes offered by airports, counting a route offered by many airlines as one route from the airport's perspective.

Distinguishing airports according to their growth rates indicates that all growing airports are subject to large amounts of route switching, but that high growth is obtained through expanding capacity on existing routes as well as by attracting new routes.

Figure 3.11 Openings and closures across airport growth categories, 2002-2011

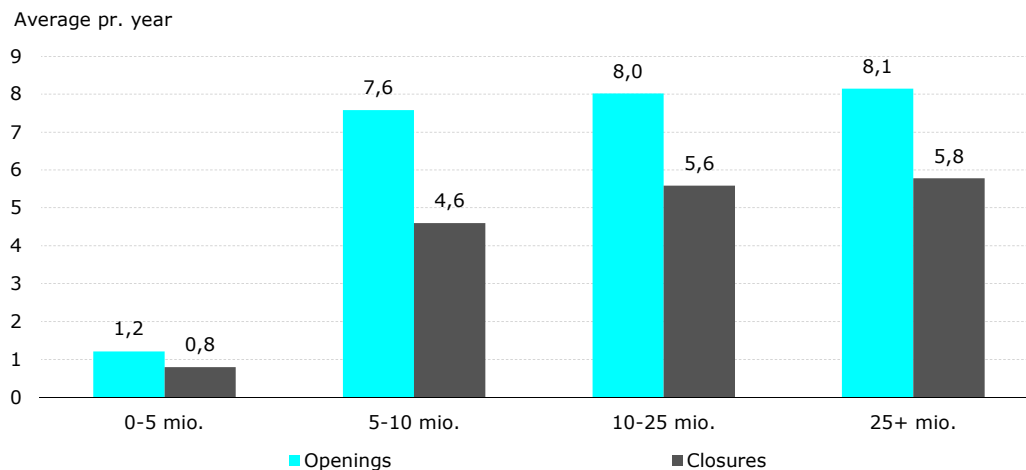


Note: Airports are categorised according to departing intra-European seats in a given year. The percentage is calculated relative to the number of routes in 2002.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Distinguishing airports by size, the number of routes opened and closed per airport is almost the same for all other than the smallest airports (less than 5 million passengers pr. year), cf. Figure 3.12. In relative terms, however, switching decreases with airport size. While at small airports (0-5 million) new unique route openings corresponded to 20 per cent of their routes pr. year, the figure for large airports (25+ million) was a smaller, though still significant, 8%.

Figure 3.12 Route openings and closures across airport sizes, 2002-2011



Note: Airports are categorised according to number of passengers in the previous year and sorted according to ACI categories. The average is calculated as the average number of openings/closures for all airports with the given category size in the year before for the period 2003-2011.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Replacement of airline capacity

Observed switching is a strong indicator of the potential for competitive pressure but not a proof of it in itself. If an airline that closes a route is replaced by an equivalent service, the airport may in principle be relatively unaffected. In practice, however, even a replacement may not be of the same ‘quality’ as the original airline, not least in the early years as it ramps up its service proposition. It may, for instance, run smaller aircraft, have a lower load factor or its passengers may make a smaller contribution to retail revenues. So, even a replacement service may adversely impact an airport’s profitability. This is obviously the more so where the service is not replaced and the airport suffers an overall decline in volume as a result of switching

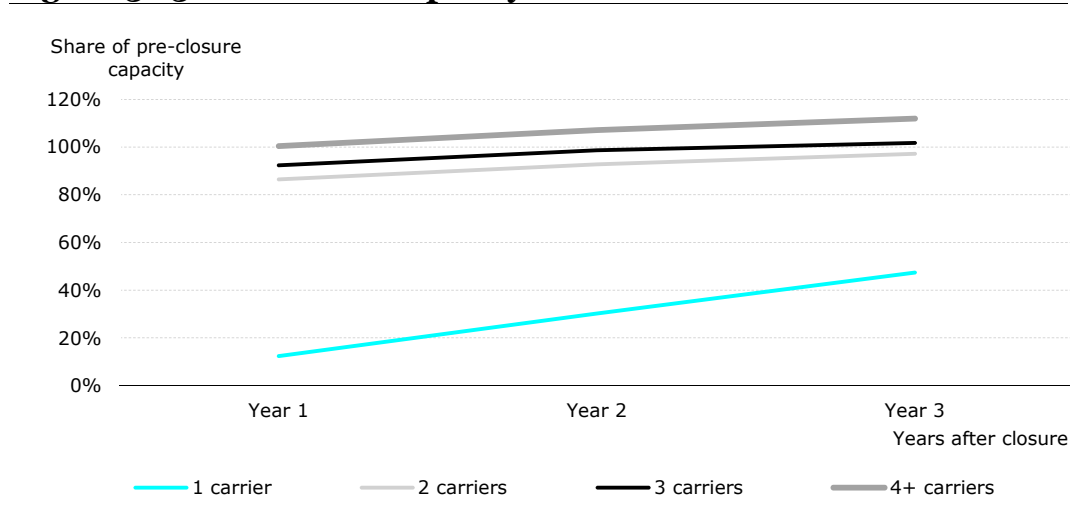
To analyse the extent to which airports do encounter losses from route closure, we have considered ‘isolated closures’, that is closures on routes for which there was not another closure on the same route two years before or after the closure. The point of considering isolated closures is to single out the routes where we can observe the effect of a closure without ‘noise’ from other closures. This gives a total of 6,298 closures from 2004 to 2009.⁴³ The sample is a broad selection of closures comprising small and large airports, small and large carriers, as well as inclusion of routes served by between one and six carriers. In the following we consider the total capacity on the route before and after one carrier closed the route.⁴⁴

⁴³ We only consider the closures where we can observe the effect two years before and after the closure which cuts off closures in the years 2002-2003 and 2010-2011 from the sample.

⁴⁴ It is difficult to define the pre-closure capacity on a route since we only have annual data. If a carrier closes a route in March 2004 the total capacity on the route will already be lower in 2004 although the year of the closure is defined to be 2005 (the first year with zero capacity). Therefore, we define the pre-closure capacity to be the maximum of the capacity in the two years before the closure.

The total capacity offered after a closure depends heavily on the number of carriers serving the route before the closure. For unique routes, i.e. routes served only by one carrier, only 12% of pre-closure capacity is offered the year after the closure. For routes served by 2, 3, and 4 carriers the figures are 86%, 92%, and 100%. In the subsequent years, there is some catch-up, especially for previously unique routes, cf. Figure 3.13.

Figure 3.13 Total route capacity after closure



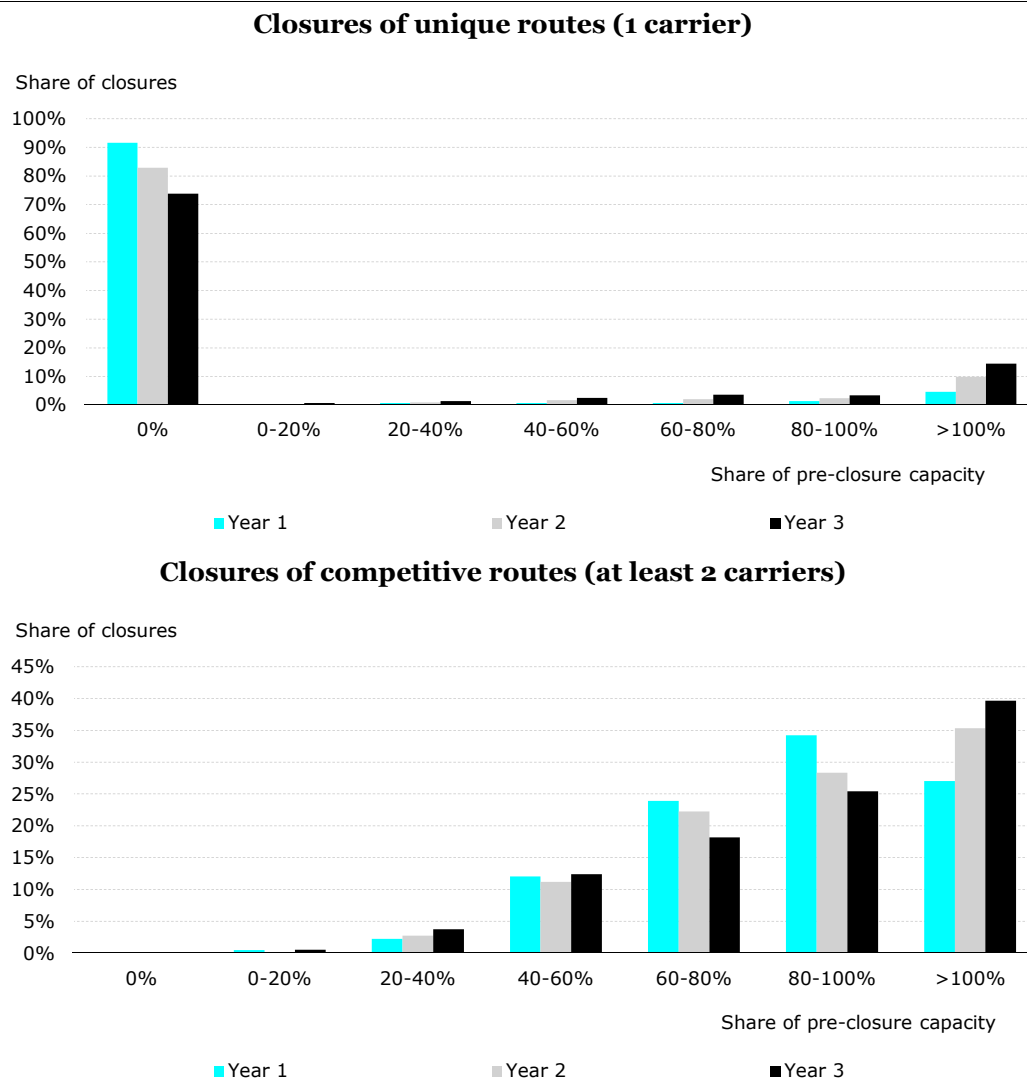
Note: The figures show the average of the total route capacity, i.e. the sum of seat capacities offered by all carriers serving a route between the same origin and destination, relative to the pre-closure capacity following one carrier's closure of the route. The figure includes all isolated closures, i.e. all closures of routes for which there was no other closure two year before or after the closure, in the years 2004-2009. The pre-closure capacity is defined as the maximum of the total route capacity in the two years before the closure.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

The figure shows that the closure of a unique route inflicts significant harm on an airport. Three years after closure only 47% of the original capacity is on average retained. For competitive routes, the loss is still present for routes that were served by less than four carriers, but the loss is much smaller. It should be noted that these figures are conservative as there has been an overall growth in the market in the intervening period which means that the capacity should have been growing irrespective of the closure.

A fuller account of the impacts is given in Figure 3.14. More than 90% of closed unique routes are not operated in the year following the closure. Moreover, for such routes the catch-up is limited; three years after the closure only 14% of the routes have regained their pre-closure capacity. For routes served by more than one airline, the initial loss of capacity is not as large and catch-up is faster, but the loss is still present. Three years after the closure only 40% of such routes are back to their pre-closure capacity levels.

Figure 3.14 Distribution of shares of pre-closure capacity after closure



Note: The figures show the distribution of the total route capacity, i.e. the sum of seat capacities offered by all carriers serving a route between the same origin and destination, relative to the pre-closure capacity following one carrier's closure of the route. The figure includes all isolated closures, i.e. all closures of routes for which there was no other closure two years before or after the closure, in the years 2004-2009. The pre-closure capacity is defined as the maximum of the total route capacity in the two years before the closure.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

3.4 Airline buyer power

The existence of airline buyer power may strengthen the competitive constraints on an airport. Buyer power generally exists where one or several buyers have a strong negotiating position with their suppliers, which may constrain the market power of the supplier.

Buyer power tends to be pro-competitive as mentioned in a recent study on buyer power: *“in the case of a large airport, if sufficient buyer power is present, the airline(s) concerned may be able to counteract to some extent an attempt by the airport to raise prices. In turn, this can mean that the regulator does not need to introduce formal price regulation of airport charges”*.⁴⁵

Buyer power has a number of aspects. One important one is how much of the supplier’s (the airport’s) business is accounted for by the customer (the airline). It is obvious that a large airline is in a better position to achieve buyer power than a smaller one. The larger the proportion of the airport’s business accounted for by the airline the larger the potential effect on the airport’s revenue if it downsizes its operations at the airport.

Across all airports with more than one million passengers, 84% of airports cater for an airline that comprises more than 40% of the airport’s capacity, cf. Table 3.2. This proportion is much less for airlines with shares of more than 60% or 80%. The second part of Table 3.2 displays the same figures for total intra-European capacity, i.e. the share of total capacity where one airline accounts for more than 40, 60 or 80% of an individual airport’s capacity. Both the number of airports exposed to these very high dependencies to individual airlines and these airports’ share of total capacity have been decreasing since 2002. The figures also indicate that high dependencies are more a feature of smaller airports because the figures for share of total airports are larger than the figures for share of total capacity.

Table 3.2 Share of airports and capacity with a large airline, 2002 and 2011

Capacity of largest airline at airport	Share of total airport 2002	Share of total airport 2011	Share of total capacity 2002	Share of total capacity 2011
More than 40%	91%	84%	80%	68%
More than 60%	69%	59%	35%	19%
More than 80%	50%	43%	6%	6%

Note: The numbers in this table is based on data for all European airports with traffic in the two years (close to 600 airports). In Chapter 6, we present the same indicator for the 250 largest airports in Europe by size category.

Source: Copenhagen Economics and SEO Economic Research based on OAG data.

Nevertheless, a large number of airports clearly have a significant degree of dependence on a single carrier. How far such a carrier will be able to exercise the potential buyer power this gives it, depends on the extent to which it has a real alternative to the current air-

⁴⁵ For further details on the existence of buyer power in the airport sector, we refer to Oxera (2012), “Buyer power and its role in regulated transport sectors”, report prepared for the Dutch competition authority, NMa 8 February 2012.

port. Consequently, buyer power cannot be analysed without also paying attention to the ability to switch. It is not just about scaling down operations but the threat of doing so.

This is the importance of the analysis in this chapter which has demonstrated the flexibility of airline business models, particularly point to point but increasingly hub carriers as well. The increased ability of, and propensity for, airlines to switch capacity between airports and the large amount of actual switching observed, shows how the potential for buyer power in this industry is becoming a reality. In addition, the results above on replacement of airline capacity indicate buyer power is more likely for small airports, those that may only support one airline per route, and airports dominated by unique routes.

A further requirement for buyer power is that the seller (the airport) must have few (or no) outside options. That is, if the airline decides to exercise its threat and to downscale its operations at the airport there will be an adverse financial impact on the airport. The fixed cost nature of the airport business and its exposure to the loss of both aeronautical and retail revenues makes it particularly vulnerable to loss if it is not able to replace the capacity withdrawn by attracting comparable capacity and passengers from another airline. We have seen above that airports generally find it difficult to effect a one-for-one replacement when a route is closed with associated loss of traffic, implying that airports generally do not have outside options for all their routes. This again shows the potential for buyer power in the industry.

There are also some generic factors at work which strengthen airline buyer power. The large point-to-point carriers have not only become very experienced in negotiating with airports but, through the multiplicity of negotiations they conduct, they will have very good insight into the bargaining strength of individual airports in a way that airports with fewer options will not.⁴⁶ In particular, smaller airports do not negotiate with the same frequency and do not have the same (quality of) information about the terms the carriers can obtain elsewhere.

The above considerations establish some general presumptions about both the potential for airline buyer power and its likely existence in relation to many airports. Whether it exists in practice, and to what extent, will depend on the individual circumstances of the airport, the airline, and the routes served.

In its guidelines on assessment of market power, the UK Office of Fair Trading (OFT) states that buyer power is ‘most commonly found in industries where buyers and suppliers negotiate, in which case buyer power can be thought of as the degree of bargaining strength in negotiations’.⁴⁷

The OFT also refers to four factors that might contribute to buyer power:

- The buyer is well-informed about alternative sources of supply and could readily, and at little cost to itself, switch substantial purchases from one supplier to another while continuing to meet its needs.

⁴⁶ Likewise, multi-hub and multi-base airlines can use their experience from other airport negotiations when negotiating with hubs/bases.

⁴⁷ Cf. OFT (2004).

- The buyer could commence production of the item itself or ‘sponsor’ new entry by another supplier (e.g. through a long-term contract) relatively quickly and without incurring substantial sunk costs.
- The buyer is an important outlet for the seller (i.e. the seller would be willing to cede better terms to the buyer in order to retain the opportunity to sell to that buyer).
- The buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender (which Ryanair has actually done in practice).

These points emphasise that the assessment of buyer power must necessarily be carried out on a case by case basis. But as the analysis in this chapter has shown they also indicate features which are now common in the European aviation sector and create some presumption that airline buyer power is characteristic of many airline–airport relationships.

Chapter 4

More passenger choice

The previous chapter looked at airline switching and showed how airlines have become more footloose. This chapter looks at passenger choice and demonstrates how passenger choice has increased over the past 10 years, and that a large proportion of passengers have a real choice between competing airports.

Main findings

- **Large geographic overlap:** Two-thirds (63%) of European citizens are within two hours' drive of at least two airports. This gives scope for airports to compete for passengers.
- **More choice for local departing passengers:** Looking at actual route offerings, around 50% of all local departing passengers on intra-European routes have a choice of more than one reasonably attractive substitute and the level of choice has increased since 2002. All of the ten largest European airports are exposed to greater passenger choice in 2011 compared to 2002. For the smaller airports choice has also increased. Moreover, the development of high-speed rail has increased access to airports and competition between them by expanding local catchment areas.
- **More choice for transfer passengers:** Between 2002 and 2011, the share of transfer passengers with a realistic transfer alternative increased from 57% to 63%. In addition, the share of transfer passengers having the option of at least one direct alternative increased from 46% in 2002 to 50% 2011.
- **More price sensitive passengers:** Driven by low airfares and increased supply of new routes, the leisure segment has generally recorded the highest traffic growth over the past 10-15 years. Leisure passengers are more price-sensitive and less time-sensitive than business passengers. On average, leisure passengers are at least twice as price sensitive and less than half as time sensitive as business passengers.
- **Increased market transparency:** The internet revolutionised the way airline tickets are distributed. The internet enables consumers quickly to scan the market and compare offerings from multiple suppliers. Today, about 50% of all leisure tickets and about 25% of all business tickets are sold online. Empirical evidence suggests that passengers booking airline tickets online are about twice as price sensitive as other passengers.
- Some passengers substitute one destination for another: Holiday makers are willing to switch destination. Airports in Spain for example, may compete with airports in Greece or Italy.

Overall, we show that passengers in 2011 had more choice of airport than they had in 2002. With the rapid increase of new routes, a large share of passengers at European airports have a choice. These changes have both flowed from, and stimulated further, airport competition for passengers and the increased competition between destinations for them.

In section 4.1 we describe how passengers are able to switch between airports. In section 4.2 we assess the propensity of passengers to switch. In section 4.3 we present the available evidence on actual switching by European passengers over the past 10 years.

4.1 Ability to switch

The ability of passengers to switch to alternative airports or to other modes of transport exposes individual airports to competition. It will vary airport by airport, but the more and better the alternatives the greater the intensity of competition generally as airports vie for customers.

Types of switching

Both point-to-point and transfer passengers have the ability to switch between airports but their range of options differs. Point-to-point passengers can switch in a variety of ways.

- Passengers can switch to other airports in their departing region. For example, people around Brussels have several different airports to choose from depending on destination.
- Passengers can switch between airports in the destination region. For example, inbound tourists travelling to London may consider most of the five London airports as good substitutes.
- Passengers may consider substituting one destination for a different destination. For example, a North European holiday maker may be flexible as between sun resorts in, say, Turkey or Spain. This may affect choice of departing airport as well as having implications for the destination airport.
- Passengers may, especially for certain types of short haul travel, substitute air travel for other transport modes. For example, air travel from Brussels to London faces competition from the Eurostar train connection.

Transfer passengers have all these switching possibilities but, in addition, are also able to choose between connections at different hub airports.⁴⁸

We have undertaken a number of quantitative analyses of how switching possibilities have evolved over time. We first present our results on point-to-point passengers and then on the development of switching possibilities for transfer passengers. These show that passengers in 2011 had both a significant level of choice of airport, and more than they had in 2002.

Point-to-point passengers

The existence of alternative airports within a reasonable distance is one measure of passenger choice. It certainly indicates the potential for competition. However, from the passenger's perspective there may not be available now, as opposed to in the future, sufficient overlap of routes as to constitute an effective choice. We have therefore undertaken three separate analyses comparing 2011 with 2002 data better to corroborate the trend that all indicate of increased passenger choice.

The first analysis assesses the potential for competition. We use the standard assumption that point-to-point passengers can switch so long as an alternative airport can be found within 'a normal transport time'.

⁴⁸ Leisure passengers can also substitute to other leisure activities that do not include flying, e.g. cruise ships from home port. Business passengers may also substitute to other forms of meeting activities such as video conferencing.

The European Commission⁴⁹ notes that the relevant time to consider with regard to determining the catchment area is not the time it takes to transfer from an airport to the destination city, but the difference in the time between transferring to the city from one airport and another candidate substitute airport. Based on material from questionnaires to 43 airports relevant in the Ryanair-Aer Lingus case, the Commission finds that the "catchment area" that airports present to airlines is at least either 100 km or 1 hour driving time. In most instances, airports argue that their catchment area exceeds these limits, sometimes considerably.

The Commission considers, therefore, that 100km or 1 hour driving time is a conservative estimate of an airport's typical minimum catchment area. It should be noted that the Commission uses the 100km/1 hour-"rule" only as a first "proxy" and that catchment areas are determined case by case. In its assessments in the Ryanair-Aer Lingus case, the Commission concludes for example that Frankfurt am Main and Frankfurt/Hahn airports are part of the same relevant market, even though Frankfurt/Hahn is 85 minutes away from Frankfurt city centre.⁵⁰ The Commission notes that studies conducted by the UK Civil Aviation Authority suggest that the catchment area of airports in the United Kingdom extends up to 2 hours driving time.⁵¹ We also note that for business passengers one hour may be more appropriate than two hours. On the other hand, for some leisure passengers more than two hours may be appropriate.

Based on the established practices of both airports and regulatory authorities, the European Commission, the Competition Commission and the Civil Aviation Authority (the two latter both from the UK), we have taken a radius of a two hours' driving time.

The mere presence of another airport within two hours' drive may not in itself represent effective choice for all travellers because the airports may not offer similar connections. However, as long as competing routes can be established, the presence of a potential competitor may be sufficient to exert competitive pressure on neighbouring airports.

The second analysis takes account of the current route overlap between airports. Where alternative airports with overlapping catchment areas offer routes to the same destinations they are in a better position to compete for the same local departing passengers, so exerting more of a competitive constraint on one another than where the overlap is simply one of geographic proximity.

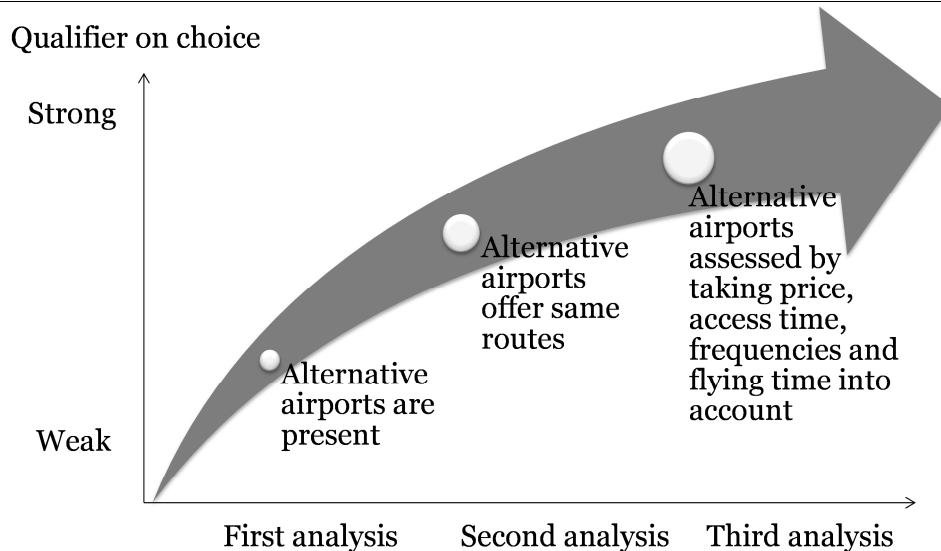
Finally, the third analysis is the most comprehensive, taking the analysis a stage further than simple route overlap by considering how far the route offerings are comparable in terms of airfares, frequency and flying time. This analysis provides a snapshot of the competition at a given point in time for the existing airfare structures, route networks and frequencies of air service. These analyses are summarised in Figure 4.1.

⁴⁹ See European Commission M.4439 Ryanair/Air Lingus, page 22-24.

⁵⁰ See European Commission M.4439 Ryanair/Air Lingus, page 53, paragraph 211.

⁵¹ See CAA (2006) Airport price control review – Initial proposals for Heathrow, Gatwick, Stansted.

Figure 4.1 Three analyses of point-to-point passengers' ability to switch



Source: Copenhagen Economics

An important caveat is that none of the three analyses, because they are based on driving time by car, capture the impact of high speed rail developments on airport catchment areas. As described later in this chapter, high speed rail connections are being developed in many parts of Europe. The result is in many cases to extend airport catchment areas, which comes on top of the competitive pressures captured by the three analyses. They also do not capture the impact over time of major road improvements as they are based on the current road network, not the road network in 2002.

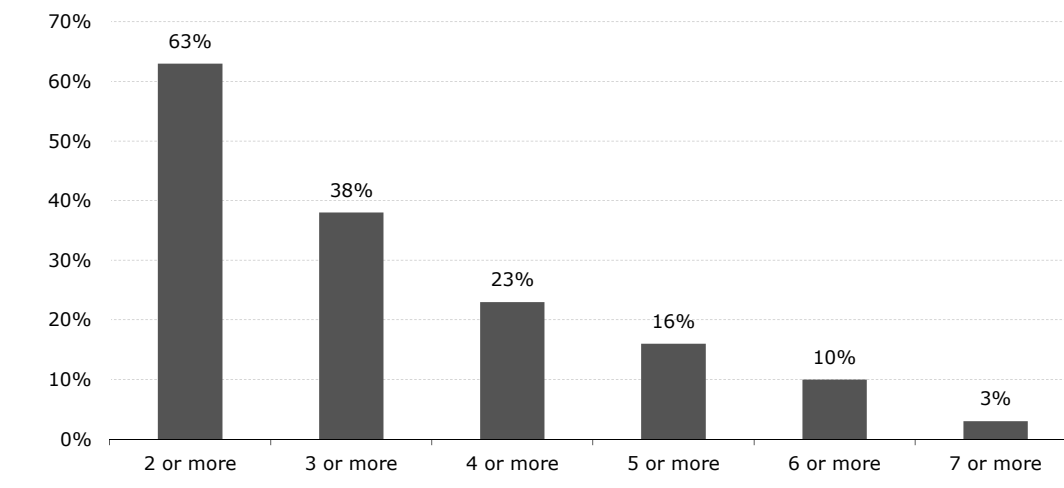
Geographic overlap

The first analysis looks at the presence of alternative airports within two hours' driving time. To limit the comparison to currently fairly similar airports, we have included airports with more than 1 million annual departing seats.⁵² This is probably quite a conservative assumption as today's sub-1 million airports will often have the capability to grow to more significant size, often in relatively short periods of time.

Nevertheless, the analysis shows significant potential for competition between airports. Specifically, it appears that close to two-thirds (63%) of European citizens are within two hours' drive of at least two airports. More than one-third (38%) are within reach of three airports; and one in four (23%) are within two hours' drive of four or more airports, cf. Figure 4.2.

⁵² It should be noted that 1 million passengers is a reasonably high threshold and if a lower threshold was used the choice would be greater.

Figure 4.2 Number of airports within a radius of two hours' drive



Note: The numbers are based on number of airports with more than 1 million departing seats per year within a radius of a two hours' drive.

Source: SEO analysis.

Route overlap

The second analysis goes beyond the potential competition represented by the geographic proximity of an alternative airport to assess the degree to which alternative airports offer connections which currently can be regarded as substitutes by passengers.⁵³

We have compared the route overlaps that apply to eight large European airports, selected because of the presence of several airports within a two hour drive time. We compare the overlap for all airports within a two hour drive and repeat the analysis for both 2002 and 2011.⁵⁴ The degree of route overlap has specifically been calculated as the share of destinations that are also offered from another airport within a radius of a two hour drive.

A two hour driving distance between two airports implicitly assumes a certain degree of geographic overlap. In terms of geographical area the overlap is close to 40% of the overall catchment area, and depending on population density this may be more or less in terms of share of population in the overlap, cf. the 39.1% in Figure 4.3. We note that some passengers will be located more than two hours away from any airport, and therefore the two hour circle underestimates the actual competition for passengers. As a conservative assumption, the two hours' distance and the implicit 39.1% geographic overlap has been applied in the route overlap analysis. Since airports are unable to price discriminate with-

⁵³ To some passengers, an alternative airport will only be a real alternative if there is a connection to exactly the same destination. This will typically be the case for business passengers going to a meeting or passengers visiting friends or relatives. For holiday passengers, however, an alternative airport may be a real alternative even if there are only connections to other destinations. Here the key question is whether these connections are attractive holiday destinations.

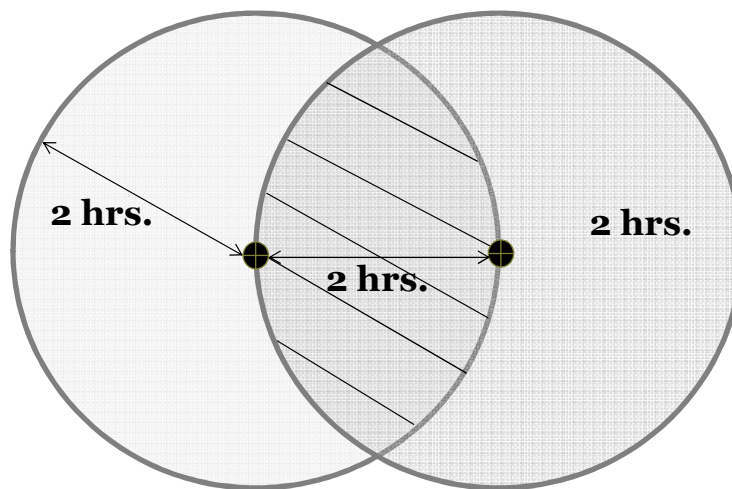
⁵⁴ The analysis covers airports within two hours' drive of eight airports chosen to include the four large hubs plus two airports in large catchment areas with overlaps (BRU, DUS) plus one airport with fewer overlaps (MPX) plus one airport with little overlap (FCO). The analysis identifies all airports located within two hours of these airports. This results in eight distinct sets of airports covering 57 airports in total, for which we have analysed the route overlap in 2002 and 2011. Some airports, e.g. Eindhoven, overlap with several airports, in this case with both AMS and DUS.

in the overlap area, the competition in the overlap (the 39.1%) is potent for the whole of the 100% as pointed out by Starkie (2002).

Figure 4.3 Overlapping catchment area for two airports two hours apart

Two airports
2 hours apart:

Overlap = 39.1%
of area of circle



Note: The area of the overlap (the shaded area) relative to the catchment area of a 2 hour drive can be calculated mathematically as 39.1%. Two airports three hours apart will have an overlapping area of 14.4%.

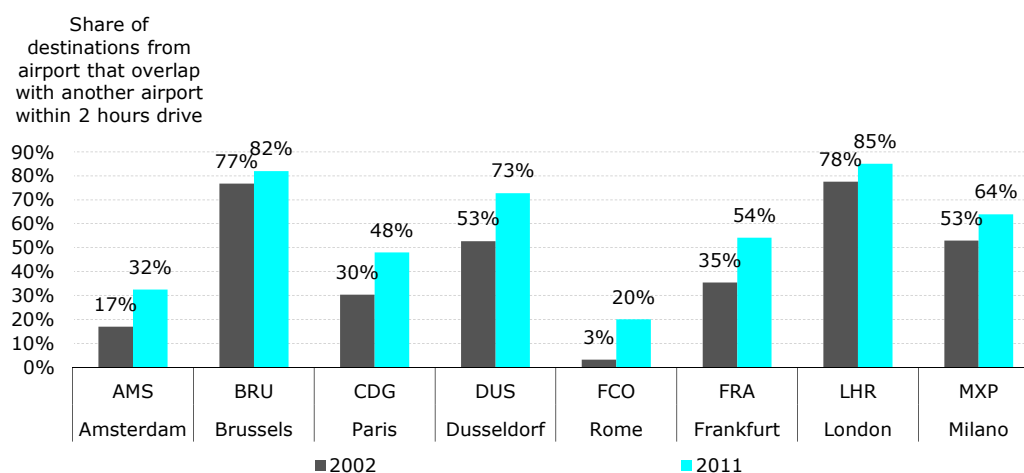
Source: Copenhagen Economics

The analysis shows significant competition between airports on the basis of route overlaps. Specifically, it shows that the route overlap is high and that over 50% of the destinations served at the largest airport are also served from one or more airports around it. This holds for many of the analysed airports. The analysis also shows that the route overlap has increased between 2002 and 2011 for all eight airports, cf. Figure 4.4.

The degree of route overlap varies between the eight airports⁵⁵. For example, 82% of European destinations served from Brussels in 2011 were also served by one or more airports within two hours' drive, whereas the figure for Paris Charles de Gaulle was 48% overlap, reflecting partly that the other Paris airports are so much smaller, cf. Figure 4.4. The diagram shows the overlap for the largest airport in the group. The smaller airports in each of the regions generally have higher overlaps, some even 100%.

⁵⁵ It should be mentioned that the results are dependent on the assumption that only airports within two hours' driving time are considered as overlaps. With longer distances the degree of overlap will increase. For example the case of Amsterdam Schiphol is very sensitive to the two hours assumption, and the overlap percentages for Amsterdam will be significantly higher with a slightly longer driving distance, since this will include the airports of Brussels (2 hours and 2 minutes away) and Düsseldorf (2 hours and 18 minutes away). This illustrates the weakness of the "circle drawing" approach of setting a specific distance as the limit for the overlap.

Figure 4.4 Share of European destinations with overlap at another nearby airport



Note: The route overlap analyses are made for eight airports in total. These are chosen to include four large hubs, two airports in large catchment areas with overlaps (BRU, DUS), one airport with fewer overlaps (MPX) and one airport with little overlap (FCO). The analysis identifies all airports located within 2 hours from these airports. This result in eight distinct sets of airports, for which we have analysed the route overlap in 2002 and 2011 comprising a total of 57 airports, with between 2 and 15 airports in each set.

Source: SEO Economic Research analysis.

While this analysis focuses on a selection of airports, mainly in densely populated areas, they do cover a significant proportion of European air traffic (22% of all passengers in 2010). It shows a clear trend towards greater overlap and therefore more passenger choice and airport competition.

Clearly, the results are influenced by the choice of a two hour drive time by car which, on the basis of regulatory studies, exceeds what can be assumed for business travellers. On the other hand, the analysis may understate the degrees of freedom available to leisure passengers particularly. While business passengers or passengers visiting friends or relatives will be significantly constrained as to destination (though not necessarily destination airport) many holiday passengers may regard different destinations as alternatives which could increase the choice of originating airport available to them beyond that indicated by this analysis of route overlaps. In addition, many of the airports analysed above are well-connected with high-speed rail and has a high-speed rail station at the airport (e.g. in Amsterdam and Paris). Since the analysis is done based on travel time by car this underestimates the catchment area and thereby the route overlap for these airports, since more passengers can reach the airport within two hours if they are willing to use the rail connection instead of driving a car to the airport.

4.2 Route and quality overlap

Our third analysis makes use of passenger choice modelling better to reflect the quality of the geographic and route overlaps by taking the following elements into account: distance

to the departure airport⁵⁶ and the price and quality of the connection offered, including airfare (on local departures), frequency and flying time. Two separate analyses are performed – one for local departing passengers on non-stop flights (so-called origin-destination market) – and one for transfer passengers on one-stop connections.

Analysis of passenger choice for local departures (OD market)

The local departure analysis includes the top 250 European airports representing 98% of total seats offered, and below we present the results for intra-European travel. For each of these airports, *SEO Economic Research* have calculated the share of seats offered from the airport with at least one ‘reasonably attractive alternative’ available from another airport. To identify the available ‘reasonably attractive alternative’, a quality indicator is defined taking into account the access costs and time for getting from the centre of each defined region to each airport, the frequencies in terms of the number of weekly departures by airline and destination airport, the travel time by air to that destination and the (estimated) airfares. The quality indicator is based on the results from a passenger choice model.⁵⁷

The analysis of passenger choice shows that on average around half of local departing passengers on intra-European routes have a choice of more than one reasonably attractive substitute. This analysis, broken down into the four ACI categories of airport by size⁵⁸, also confirms this picture across size categories and confirms the trend towards improved choice for European passengers. It shows that the share of passengers with the choice of a comparable service from different airports has increased.

Looking across airports in 2011, we find that for category 1 airports (> 25 million passengers), representing the ten largest airports in Europe, on average 44% of passengers have a choice of a ‘reasonably attractive alternative’.

Looking at the change over time in category 1, the share of passengers with choice has – on average - increased from 36% to 44% at the ten largest European airports and although the size of the increase varies from airport to airport, the tendency for increased choice is affecting all 10 airports in the category.

For the other three airport categories, the average proportion of passengers with choice is even higher, with the highest share (57%) in categories 3 and 4. We see that the choice indicator is increasing in all categories reflecting the general improvements in the route offerings from these airports, cf. Table 4.1. We also note from the analysis that – on average - the increase in the choice indicator is more pronounced in categories 1 and 2, where

⁵⁶ The analysis uses access by car and takes both access costs and access time into account.

⁵⁷ As with all models the passenger choice model applied for this analysis simplifying assumptions are made. We have tested the sensitivity of the choice of key parameters and found that comparing over the two years we find the same pronounced trend of increasing competition regardless of choice of parameters. Our results are also fairly stable across all airports and the model results are found to be consistent with other evidence. To avoid overestimating the degree of choice, only airports within a range of 200 kilometres are considered a relevant choice and only so to the extent that the alternative airport offers an attractive connection. The details of the analysis are set out in the technical annex.

⁵⁸ The four categories are: Category 1: airports with more than 25 million passengers per year; Category 2: airports with between 10 and 25 million passengers; Category 3: airports with between 5 and 10 million passengers; Category 4: airports with less than 5 million passengers per year.

there was initially a lower share of passengers with choice, and smaller (again, on average) in categories 3 and 4, where there was already greater choice in 2002.

Table 4.1 Development in passenger choice, 2002-2011

	Total number of airports	Avg. share of passengers at airports in category with choice		Number of airports with increased choice	Percentage of airports in category with increased choice
		2002	2011		
ACI Category 1	10	36%	44%	10	100%
ACI Category 2	20	35%	43%	19	95%
ACI Category 3	32	50%	57%	28	88%
ACI Category 4	188	51%	57%	125	66%

Note: The four ACI categories are based on number of passengers Analysis covers intra-European destinations for the 250 largest airports in Europe.

Source: Copenhagen Economics based on SEO Economic Research choice model analysis.

All in all, this points to an overall high degree of passenger choice across most airports in Europe, regardless of size categories, and with a clear and consistent trend for increasing choice over time. We note that the indicators used underestimate the degree of choice since we do not include the additional choice related to the possible substitutability between destination airports.

Transfer passengers

European transfer passengers also have more choice, including from outside Europe where there has been significant growth of hub capability in recent years. There has also been a significant growth of direct alternatives. European hubs therefore face increased competition on two fronts – greater hub on hub competition, and more scope for direct services with no transfer involved.

Looking first at competition between hubs, we have analysed whether the passengers of 16 European hub airports⁵⁹, competing with up to 60 hubs around the world, had more ‘realistic available one-stop connections’ to choose from in 2011 than in 2002.

Our approach to the analysis is rather conservative. It is likely to underestimate the real choice available to passengers because we have applied three requirements to the definition of ‘realistic alternatives’.

⁵⁹ The 16 hub airports are London Heathrow (LHR), Paris Charles de Gaulle (CDG), Frankfurt (FRA), Amsterdam (AMS), Madrid (MAD), Munich (MUC), Brussels (BRU), Rome Fiumicino (FCO), Zürich (ZRH), Copenhagen (CPH), Lisbon (LIS), Helsinki (HEL), Vienna (VIE), Prague (PRG), Budapest (BUD) and Warsaw (WAW).

- *Firstly*, we have required that the alternative is no more than 30% more costly than the best option in terms of time for the total journey.⁶⁰ With a higher threshold, for example 40% or 50%, the number of ‘realistic alternatives’ would be higher⁶¹.
- *Secondly*, we have excluded options with more than one stop. In practice, passengers often have the opportunity to save money if they are prepared for a two-stop connection. We do not take such options into account.
- *Thirdly*, we have only looked at airport-pairs where there is a hub route in 2002 and/or 2011, so where a connection via at least one European hub was possible. Direct routes from the feeder destinations, be they existing or potential, have a further disciplining effect on hubs.

There is no objective or standard threshold for how much more time consuming an alternative hub route needs to be before it becomes an unattractive option. We note that airfares should be taken into account as well, and we should set the threshold so as to allow for sufficiently price competition to take place. The 30% threshold has been chosen to reflect this balance, such that alternative routes that consume up to 30% more time, are considered as alternatives, where a lower airfare might compensate for the longer journey time. This can be illustrated by considering a 10 hour flight, where we have considered that an alternative routing which takes up to 3 hours longer (+30%) would be considered for certain passenger types if airfares were attractive.

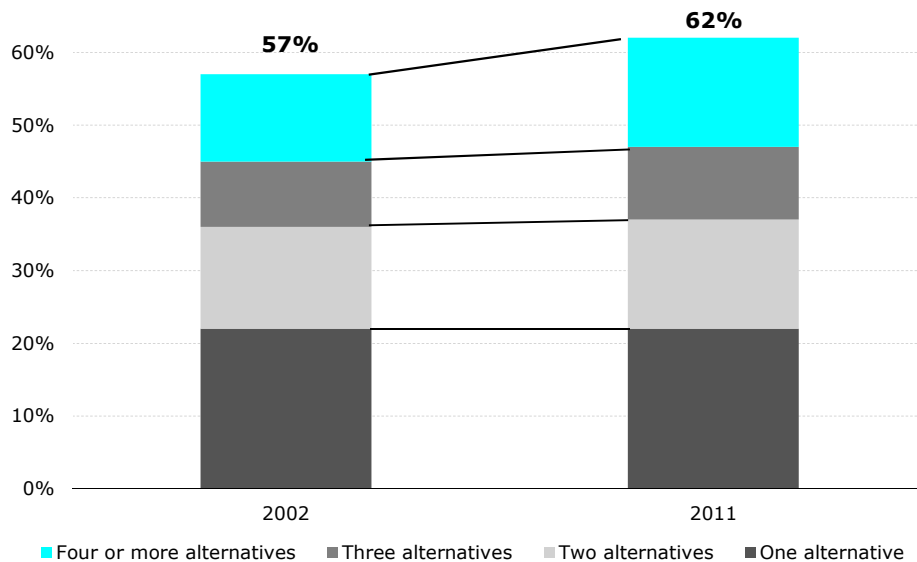
Even with this relatively strict definition of ‘realistic alternatives’, the analysis shows that the majority of European transfer passengers, some of whom may also have direct alternatives, have at least two hub itineraries to choose from. Specifically, 62% of the passengers have one or more ‘realistic alternatives’. Furthermore, more than 45% of the passengers using a one stop European connection have two or more realistic alternatives, almost 40% have three or more realistic alternatives, and almost 25% have four or more realistic alternatives, cf. Figure 4.5.

Moreover, not only is there significant passenger choice but it is also increasing. Between 2002 and 2011, the share of transfer passengers with realistic alternatives increased from 57% to 62% in 2011. There was a particularly sharp increase in the proportion of passengers with four or more options to choose from, cf. Figure 4.5.

⁶⁰ We have assessed the quality differences between alternative routes by using average value of time (distinguishing between in-flight time and transfer time). We can calculate the generalised travel time cost (exclusive of the ticket price) for leisure and business travel. If the monetised quality of one connection is close, e.g. within 30% of the best connection, we would argue that the two routes, i.e. the two hubs can compete to some degree in that particular market, e.g. Manchester-Bangkok.

⁶¹ We have also tested narrower cost differences of 20% and 10% respectively, and found a similar result of increased choice

Figure 4.5 Number of alternatives for transfer passengers, 2002-2011



Note: We have assessed the quality differences between alternative routes by using average value of time (distinguishing between in-flight time and transfer time). We can calculate the generalised travel time cost (exclusive of the ticket price) for leisure and business travel. If the monetised quality of one connection is close, e.g. within 30% of the best connection, we would argue that the two routes, i.e. the two hubs can compete to some degree in that particular market, e.g. Manchester-Bangkok. (GTC<1.30)

Source: SEO Economic Research hub competition analysis.

Interestingly, and representative of the outcome that might be anticipated from enhanced competition, there has been a significant increase in the average quality of connections offered by European hubs as they have sought to improve the quality of what they offer to mobile transfer passengers (this is elaborated in chapter 5).

As a result, and as an indicator of the competition between hubs, the example of Manchester-Bangkok can serve to show that not only are there more connecting options available to passengers in 2011 compared to 2002, but there is also a high replacement rate between hubs delivering the best connection. There are no direct connections serving this market, so travellers need to go via a connection at a hub. As is shown in Figure 4.6 the hubs that were most attractive in 2002 are no longer the most attractive in 2011. In this example, Frankfurt and Zürich gave way to Helsinki and Copenhagen which offered better connections in 2011.

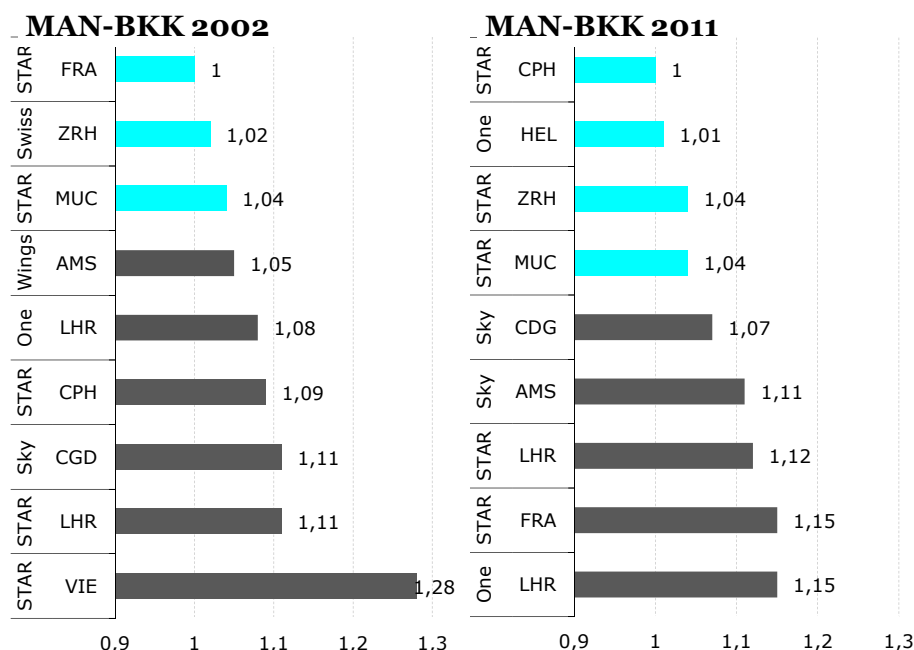
Figure 4.6 Example: Manchester-Bangkok market

2002 situation

- Using average value of time for business travellers, Frankfurt was the most attractive connection in 2002
- Zurich and Munich, however, offered connections valued only 2 pct. and 4 pct. more costly to passengers (assuming average value of time).

2011 situation

- Using exactly the same average value of time for business travellers, Frankfurt was no longer the most attractive connection in 2011
- By 2011, Copenhagen and Helsinki have developed better connections, making them more attractive connection hubs than FRA, ZRH and MUC.



Note: The best connection in each year is normalised to 1.00.

Source: Copenhagen Economics based on SEO Economic Research hub competition analysis.

Additional choice delivered by new direct routes

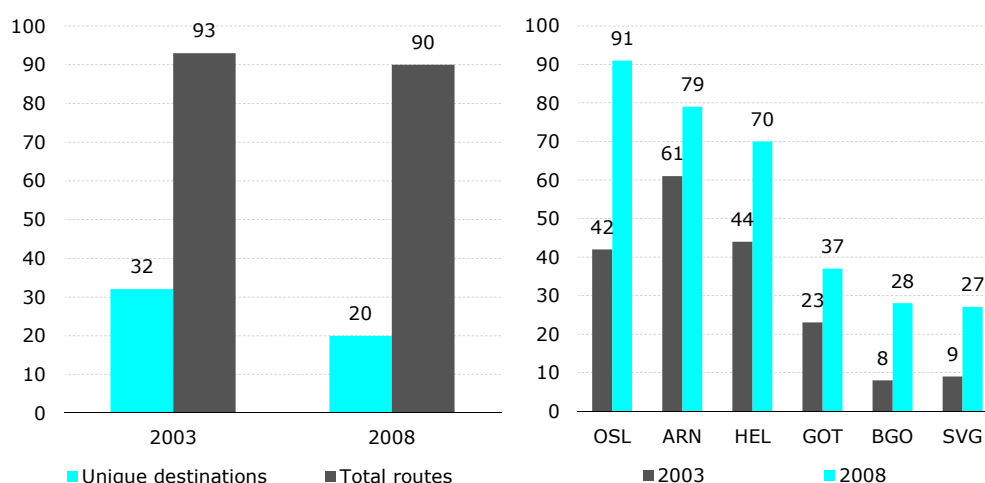
We also see a clear trend towards more direct routings becoming available, increasing the choice for passengers who would otherwise only have had transfer options available.

SEO Economic Research has used the OAG database to assess development in the supply of direct routings. This analysis specifically compared the supply of direct routes from hub airports offering at least one indirect, single-hub transfer service to a destination in 2002 and 2011. The analysis therefore comprises a total of 25,500 single-hub transfer services. It shows that 50% of the transfer passengers involved had at least one direct

alternative to the single hub-transfer service. Moreover, as with transfer choice generally, this represents an increase in the share of transfer passengers with direct alternatives from 46% in 2002.

The increased supply of direct routes is exemplified by the hub-bypassing between Scandinavia and the main European destinations. Copenhagen Airport (CPH) has historically been the Scandinavian hub airport, with six Scandinavian airports providing the main feeder routes. However, between 2003 and 2008, the supply of direct routes from the feeder airports to European destinations, by-passing Copenhagen, grew substantially. The result has been that the number of unique destinations flown out of Copenhagen Airport dropped from 32 in 2003 to 20 in 2008, cf. Figure 4.7 (a). Over the same period, the number of direct routes between Copenhagen Airport's Scandinavian feeder airports and European destinations has increased. For example, the number of direct routes out of Oslo more than doubled between 2003 and 2008, cf. Figure 4.7 (b). It should be noted that, in parallel, Copenhagen Airport has developed new routes to the next layer of feeder airports. As traffic out of smaller airports has grown, there is now a viable market for operating feeder routes from them – the airport's recent cooperation with Blue 1 operating feeder routes from smaller airports in Finland directly to Copenhagen illustrates this development.

Figure 4.7 More direct routes between Scandinavia and Europe



Note: Number of routes includes all routes with +1,000 passengers per year. Unique destinations are destinations that are served from Copenhagen Airport, but not from the feeder destinations.

Source: Copenhagen Economics based on OAG analysis from SEO Economic Research.

4.3 Propensity to switch

Market changes have also meant that passengers generally have become readier to exercise the choice over airports that is increasingly available. There are two main developments: a changed passenger mix and increased use of the internet both to explore options and, often, to transact.

Changed passenger mix

Over recent years leisure traffic has generally grown faster than business traffic. This was one of the initial drivers of low cost traffic growth (although as the model matures low cost airlines are now also focussing on business passengers). National airline traffic statistics do not always include a leisure/business breakdown but, where they do, the increase in the leisure proportion has been significant. The development is exemplified by the position for the UK, Norway, Sweden, Holland and Belgium, cf. Table 4.2

Table 4.2 Development in leisure share

Market	Period	Leisure share development
UK	1996-2006	From 59% to 70%
Norway, international	1996-2007	From 30% to 60%
Sweden, international*	2000-2011	From 55% to 63%
Belgium**	2005-2001	From 48% to 58%
Holland***	2000-2011	From 64% to 67%

Note: * Only traffic at Arlanda Airport. **Only traffic at Brussels Airport. *** Only traffic at Schiphol Airport.

Source: Copenhagen Economics based on data from Civil Aviation Authority (UK), Swedavia (Arlanda Airport), Brussels Airport, Schiphol Airport and Norwegian Institute of Transport Economics, 'International and Domestic Air Travel in Norway 2007'.

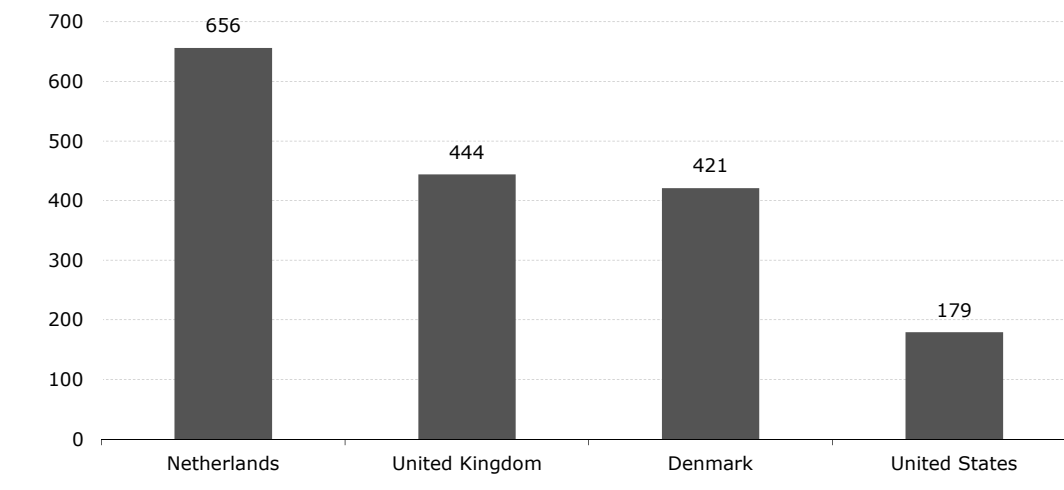
A higher share of leisure passengers increases the propensity to switch for two reasons.

First, leisure passengers (including holiday traffic and visiting friends and relatives (VFR)) will tend to be more price sensitive than business passengers who will generally not be meeting the bill personally. Leisure passengers, comprising all socio-economic groups, will be spending their own, often constrained, budgets. This intuition about price sensitivity is supported by empirical studies showing that leisure passengers are significantly more price sensitive than business passengers and that short haul travellers are more price sensitive than long-haul passengers on average.⁶²

Second, leisure passengers tend also to be less time sensitive than business passengers and therefore prepared to travel longer distances to reach a preferred airport. While precise values differ, this intuition is again supported by evidence for various countries, cf. Figure 4.8.

⁶² See for example Gillen D. et al (2008), "Air Travel Demand Elasticities: Concepts, Issues and Measurement", Department of Finance, Canada (2008). It should be noted that *levels* of such elasticities might vary according to whether they are estimates of overall market response to price or route level response to price, see Intervistas (2007) in a study for IATA. However, the *differences* between leisure and business passengers are found consistently across studies, see also UK Department of Transport (2011), "UK Aviation Forecasts" and passenger surveys, see for example UK Civil Aviation Authority 'Passengers airport preferences', Results from the CAA Passenger Survey, Working paper, November 2011.

Figure 4.8 Index of estimated value of travel time for business passengers Leisure=100



Note: Copenhagen Economics based on US Department of Transportation, 'The Value of Travel Time in Economic Analysis'; DTU Transport, 'Tidsværdier i transportstudier', 2012.

Increased internet use

While leisure passengers are more price sensitive than business passengers, a number of studies have shown that both segments have become more price sensitive over time.

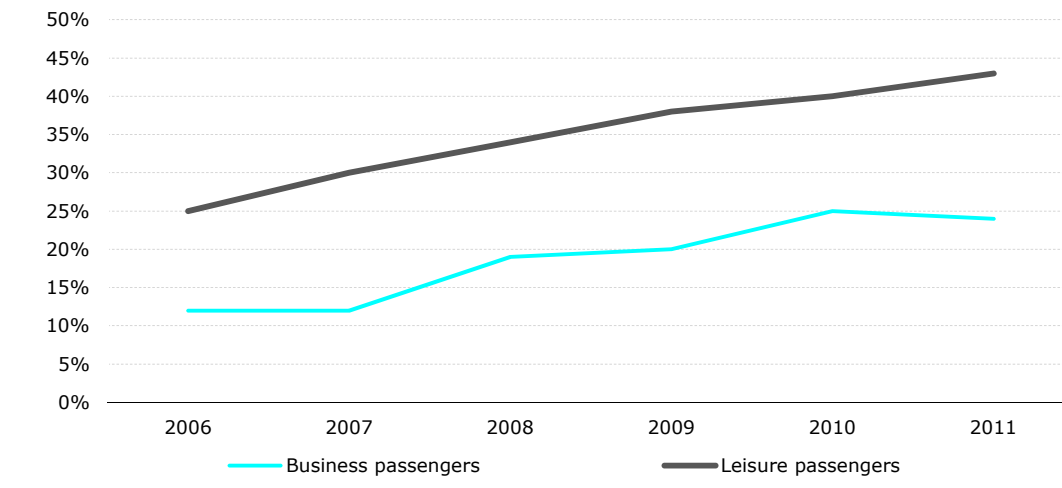
For example, an empirical study from 2008⁶³ concluded that, compared to 1999, the total price elasticity of air-travel demand was 8% higher. It was also concluded that this overall increase was a result of an increased price sensitivity for both leisure and business passengers.

Technological change is one of the main drivers of this development. Over the last 10 years, there has been a substantial increase in consumers' use of the internet for search and resulting transactions. The airline industry has been in the forefront of this development. The change has been fastest in the leisure segment, but business passengers, who have traditionally used Travel Management Companies⁶⁴, are now also buying their airline tickets online, cf. Figure 4.9.

⁶³ Source: Tracing the Woes: An Empirical Analysis of the Airline Industry, Steven Berry and Panle Jia, NBER Working Paper No. 14503, November 2008. The figures are based on data for covering the US airlines industry.

⁶⁴ Travel management companies may also be using the internet to make comparisons for clients.

Figure 4.9 Sales channel mix for leisure and business (online share of turnover)



Note: Numbers for 2010 and 2011 are preliminary. It should be noted that some airlines will have higher shares than shown here.

Source: Copenhagen Economics based on easyJet presentation 2012, 'Investor Day' 31 January 2012.

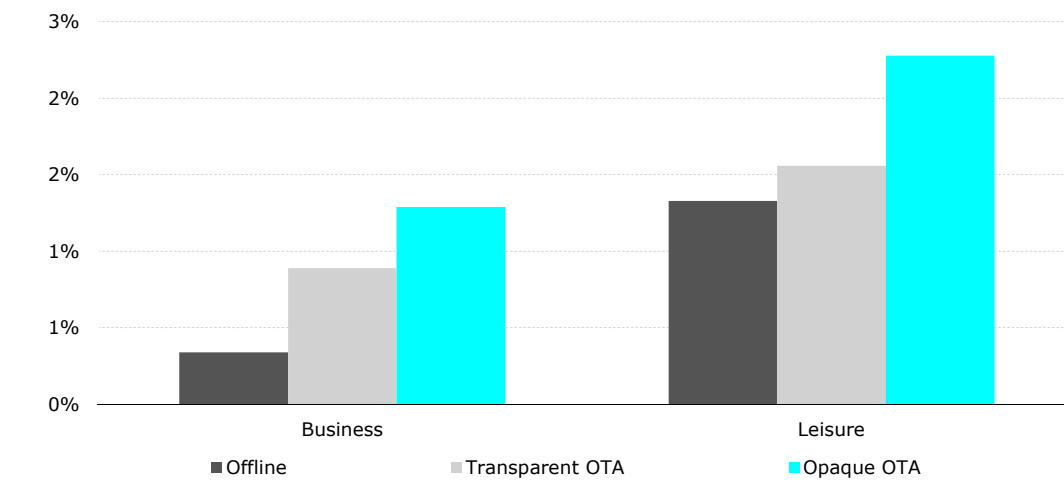
More internet shopping can be expected to increase consumer sensitivity to price. The internet enables consumers to scan the market and compare offerings from multiple suppliers within seconds. Such access to information improves the workings of markets, through enabling more price focussed consumers and thereby encouraging more intense competition.

This impact is supported by a recent empirical study.⁶⁵ On the basis of data representing millions of records of airline ticket sales, it compares online and offline channels. The offline channel for leisure travel is represented by phone-based or face-to-face reservations via traditional travel agencies, and for business travel it is represented by corporate travel departments and travel agencies. The online channel represents consumer-direct bookings via transparent online travel agencies (OTAs) such as Expedia, Momondo and Travelocity, and opaque OTAs such as Hotwire and Priceline.com.

The results confirm that leisure passengers are generally most sensitive to price changes. However, they also show, for both leisure and business passengers, that the internet has made the demand for air travel more sensitive to price changes. Specifically, it appears that the offline demand is less price sensitive than online demand, including both transparent OTA and opaque OTA, cf. Figure 4.10

⁶⁵ 'Online and offline demand and price elasticities: evidence from the air travel industry', Nelson Granados, Alok Gupta and Robert J. Kauffman, 2012.

Figure 4.10 Price elasticities by distribution channel



Note: The offline channel is for leisure travel represented by phone-based or face-to-face reservations via traditional travel agencies and for business travel it is represented by corporate travel departments and travel agencies. The online channel represents consumer-direct bookings via transparent online travel agencies (OTAs) such as Expedia and Travelocity, and opaque OTAs such as Hotwire and Price-line.com.

Source: 'Online and offline demand and price elasticities: evidence from the air travel industry', Nelson Grados, Alok Gupta and Robert J. Kauffman, 2012.

4.4 Actual switching

We now turn to evidence which shows that passengers are actually exercising their ability to switch. We look at switching not only between alternative airports, but between air travel and other modes of transportation, specifically high speed rail.⁶⁶

Switching between airports

Whereas evidence on the potential for switching can be collated from analysis of extant data, evidence on actual switching between European airports requires more bespoke analysis in the form of passenger surveys and case studies usually conducted for specific, often regulatory, purposes.

Passenger surveys can be useful in shedding light on passengers' awareness of potential alternative airports and how far that may have affected their decisions. Evidently, a strong awareness of alternative airports and the services operated from them will increase the likelihood that passengers switch between airports.

The following highlights a number of recent studies from the UK Civil Aviation Authority, the UK Competition Commission and Bologna airport. It should be noted that survey results can be difficult to compare as they are mainly designed to shed light on switching behaviour in a certain country or region. However, in general terms, the different surveys all confirm that where there is choice many passengers are usually aware of it and pre-

⁶⁶ We have sought to collate a range of data, though it is necessarily biased towards the UK where there has been more detailed examination of the market than elsewhere, especially performed by the CAA.

pared to exploit the possibility of switching between airports if that leads to a better deal. Moreover, there is no reason to think that similar results would not be obtainable in other parts of Europe, not least given the pervasive influence of the internet which is one of the main ways that passengers become aware of what is available to them.

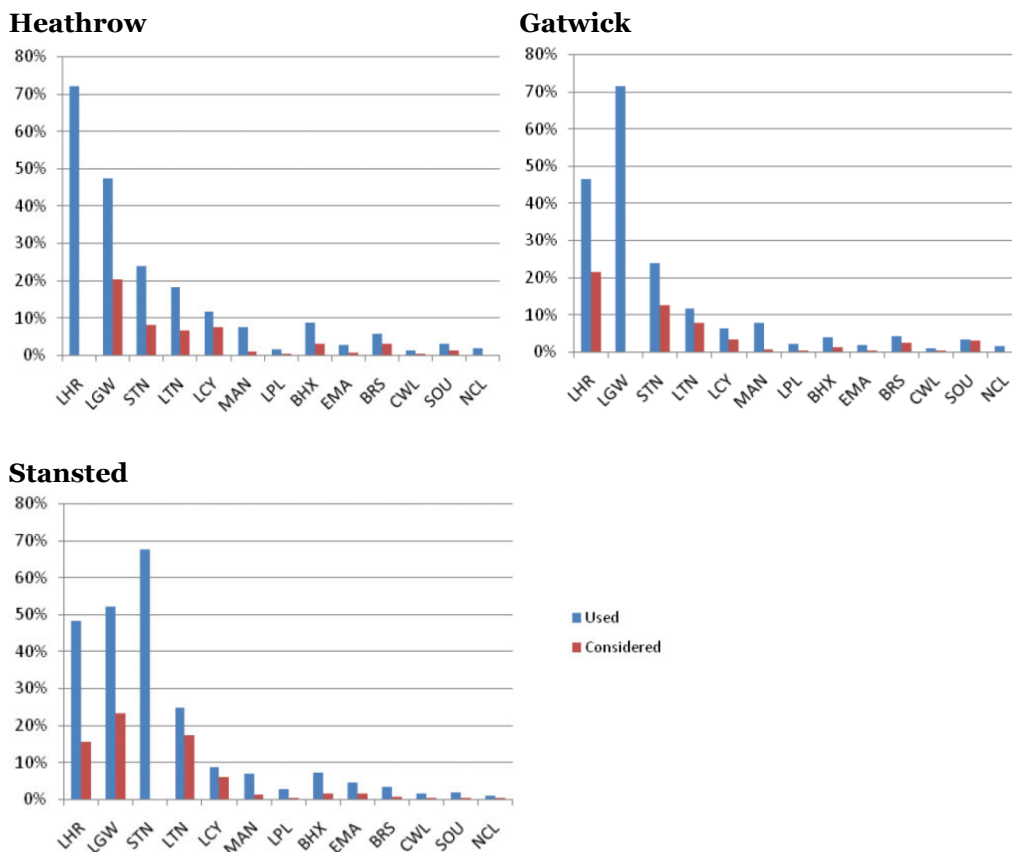
In a recent study, the UK Civil Aviation Authority investigated the extent to which passengers at Heathrow, Gatwick and Stansted airports are willing and able to switch between airports, the possible reasons why passengers choose a particular airport, and their price responsiveness.⁶⁷

The UK Civil Aviation Authority study shows that passengers in the London area to a large, though varying, extent consider the three airports as real alternatives to each other. Results differ for short-haul, long-haul and transfer passengers.

Short-haul passengers are the most likely to consider and use alternative airports. Short-haul passengers departing from the three surveyed airports have to a large extent used or considered using the other airports within the last two years. To a more limited extent, airports outside London were also considered or used, cf. Figure 4.11.

⁶⁷ We refer to the UK Civil Aviation Authority – Airport Market Power Assessment, ‘Passengers airport preferences’, Results from the CAA Passenger Survey, Working paper, November 2011.

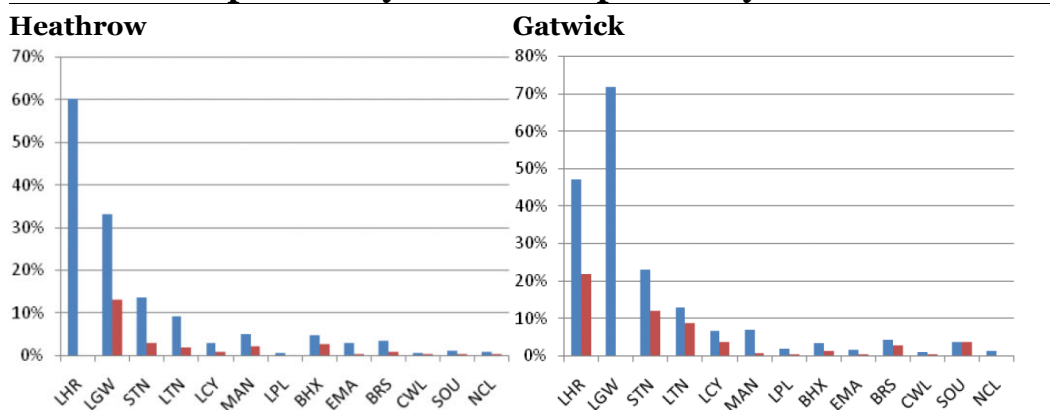
Figure 4.11 Short-haul passengers – airports considered as alternatives or previously used in the past two years



Note: CAA analysis of CAA Passenger Survey data – supplementary stated preference question

A similar picture emerges for long-haul surface passengers at Heathrow and Gatwick (the questions were not asked to long-haul passengers at Stansted airport due to their small number). However, the share of passengers considering other airports is somewhat lower than for short-haul passengers, cf. Figure 4.12. This reflects the more specialised nature of those services and the more limited set of overlaps currently. Airplane technology development and airport competition are likely to change this in the future.

Figure 4.12 Long-haul passengers – airports considered as alternatives or previously used in the past two years



Note: Similar figures are presented in the CAA report for surface long haul passengers and transfer passengers.

Source: CAA analysis of CAA Passenger Survey data – supplementary stated preference question

Transfer passengers at Heathrow were asked which other hub airports they had considered for their current journey. The answer underlined the competition from other major European hub airports. About 35% of connecting passengers had considered transferring at other major European hubs, Amsterdam Schiphol, Frankfurt or Paris Charles de Gaulle, instead of Heathrow. Each of these airports was considered by approximately 10% of respondents.

In addition, the Civil Aviation Authority study shows that passengers are ready to switch and use alternative airports to obtain a better deal. Specifically, the Civil Aviation Authority investigated the passenger responsiveness to a hypothetical 10% increase in the cost of flying from their departure airport.⁶⁸

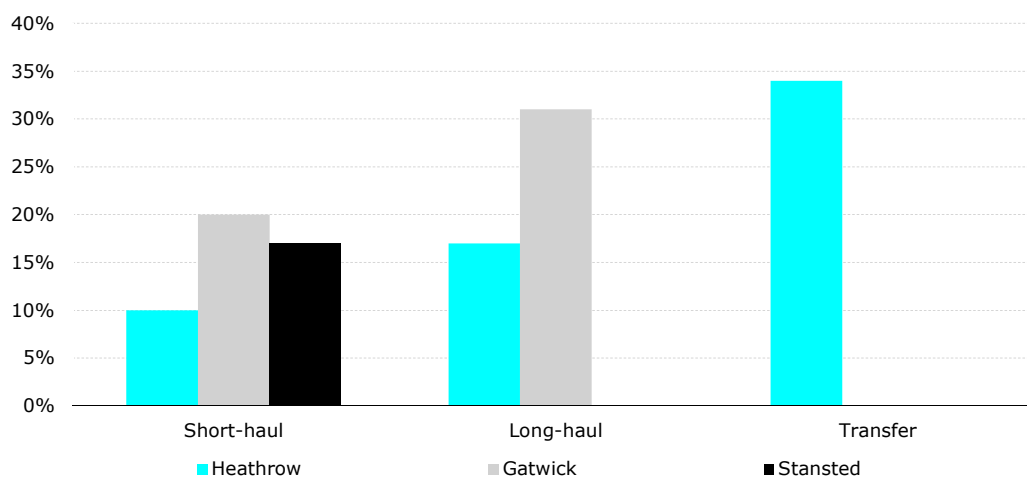
The study showed that between 10% and 34% of the passengers would switch to an alternative airport if the airfare increased by 10%.⁶⁹ For surface passengers, including short-haul and long-haul, the passengers at Heathrow appear to be the least willing to switch in response to an increase in price. An obvious explanation is that Heathrow has the largest share of business passengers, normally less price sensitive than leisure passengers. However, consistent with the high level of choice available to such passengers identified earlier in this chapter, transfer passengers at Heathrow seem to be the most price sensitive com-

⁶⁸ This represented a £5 price increase for a short-haul single; a £10 for a short haul return; and £50 for a long haul journey. An increase of £40 was chosen for a journey involving an indirect routing (i.e. transfer), see UK Civil Aviation Authority – Airport Market Power Assessment, ‘Passengers airport preferences’, Results from the CAA Passenger Survey, Working paper, November 2011.

⁶⁹ It should be noted that airport charges are generally a small fraction of total ticket price, so the direct impact on the passenger from changes in airport charges will be small. However, even small changes in the airport charge may have a large impact on passenger numbers as an increase in the airport charge may render the routes to that airport insufficiently profitable for some airlines. Since airlines are continuously reviewing the profitability of each route, and aim at shifting their aircraft to the most profitable routes, the airport will risk losing not just a few passengers on each route, but entire routes if some airlines find it insufficiently profitable to operate from the airport compared with another airport. In this context, as noted elsewhere in this report, airlines will not only look at charges, but will also assess how the other elements offered by airports affect their overall cost of operations (e.g. with respect to turnaround times or risks of delays).

pared to local departing passengers. Specifically, the surveys shows that 34% of transfer passengers stated that they would switch away from Heathrow when faced with a 10% price increase, cf. Figure 4.13. This underpins our previous assumption that travellers are willing to switch hub airport if time and airfares are right.

Figure 4.13 Passenger price responsiveness to 10% increase in the cost of using their current airport



Note: A 10% price increase was calculated based on the average short haul and long haul airfares using CAA Passenger Survey data. The amounts chosen were £5 for a short haul single, £10 for a short haul return, and £50 for a long haul journey. An increase of £40 was chosen for a journey involving an indirect routing (i.e. connecting flights). The question was asked to short haul and long haul surface passengers at Heathrow, Gatwick and Stansted, long haul surface passengers at Heathrow and Gatwick, and to connecting passengers at Heathrow only: If your flight and every other [single/return] flight at [airport] cost [FEE] more per person, would you have: Still booked your current flight? Booked a flight from Heathrow to a different destination or at a different time? Booked a flight from a different airport? Chosen not to fly?

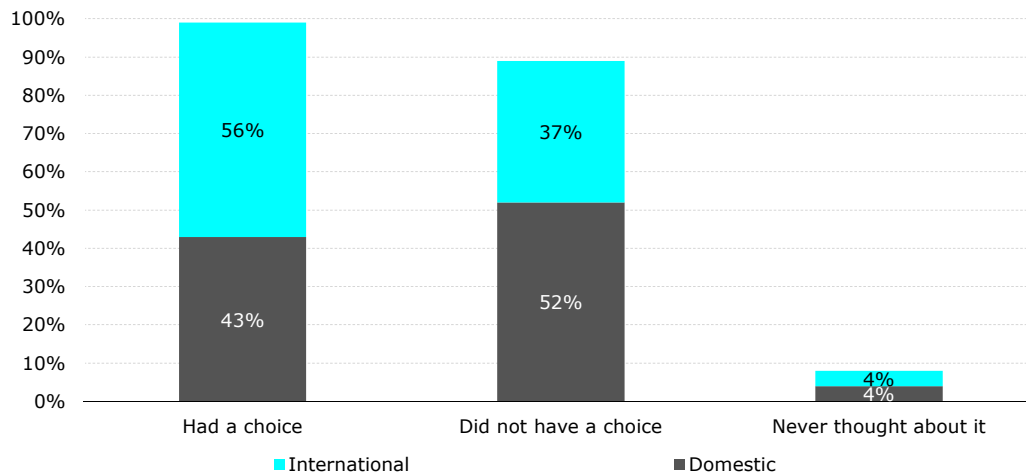
Source: CAA analysis of CAA Passenger Survey data – supplementary stated preference question

For its 2009 market inquiry⁷⁰, the UK Competition Commission commissioned ORC International to study what drives the behaviour of air passengers in their choice of airport. The research focused on three airports located in lowland Scotland, namely Edinburgh and Glasgow (operated by BAA) and Prestwick (operated by Infratil).

Amongst other things, the study revealed that almost half (47%) of respondents had a choice of airports when planning their journey, that is they could have realistically used a different airport. Respondents on international flights in particular had a choice of airports (56%). Only a small proportion (4%) overall did not consider they had a choice of airports. cf. Figure 4.14.

⁷⁰ Source: ORC International, 'Air Passengers in Lowland Scotland airports' BAA Airports Market Inquiry, Submitted to Competition Commission, November 2007, <http://www.competition-commission.org.uk/our-work/baa-airports>

Figure 4.14 Did you have a choice of airports when planning this journey? That is, could you have realistically used a different airport?

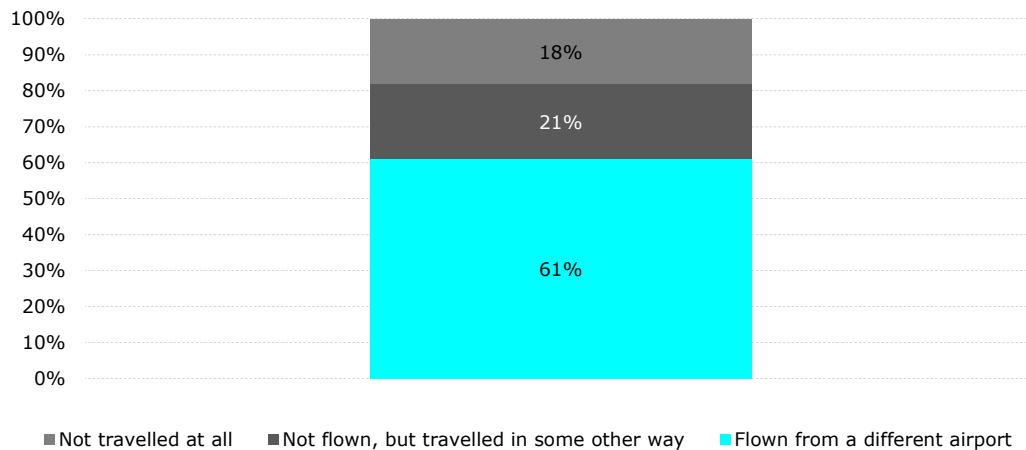


Note: 1,126 respondents participated in the survey.

Source: ORC International, 'Air Passengers in Lowland Scotland airports' BAA Airports Market Inquiry, Submitted to Competition Commission, November 2007, <http://www.competition-commission.org.uk/our-work/baa-airports>.

This study of the Scottish market also confirmed that passengers were prepared to use the alternative airports. If, when they made their travel arrangements, no flights had been available from their chosen airport, 61% answered that they would have used a different airport. 21% would have chosen to travel in some other way than air travel, cf. Figure 4.15.

Figure 4.15 If no flights from this airport had been available when you made your travel arrangements, what would you have done instead?



Note: 1,126 respondents participated in the survey.

Source: ORC International, 'Air Passengers in Lowland Scotland airports' BAA Airports Market Inquiry, Submitted to Competition Commission, November 2007, <http://www.competition-commission.org.uk/our-work/baa-airports>.

A survey conducted by Bologna airport among its passengers also shows that passengers consider other airports. In the survey, 10% of the passengers interviewed had considered an alternative airport for the current journey. These passengers particularly considered using an airport in Milan (28%), Rimini (26%) or Rome (15%).⁷¹

Case studies are another source of information on passenger switching. This approach is more outcome-oriented. Typically, the case studies look at the development in key parameters during a specific period of interest or following a specific event of interest, for example the introduction of a new tax.

Based on input from SEO Analysis, we have conducted five case studies to shed light on the impact of passenger switching. Specifically, we have studied market share development for the airports located around five selected European cities during the last 10 years. The five cities are Stockholm, Oslo, Belfast, Paris and Milan. A common feature of the selected cities is that there are alternative airports with multiple owners. This implies that the airports can be assumed to be competitors.

The case studies confirm that European passengers are exploiting their ability to switch airport. In all cases, the main airports had experienced a decline in their market share. The decline has been largest for airports around Stockholm, Oslo, and Milan with market share reductions of between 8 and 22%. For airports around Paris and Belfast the reduc-

⁷¹ Passengers survey conducted by Bologna Airport, April 2012. Even though the sample is relatively small, the result resonates well with other results from larger samples. These results further substantiate that passengers are considering alternative airports.

tion has been more moderate with main airports' market shares declining by around 3%, cf. Table 4.3.

Table 4.3 Market share development of main airports, 2002-2010

City	Main airport(s)	Alternative airport(s)	Change main airports' market share 2002-2010
Belfast	Belfast International (BFS) 12k from city centre	B: George Best (BHD) 5k from city centre	-3.2%
Paris	Charles de Gaulle (CDG) 25k from city centre Orly (ORY) 13k from city centre	C: Beauvais-Tillé (BVA) 85k from city centre	-2.7%
Oslo	Gardermoen (OSL) 35k from city centre	Moss, Rygge (RYG) 60k from city centre Sandefjord, Torp (TRP) 118k from city centre	-8.1%*
Milan	Linate (LIN) 8 km from city centre Malpensa (MXP) 40 km from city centre	Bergamo (BGY) 45 km from city centre	-17.4%
Stockholm	Arlanda (ARN) 37 k from city centre Bromma (BMA) 7 k from city centre	Skavsta (NYO) 100 k from city centre Västerås (VST) 110 k from city centre	-22.4%

Note: * The period for Oslo is 2003 to 2010.

Source: Copenhagen Economics based on SEO analysis and the OAG database.

The impact of the Dutch passenger tax also illustrates passengers' willingness to switch between airports in response to price. As the tax was introduced on July 1st 2008 and abolished exactly one year later, it can be viewed as a unique 'social experiment'.

The general view is that the passenger tax did affect Dutch passengers' choice of airport. For example, in a study released in February 2011, the Dutch Ministry of Infrastructure and the Environment⁷² concluded that the air passenger tax had reduced the number of Dutch passengers departing from airports in the Netherlands, especially Amsterdam Airport Schiphol, and that most such passengers had instead opted primarily to use Düsseldorf, Weeze and Brussels airports. The conclusion was derived from two types of analysis.

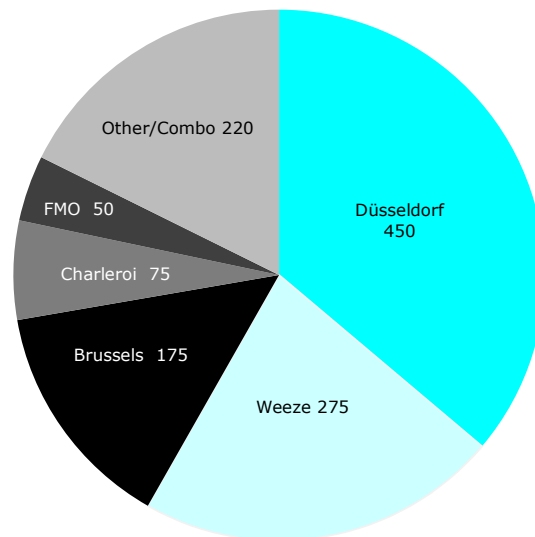
Firstly, a passenger survey conducted in the summer of 2011. A total of 3,000 people were asked questions related to flight frequencies, awareness of various airports, and the airports considered for European and international destinations. The respondents who had flown during that period when the tax was in operation were asked whether it had influenced their choices.

The results showed that 80% of the respondents were aware of the passenger tax, while 14% answered that the tax had influenced their travel behaviour. About 50% of these respondents answered that they had chosen not to travel or to travel by car or train. The remaining 50% confirmed that they had opted to use a foreign airport. Düsseldorf, Weeze and Brussels airports were mentioned as the most popular choices.

⁷² Source: Ministry of Infrastructure and the Environment, 'Effects of the Air Passenger Tax Behavioural responses of passengers, airlines and airports', report by KiM Netherlands Institute for Transport Policy Analysis, February 2011.

Secondly, the conclusion was derived from a before and after comparison of the annual growth figures for passenger volumes of European IATA-airlines and Amsterdam Schiphol Airport. The result, which should be seen only as a rough estimate, shows the tax entailed a decrease of approximately 2 million passengers during the period in which the tax was in force. According to the estimates, of these 2 million potential Schiphol passengers, half cancelled their travel plans or decided to use another means of transport, such as car or train. The other half of these passengers (1.25 million) departed from a foreign airport, of which Düsseldorf was the most popular choice, followed by Weeze and Brussels, cf. Figure 4.16.

Figure 4.16 : Estimate of extra passengers as a result of Dutch air passenger tax (000)



Note: Rough estimate of the number of extra Dutch passengers at foreign airports as a consequence of the air passenger tax (000 pax).

Source: Ministry of Infrastructure and the Environment, 'Effects of the Air Passenger Tax Behavioural responses of passengers, airlines and airports', report by KiM Netherlands Institute for Transport Policy Analysis, February 2011.

Switching to other transport modes

Evidence on switching to other modes of transport is primarily focused on the expanding supply of high speed rail in Europe. Currently, Western Europe has a total of about 3,000 kilometres of high speed lines, nearly 970 trains in circulation and more than 100 million passengers per year. An additional 6,000km of high speed lines are due to be built by 2020.⁷³

The recent growth of Eurostar's services from London to Paris and Brussels illustrates the impact of high speed rail. As of 14 November 2007, Eurostar moved its London operations from Waterloo Station to the newly restored St Pancras International rail station. At the same time, Eurostar started to use the whole of a dedicated high-speed line connecting central London through the Channel Tunnel to Paris and Brussels. With this move, the

⁷³ Source: Infrastructure Journal, 1/6/2010.

rail journey time to Europe was reduced by around 20 minutes. It became possible to reach Brussels and Paris from London in 1h 55m and 2h 15m respectively.

The impact of the change was clear. Analysis performed by the UK Civil Aviation Authority in 2009⁷⁴ suggests a significant substitution from air to rail on travel to Paris/Brussels, especially for passengers originating from areas with effective rail links to St Pancras and its nearby rail stations.

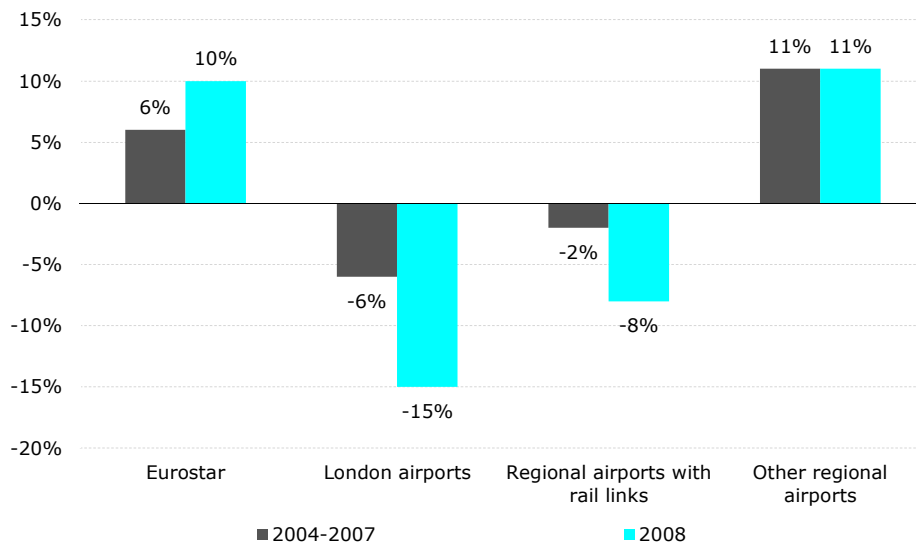
The analysis specifically shows that that air passengers between all UK airports and Paris or Brussels declined annually by 6% between 2004 and 2007, while passengers travelling on Eurostar across the Channel increased by 5% per year over the same period, cf. Figure 4.17.

Moreover, the analysis revealed that the impact on air travel to Paris/Brussels differed quite substantially between London and regional airports. For London airports and regional airports that serve geographical areas with direct rail links to St Pancras, Kings Cross and Euston stations the number of passengers declined by respectively 5.5% and 2% per year between 2004 and 2007. On the other hand, air passenger traffic to Paris/Brussels from regional airports without effective rail links to London increased significantly with an average annual growth rate of 11%, cf. Figure 4.17.

The impact of Eurostar is further demonstrated by the fact that despite the economic crisis the same trend continued in 2008. Passenger numbers from airports in regions with direct rail links to the three London termini fell by almost 15% and about 8% respectively compared with 2007, whereas passenger numbers from the other regional airports increased by around 11%, cf. Figure 4.17.

⁷⁴ UK Business Air Travel: Traffic Trends and Characteristics, May 2009, Civil Aviation Authority.

Figure 4.17 Passenger growth between UK and Paris/Brussels by air and by Eurostar



Note: The figures for 2004-2007 are average annual growth rates. The figures for 2008 are based on comparison of the first three quarters of 2008 and 2007.

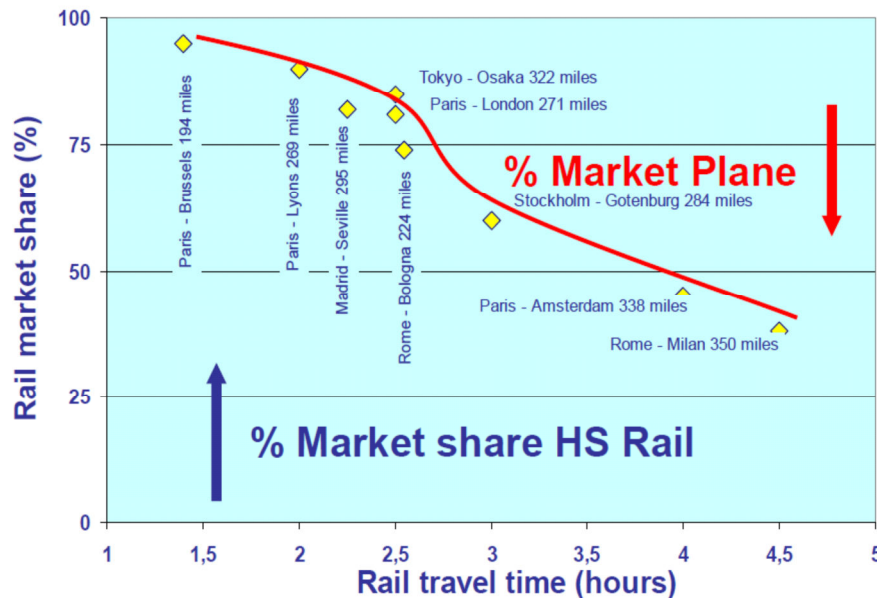
Source: UK Business Air Travel: Traffic Trends and Characteristics, May 2009, Civil Aviation Authority.

In terms of market share, the impact is also clear. In 2005 rail's share of point to point traffic between London and Paris/Brussels was below 70%. By 2010 that had increased to 80% according to the Annual report from Eurostar.

The French market provides another example.⁷⁵ In 2001, the TGV Mediterranean was introduced between Paris and Marseille. At that time, rail held a market share of only 22% of the combined Paris-Marseille air/rail market. Four years later, the picture had significantly changed. By 2005 the market share of rail had increased to 65%. This development continued into 2006 with the rail market share reaching almost 70%, assisted by easyJet's 2006 decision to abandon its Paris-Marseille flights.

Looking ahead, these examples show the potential for rail to add to the competitive constraints on Europe's airports. This is most particularly true in the short haul segment competing with rail travel times of less than four hours, where airport charges generally are a larger proportion of overall costs and where high speed rail typically captures a market share of total travel of more than 50%, cf. Figure 4.18.

⁷⁵ Source: Ascend Magazine, 2007, Issue No 2. <http://www.sabreairlinesolutions.com/home/resources/ascend/archive#9>

Figure 4.18 Rail market share and rail travel time

Note: High Speed Rail: The Big Picture', Iñaki Barrón, International Railway Association (UIC), April 2007.

More generally, the speed, reliability and city-centre to city-centre convenience of high speed rail for many travellers, taken with the rail station development that often accompanies it, will place continuing pressure on airports (and airlines) to supply a competitive combination of price and quality. Several studies⁷⁶ have concluded that the market share of high speed rail is in part determined by the quality of service of both rail and air travel, including the level of fares, the frequency, travel time, and distance to the point of departure (airport or rail station). Airports will therefore need continuously to develop their products and services if new high speed rail services are not to become more and more attractive to passengers. This represents a potent source of competitive pressure on the airports which is likely to increase with the investments currently planned.

⁷⁶ See for example, <http://www.theatlanticcities.com/commute/2012/01/what-eurostars-success-means-california-hsr/938/> and <http://www.sciencedirect.com/science/article/pii/S0094119011000921>

Chapter 5

Airport responses

In the previous chapter we showed how passengers have more choice today than 10 years ago, and that passengers in general have been more responsive to both price and quality. In chapter 3 we showed how airlines have become more footloose and more responsive to changes in passenger taste and travel patterns, and more active in their negotiations with airports. In this chapter we look at how airports have responded to these changes.

Main findings

- **More commercial airports:** Europe's airports have changed their ownership and governance over the last few decades. Nearly half of European passenger journeys start at an airport with private shareholders. In total, 80% of Europe's airports have been corporatised, with most publicly owned airports operating as commercial entities at arms-length from government.
- **More marketing activities and route development:** 96% of all European airports, small or large, are actively marketing their airport to airlines. Case studies suggest that marketing and route development expenses have more than doubled over the last 10 years.
- **Increased quality competition:** Many airports have responded to the increased competition by investing in service quality upgrades. In order to **attract more point-to-point traffic**, airports have developed dedicated low-cost terminals and invested in improved surface access to the airport. To **improve transfer products**, airports have invested in shortening transfer times.
- **Increased price competition:** The price response to the recent economic crisis shows that European airports are also competing on price. In 2009, total passenger traffic at all European airports dropped by more than 5%. A competitive price response to this development followed with almost 70% of European airports either lowering or keeping charges stable in 2009.
- **Airport entry and expansions:** The airport sector has also responded strategically to changing market conditions. During the last 10-15 years, there have been several examples of airport entry and expansions that have increased competition between airports to the benefit of airlines and passengers. There were 81 more airports in Europe with commercial jet services in 2008 than in 1996. Expansions include investments in both new terminals and new runways.

Airports are both spurring and responding to competition. Competitive pressures from greater airline and passenger choice have been strengthened by more airport marketing and more differentiated offerings by airports to airlines and passengers. These developments have led to stronger competitive constraints on airports and increased competition between them.

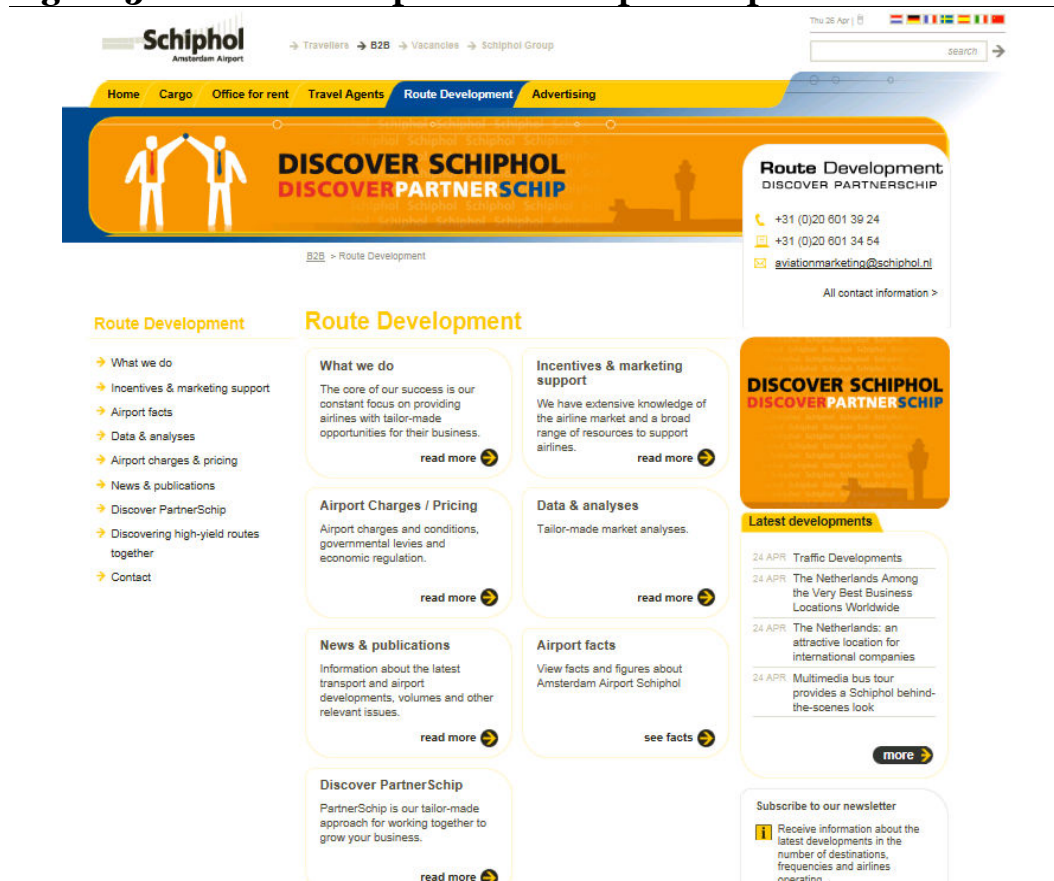
Section 5.1 looks at the development of airports' route development activities. Section 5.2 gives examples of how airports are increasingly competing on price and quality. Section 5.3 focuses on the impact of airport expansions and new airport entry.

5.1 Route development

Route development activities are those marketing activities undertaken by airports with the aim of attracting new routes, for example through participation in route development conferences, offering incentive schemes, meetings with airlines, producing bespoke reports for airlines etc.

It is only relatively recently that airports have devoted significant effort to route development. A decade or so ago, very few airports had marketing staff. Today, most European airports, small or large, have a marketing staff devoted to route development. As illustrated by Schiphol airport's webpage, it forms a key part of many airports' broader public presentation, cf. Figure 5.1.

Figure 5.1 Route development at Schiphol airport

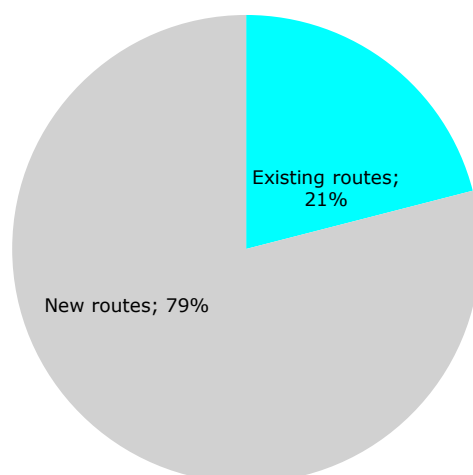


Source: Schiphol airport, <http://www.schiphol.nl/B2B/RouteDevelopment.htm>.

Route development matters

The sources of new traffic make it evident why airports devote such efforts to route development. New routes are the key to growth. Between 2005 and 2011 new routes created 79% of the traffic expansion in Europe, while existing routes were responsible for only 21% of total growth, cf. Figure 5.2

Figure 5.2 Source of new scheduled capacity in Europe, 2005-2011



Note: According to Avia Solutions the results are based on non-stop departures from Western European Airports where summer 2005 has been compared with summer 2011.

Source: Avia Solutions, 'Traffic Forecasts and Route Development', Jonathan Naylor, 3rd March 2011

Resources spent on route development

There is little comprehensive evidence on the growth in resources devoted to route development. A few examples are, however, illustrative.

In 2000, Copenhagen Airport's marketing staff comprised two people. By 2005 marketing staff had doubled, and by early 2012 a total of eight staff were involved, cf. Table 5.1.

Table 5.1 Marketing staff at Copenhagen Airport

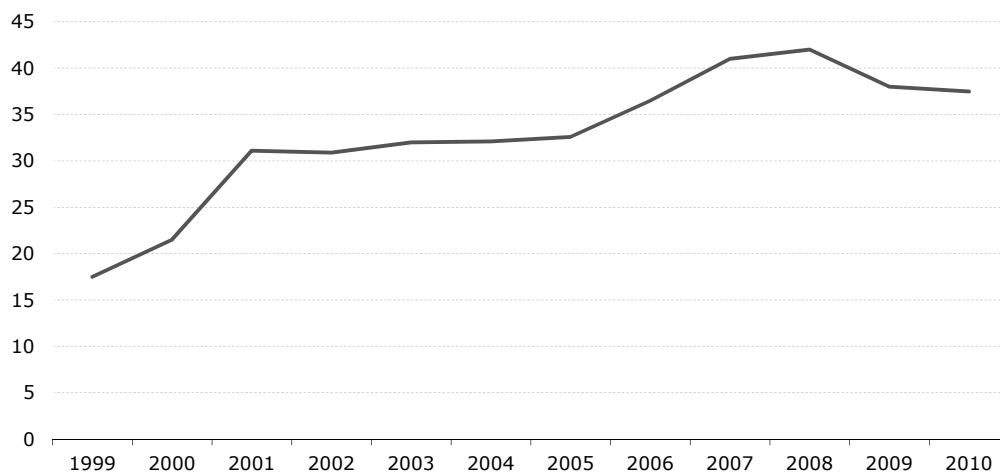
	2000	2005	2012*
Full time employees	2	4	8

Note: * The 2012 figure is for April 2012.

Source: Information from Copenhagen Airport.

Zurich Airport provides another example. Between 1999 and 2010 Zurich Airport's expenses on marketing and sales more than doubled, cf. Figure 5.3.

**Figure 5.3 Marketing expenses at Zurich Airport, 1999-2010
(1,000 CHF)**



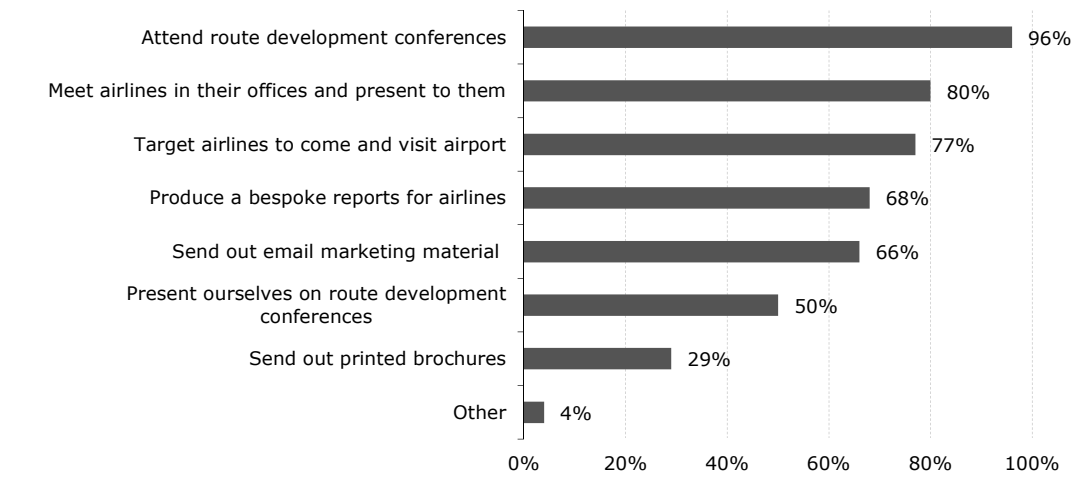
Source: InterVISTAS based on various Annual Reports of Zurich Airport.

A 2009 survey from ASM Aviation sheds further light on the importance of route development.⁷⁷ The survey included more than 100 airports of all sizes and from all over the world. 59% came from Europe and the rest from other regions of the world.

The survey showed that 96% of European airports surveyed actively marketed their airport to airlines. The share of active airports was consistently high across all airport sizes and regions. Attendance at route development conferences was the most widespread marketing activity, with meetings with airlines at their offices the second. Two thirds of airports produced bespoke reports for airlines, cf. Figure 5.4.

⁷⁷ ASM, 'Industry Trends & Climate Survey –Interim Research Results' Live Webinar, July 2009.

Figure 5.4 How do European airports market themselves to airlines?



Note: Based on answers from 100 airports, of which 59% were European.

Source: ASM, Industry Trends & Climate Survey, Interim Research Results, Live Webinar, July 2009.

The annual *World Routes* and *Routes Europe* conferences are considered the most important route development conferences for European airports to attend. They are attended by air service decision makers from all over Europe. Similar conferences are held for other regions of the world. Besides informal networking, the conference programme includes various meeting opportunities for both airports and airlines with the aim of identifying new route opportunities, cf. Figure 5.5.

Figure 5.5 Conference programme Routes Europe 2012

Note: Routes Europe 2012, which was the 7th Routes Europe Conference, was held in Tallinn, Estonia from 20 May 2012 to 22 May 2012.

Source: Routes webpage, www.routesonline.com/events/146/routes-europe-2012/event-essentials/

The evolution of attendance at the Routes conferences illustrates how airports have become more commercially oriented and active. The first World Routes conference was held in 1995 and the first Routes Europe was held in 2006. The Routes Europe 2012 conference was held in Estonia with participation of more than 80 airlines and more than 250 airports.⁷⁸

Europe versus Rest of World

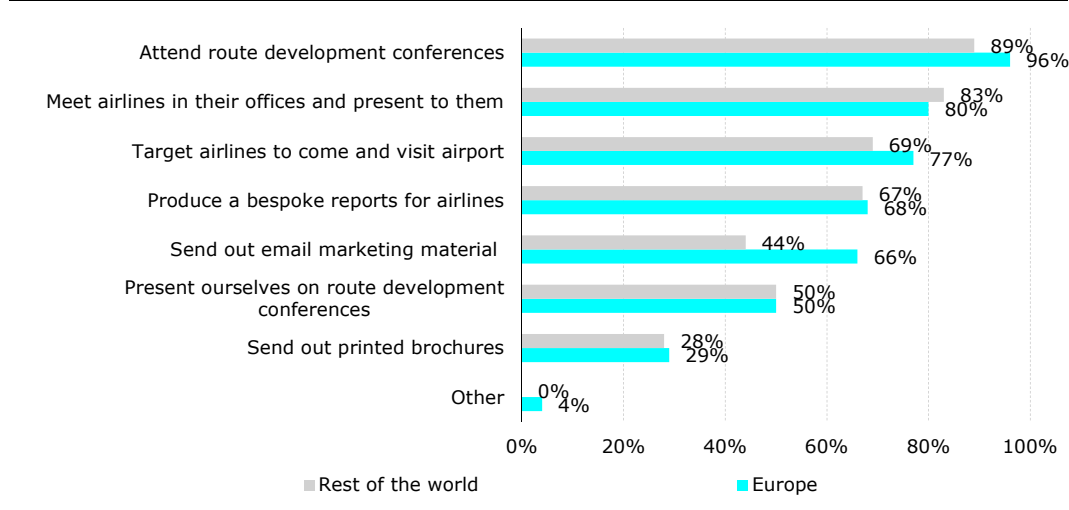
A comparison of Europe with the rest of the world suggests that competitive pressures are strongest in Europe. In terms of route development activities, the 2009 study by ASM aviation⁷⁹ shows that European airports are generally more active than airports in the rest of the world. The study reveals that European airports are more frequent attendees at route development conferences than airports elsewhere. They are also more active in tar-

⁷⁸ Own calculations based on attendance lists available at www.routesonline.com.

⁷⁹ ASM, 'Industry Trends & Climate Survey –Interim Research Results' Live Webinar, July 2009.

getting airlines and inviting them to visit the airport. Furthermore, they more often send out email marketing materials to airlines, cf. Figure 5.6.

Figure 5.6 Airport's route development activities, Europe versus Rest of World



Note: Based on answers from 100 airports, of which 59% were European.

Source: ASM, Industry Trends & Climate Survey, Interim Research Results, Live Webinar, July 2009.

Route incentive programmes

In order to attract new traffic, airports increasingly offer airlines various forms of start-up support or route incentive programmes. Typical incentives include one or more of the following elements:

- Start-up rebate on airport charges (landing or/and terminal charge)
- Route start-up cost reimbursement, that is the airport covers certain start-up costs
- Revenue guarantees, that is the airport guarantees that the airline will achieve a certain level of revenues or a certain load factor, otherwise the airport will pay the shortfall or will pay up to a fixed amount
- Marketing support, for example advertising and promotion conducted by the airport on behalf of the airline, or the airport providing funding for the airline's marketing costs

Route incentives will often be organised and financed by the airport concerned as part of normal business development. But they may also often be supplied by, coordinated with, or financed by public authorities, local business chambers or other groups with an interest in improving the local supply of air services. Moreover, the schemes are often organised as a route development fund (RDF) that is open for applications for all interested airlines. An example is the Scottish Air Route Development Fund⁸⁰, which was publicly funded and active from 2003 to 2007.

⁸⁰ The Scottish Air Route Development Fund was established in November 2002. It was open to support for new routes from 2003 and until 31st May 2007. The fund was based on public funding. Its purpose was to provide incentives to initiate new direct routes to and from Scotland. It was suggested that access to air services is a key driver of economic growth. The role of the

There are no comprehensive statistics or surveys of the use of route incentive schemes. However, it is apparent from studying a number of different airports that such incentives are targeted at most traffic segments including short-haul, transfer and long-haul. The incentives schemes offered by Vienna Airport provide an example of such schemes, cf. Figure 5.7.

It should be noted, that any incentive scheme used by airports or their partners should be in accordance with European rules on state aid⁸¹, and the application of state aid rules, which are currently being reviewed by the European Commission, should ensure a level playing field for airport competition to play out.

Route Development Fund was to facilitate risk sharing arrangements between airports and airlines, cf. Scott Wilson, Scottish Enterprise, Scottish Government, VisitScotland and Highlands & Islands Airports Limited (HIAL), Evaluation of the Scottish Air Route Development Fund, Final Report, November 2009.

⁸¹ According to the current guidelines on State Aid: 'Community Guidelines on financing of airports and start-up aid to airlines departing from regional airports' (2005/C 312/01).

Figure 5.7 Vienna Airport's incentive schemes

1. TRANSFER INCENTIVE

1. Introduction

VIE offers a fair, transparent and non-discriminatory programme, which has been designed to promote transfer traffic as well as support the hub function of Vienna International Airport, to all scheduled carriers.

2. Terms and Conditions of Eligibility for the Transfer Incentive

- Any airline paying the passenger service charge according to the currently valid Tariff Regulations of VIE is eligible for the transfer incentive.
- A transfer passenger is a traveller who, travelling in a logical direction, changes at Vienna International Airport
 - from one aircraft to another aircraft of the same airline with a different flight number or
 - from one aircraft of an airline to another aircraft of a different airline.
- The transfer must take place within a period ranging from the Minimum Connecting Time to a maximum of 6 hours after the scheduled arrival of the inbound flight.
- The basis of calculation is the number of departing transfer passengers of the corresponding airline reported electronically by the passenger handling agent (self-handler or handling agent). Return Check-Ins are excluded from the Incentive.
- With regard to code-sharing flights, only the operating carrier is eligible.
- The airline must present adequate proof to VIE that it is eligible for the incentive as well as provide the figures of transfer passengers who meet the conditions.
- A transfer incentive agreement must be concluded between VIE and the respective airline.
- VIE reserves the right to revoke or amend at any time and without justification this Incentive Programme or parts thereof. Also, VIE explicitly reserves the final decision in its entirety concerning qualification for the transfer incentive, excluding any recourse to legal remedies.

3. Services Provided by VIE

- The transfer incentive amounts to:
EURO 8.21 for each departing passenger of an airline meeting the above terms and conditions.
- Payment will be made in EURO after completion of a calendar year by February of the following year or once the agreement has expired based on the relevant documents. Payment on account may be agreed upon. Until the actual refund, the airline must have duly settled all invoices issued by VIE - this shall apply to the entire business relationship between VIE and the airline.

2. GROWTH INCENTIVE

1. Introduction and Objectives

VIE is making a transparent and non-discriminatory offer to airlines designed to increase the number of frequencies (Frequency Incentive, High Frequency Incentives), promote taking up new routes (Destination Incentive) and strengthening the hub function. This step has been taken also in the wake of the events of September 11th 2001, SARS or Economic Crises and the ensuing consequences for the aviation industry.

Destination-, Frequency- and High Frequency Incentives have been designed to support

- new destinations (Destination Incentive)
- new/additional frequencies (Frequency Incentive)
- frequencies per week (High Frequency Incentives)

from and to VIE in order to promote both the portfolio of offered routes as well as the number of connections.

Source: Vienna Airport, 'Incentive programmes of Vienna Airport', effective from April 1, 2010, <http://www.viennaairport.com/jart/prj3/va/main.jart?rel=en&content-id=1249344074256&reserve-mode=active>

Another illustrative example follows from the schemes offered by Dublin Airport, cf. Figure 5.8.

Figure 5.8 Dublin Airport's incentive schemes

Incentive Schemes

Dublin GROWTH Incentive Scheme 2011-2013

The DAA is pleased to announce an enhanced GROWTH Incentive Scheme which will operate at each of the three DAA airports. This initiative will operate in conjunction with previously announced New Route Incentives and is aimed at further stimulating passenger growth at Dublin Airport.

The Dublin GROWTH Incentive Scheme has been amended and improved, and now offers a full rebate of Passenger Service Charges for traffic growth over a three year period. A further enhancement is the reduction in the initial threshold to the actual traffic level recorded in 2010.

Outline of the Dublin GROWTH Incentive Schemes 2011-2013:

- The scheme will run for three years from 2011 to 2013
- When traffic at a Dublin Airport exceeds the level of traffic that was recorded during the previous year, airlines will be rebated retrospectively, based on their contribution to the overall growth at the airport
- The threshold for 2011 will be 18.431m at Dublin Airport, which is the actual traffic recorded in 2010
- The level of traffic to be exceeded at Dublin Airport in order for a Dublin GROWTH Incentive rebate to be paid in 2012 and 2013 will be the traffic recorded at Dublin Airport during 2011 and 2012 respectively
- The Dublin GROWTH Incentive rebate will be available to all passenger airlines and will be paid to airlines that grow traffic over the previous year. The rebate will be distributed based on each airline's proportion of the overall incremental passengers recorded at the airport
- The total Dublin GROWTH Incentive payment will be capped at the level of growth at Dublin Airport as a whole
- In the event of an airline receiving route or other incentive support, the airline will receive the benefit of the higher value scheme. Airlines will not be eligible to receive both route support and a GROWTH Incentive rebate.

Example: If 2011 total annual traffic exceeds 18.4 million passengers at Dublin Airport, DAA will rebate all associated Passenger Services Charges for departing passengers in excess of that amount. The rebate will be paid to those airlines demonstrating growth at Dublin Airport at 2011. The rebate payment would be made in early 2012.

- The Dublin GROWTH Incentive Scheme will apply to all commercial terminal traffic.
- Operators will continue to be invoiced at the standard applicable airport charge levels
- Growth that has been generated as solely a result of an airline switching capacity between DAA airports, with no net benefit to DAA, will be excluded from any GROWTH Incentive rebate under this scheme.

[1] In Dublin Airport this amounts to €11.50 per departing passenger using a contact stand and €6.30 per departing passenger utilising a remote stand.

[2] The introduction of this enhanced GROWTH Incentive Scheme signifies the discontinuation of the previously announced 2011 GROW Incentive Scheme.

Dublin GROWTH Incentive Scheme 2011-2013

Transfer Incentive Scheme

Following a review, DAA has introduced a Transfer Incentive Scheme for 2010 for qualifying routes commencing operations from July 1, 2010 until further notice.

Transfer Incentive Scheme 2010 (PDF)

Long - Haul New Route Support Scheme

Annual discounts of 100%, 90%, 75%, 50% and 25% on passenger charges, aircraft parking, airbridge and runway movement charges over 5 years.

Long-Haul New Route Support Scheme

Short - Haul Route Support Scheme

For routes operating on a year round basis, annual discounts of 100%, 75%, 50% on passenger charges, aircraft parking, airbridge and runway movement charges over 3 years. For routes operating on a seasonal basis, seasonal discounts of 60%, 40% and 20% on passenger charges, aircraft parking, airbridge and runway movement charges over 3 years.

Short-Haul Route Support Scheme

Standby Aircraft Scheme 2011

Source: Dublin Airport's homepage, www.dublinairport.com/gns/about-us/aviation-business-development/incentive-schemes.aspx

In return for the offered incentive schemes, airports have increasingly aimed at closing bespoke long term contracts with airlines.⁸² In addition to the airport discounting its charges, such contracts usually include commitments from both the airport and the airlines. The airport usually commits to a certain level of quality of service, e.g. minimum turnaround times, and marketing activities on behalf of the airline. If the contract covers an extended duration, future investments may also be a commitment for the airport. The airlines, in turn, often commit to a certain level of operations from the airport. Sometimes the contract will provide the airport with the comfort of guarantees regarding minimum passenger volumes.

5.2 Service and price competition

Airports have also responded to the increased competition through adjustments to prices in general and to service.⁸³ Many airports have implemented service and quality upgrades. There is also evidence that European airports have adopted more competitive pricing policies. The following describes examples of such competitive behaviour.

Quality upgrades: point-to-point traffic

In order to attract point-to-point traffic, many airports aim to improve the quality of their service to airlines. For example, airports have offered shorter turnaround times, upgraded with new products targeted at selected airlines, for example LCCs, and invested to expand their catchment area.

In order to attract more LCC traffic, some airports have developed dedicated low-cost terminals. In most significantly sized airports, the existing terminals have been designed to meet the demands of full service carriers, which implies high convenience and comfort as well as expensive materials. In contrast, low cost terminals are designed to meet the demand of LCCs for a minimal service and an efficient terminal facility at a reasonable price.

A survey from 2010 identified dedicated low-cost terminals at nine European airports. The oldest was established in 2003 in Tampere in Finland, while the newest in Copenhagen and Bordeaux came into use in 2010, cf. Table 5.2.

⁸² The terms of these contracts are generally confidential but based on recent research, it is possible to indicate their basic features with some degree of confidence, see David Starkie (2012), 'European airports and airlines: Evolving relationships and the regulatory implications', *Journal of Air Transport Management* 21 (2012) 40-49.

⁸³ Note that route development discounts, which are mentioned above, are effectively targeted adjustments to prices.

Table 5.2 Examples of low cost terminals in Europe, 2010

Airport	Year opened	Type of terminal
Tamper-Pirkharla Airport	2003	Renovated former cargo terminal 2
Budapest Airport	2005	Terminal 1 refurbishment
Amsterdam Airport	2005	Pier H off existing terminal
Marseille Airport	2006	Old cargo facility refurbishment
Bremen Airport	2007	Old warehouse facility refurbishment
Lyon Airport	2008	Old cargo facility refurbishment
Copenhagen Airport	2010	New terminal
Bordeaux Airport	2010	New terminal

Source: 'Do dedicated low-cost passenger terminals create competitive advantages for airports?' Eric Tchouamou Njoya, Hans-Martin Niemeier School of International Business, University of Applied Sciences, Bremen, Germany.

A specific example is Bordeaux Airport. In June 2010, Bordeaux became the third French airport to open a dedicated low-cost terminal.⁸⁴ The new terminal has been designed to offer short turnaround times at low costs, cf. Figure 5.9.

Figure 5.9 Terminal billi Bordeaux illico

Low cost flights > billi

- > Low cost flights at Bordeaux
- > Low cost airlines
- > **Terminal billi Bordeaux illico**
- > Services
- > Questions

Destinations

RYANAIR
Bologna, Cork, Charleroi, Edinburgh, Marseille, Rome, Seville

easyJet
Bâle-Mulhouse, Bristol, Genève, Lisbonne, Londres-Gatwick, Londres Luton, Lyon, Madrid, Milan, Nice

VOLOTEA
ENVOLEZ-VOUS VERS AJACCIO, BASTIA, IBIZA, MALAGA, PALERME, TOULON ET VENISE

Jet4you.com
ENVOLEZ-VOUS VERS BARCELONE, PARIS CDG, NANTES

Terminal billi Bordeaux illico

An air terminal offering up to date simplified services, this is billi - Bordeaux illico! The 100% low cost Bordeaux terminal has been designed to offer speedy access to aeroplanes. There are special manual procedures whereby you deposit your hold baggage at the security control point, then access the aeroplane via a pedestrian walkway. Just a stone's throw from the main airport, the terminal can be accessed between Hall B and the cargo area.

[See the billi terminal \(picture\)](#)

Map of Terminal billi Bordeaux illico:

- Baggage reclaim
- Boarding
- Check-in
- Departure hall
- TO HALL A & B PARKING SHUTTLE P4
- Call for baggage service
- WC
- Unaccompanied children
- Luggage trolley
- Shops
- Restaurants
- Bar / Snack
- ATM
- Currency exchange
- Tourist coaches
- Airlines desk
- Hold baggage deposit
- PBM

Source: Bordeaux-Mérignac Airport, <http://www.bordeaux.aeroport.fr/en/low-cost/terminal-billi-en>

⁸⁴ The other two are Marseille Airport and Lyon Airport, cf. **Error! Reference source not found..**

Many airports have also invested to expand their catchment area, which can potentially increase the number of potential passengers at the airport and thereby spur competition with neighbouring airports. For example, in October 2007, a new Metro service to Copenhagen Airport was opened. The construction of the Metro line was publicly funded, but Copenhagen Airports A/S invested and built a Metro station at the airport, which is integrated into the terminal complex so that passengers can walk from the Metro station to the terminals without having to go outdoors. The trip from the airport to the Copenhagen city centre takes 14 minutes.⁸⁵

Another example is Frankfurt Airport. There are two railway stations at Frankfurt Airport: one for suburban/regional trains (opened in 1972) and one for long distance trains (opened in 1999). From its webpage, it is obvious that the company behind the airport, Fraport AG, attaches great value to the intermodality of the airport, cf. Figure 5.10.

Figure 5.10 Frankfurt Airport's thoughts on the value of intermodality

FRA links air, rail and road transportation

Fraport AG is a leader in the development of intermodal travel concepts which involve integrating air, rail and road transportation. FRA's Long-distance Train Station has also been trailblazing the future of the Frankfurt intermodal transport hub. Via the Long-distance Train Station, air travelers departing or arriving at Frankfurt have direct access to Deutsche Bahn's (German Rail) ICE-train network.

Airports with intermodal capabilities have an edge on their competitors because intermodality generates additional traffic: Integration of Frankfurt Airport in Deutsche Bahn's high-speed rail network has expanded the airport's catchment area compared to airports without Long-distance Train Stations. It strengthened the hub function, raised passenger figures, and given us important competitive edges. At the same time, moving air traffic to the rail eases some of the strain on flight capacity. For example, landing and departure slots that are freed-up by shifting short-haul flights to the rail can be used for the urgently needed expansion of intercontinental flight services.

With the further expansion of the European high-speed rail network, FRA will be one of the most significant integrated transportation centers on the Continent. Opening of the new high-speed rail route between FRA and Cologne in August 2002 marked a milestone in that direction. The new route doubled the number of trains using the Long-distance Train Station and slashed travel times between Frankfurt and, e.g., Amsterdam, Brussels, Cologne, Dortmund, and Münster by about one hour, and, as a result, enhanced FRA's catchment area. In addition, Frankfurt Airport's integrated Regional Train Station provides for fast connections between the airport, the city of Frankfurt and the Rhein-Main region.

Intermodality is a central success factor at Frankfurt Airport:

Long-distance train station:	- 174 high-speed long-distance trains per day (2011) - 454,000 passengers per month (2011)
Regional train station:	- 223 commuter and regional trains per day (2011) - 282,000 passengers per month (2011) - travel time to downtown Frankfurt: 15 minutes
Road:	- direct access to the intersection of Germany's most important autobahns, the A5 (north/south) and the A3 (east/west)
Parking:	- 28,500 car parking facilities
Bus terminal:	- 240 bus stops per day in local and regional public transportation

Source: Fraport AG, http://www.fraport.com/content/fraport-ag/en/products_services/intermodality.html.

⁸⁵ See <http://www.cph.dk/CPH/UK/ABOUT+CPH/History/The+airport+today+2000+plus.htm>.

Quality upgrades for transfer traffic

In order to attract transfer traffic, many airports have in different ways actively sought to improve their transfer product.

Shorter transfer times (connecting times) is a key way of improving the transfer service. An analysis of the 18 largest European hubs performed by SEO Analysis reveals that their efforts, in competition with one another, have lowered the average transfer time at Europe's airports. On average, transfer times were 10 minutes shorter in 2011 than in 2002. Another way to attract transfer traffic is to improve the quality of the transfer product, for example in terms of information to and dedicated areas for transfer passengers.

Copenhagen Airport (CPH) is a specific example of an airport that has sought to improve its transfer service. In January 2010, the airport launched new special transfer collaboration with its legacy carrier, SAS. The first concrete aim was to decrease the minimum connecting from 40 to 30 minutes, which enabled 70 extra daily SAS flights from CPH and made CPH more competitive on certain transfer routes. Another aim was to improve the transfer service at Copenhagen Airport in terms of quality, cf. Box 5.1.

Box 5.1 Special extended transfer collaboration between Copenhagen Airport and SAS

In 2010, CPH entered a strategic partnership with SAS, part of which, “World Class Transfers”, was designed to make CPH one of the world’s best transfer airports. The first concrete goal was to decrease the minimum connecting from 40 to 30 minutes. This initiative enabled 70 extra daily SAS flights from CPH and made CPH more competitive on certain transfer routes.

The transfer product was also improved in other ways. The initiative meant that transfer passengers at Copenhagen Airport are now met at arrival gate by a screen with dedicated transfer information. The screens show the first eight connections of the passengers on-board the arriving plane. In addition to the gate information the screens also indicate how many minutes it takes to walk to the specific departing gate. The screens make orientation easier and way finding faster and more efficient.

In addition, a special baggage process has been implemented for passengers with short connections at Copenhagen Airport intended to help ensure that transfer bags reach the connecting flight.

In 2010 the changes helped increase the share of transfer passengers at CPH which had otherwise been steadily decreasing since 2000. Some transfer examples highlighted by CPH show the improvement in the transfer product:

Route	Travelling time via CPH before transfer initiative	Travelling time via CPH before transfer initiative
Hannover - Helsinki	5:50	3:15
Hannover - Gothenburg	5:30	2:20
Warsaw - Bergen	5:20	3:20

Source: Copenhagen Economics based on interviews with Copenhagen Airport and websites of Copenhagen Airport, Terminal A, and the Danish Competition and Consumer Authority.

London Heathrow’s Terminal 5 is another example of an investment, which has been beneficial to both the airport and its customers. The start of operations at Terminal 5 in March 2008 marked the beginning of a new chapter for Heathrow. However, based on public announcements from British Airways, it is also clear that Terminal 5 has large positive implications for its airline user. For example, in an investor presentation from 2007⁸⁶, British Airways explained how Terminal 5 was a great opportunity for British Airways because it allowed for improved customer experience, more efficient aircraft operations and new and more efficient ways of working. In terms of annual cost savings, British Airways estimated the benefits to be around £40 million.

In order to improve the overall efficiency of operations at an airport, the concept of Airport CDM (Collaborative Decision Making) has been developed.⁸⁷ Airport CDM is about working efficiently together in the airport. This is achieved by enhancing the decision-making process by the sharing of up-to-date relevant information and by taking into account the preferences, available resources, and the requirements of those involved at the

⁸⁶ See ‘07/03/2007 Investor Day 2007 Presentation’, <http://www.iairgroup.com/phoenix.zhtml?c=240949&p=irol-presentations>.

⁸⁷ This section is based on information displayed at European CDM web site, <http://www.euro-cdm.org/>

airport (such as airline operators, air traffic control, handling agents, and the airport management). The aim is to make these various agents work more efficiently together and to share data more transparently. Airport CDM aims to improve the overall efficiency of operations at an airport, with a particular focus on the aircraft turnaround and pre-departure sequencing process.

In 2011 the expectation was that by the end of the year CDM would be fully implemented at eight major European airports⁸⁸ and partially implemented at eight others⁸⁹. A cost-benefit analysis from 2008, drawing on results from trial implementations at Barcelona, Brussels, Munich and Zurich airports, concluded that Airport CDM had the potential to create large benefits for the parties involved at modest cost. The investment required from any single airport partner is modest and, in many cases, existing equipment, facilities and services can be utilised with only limited modifications. The analysis also showed that the combined benefit/cost ratio was around 9 and that all parties had a positive return on investment from the second year and onwards, cf. Table 5.3.

Table 5.3 Overall results of cost-benefit analysis of airport CDM

	Airlines	Ground handlers	Airport	Air traffic controllers	Total
Benefit/cost ratio	8	14	8	6	9
Payback period	1 year	1 year	2 years	2 years	2 years

Note: Airport CDM (Collaborative Decision Making) has been developed as a tool to improve the overall efficiency of operations at an airport. The results displayed in table are based on trials at Barcelona, Brussels, and Munich and Zurich airports.

Source: Eurocontrol, 'Airport CDM Cost Benefit Analysis', 2008, <http://www.euro-cdm.org/>.

Quality indicator

Another way to attract passengers (and airlines) is to improve the passenger facilities at the airport. With increased competition for passengers and therefore attention to passenger service and facilities, one would expect a general upward trend in the level of passenger satisfaction at European airports.

The ASQ Survey confirms this intuition. The ASQ Survey, launched in 2005 with the first results available from Q1 2006, is a customer satisfaction benchmark programme comprising over 190 airports in more than 50 countries. All airports use the same questionnaire and follow the same methodology.⁹⁰ A total of 38 European airports were part of the ASQ in 2006 and in 2011. The average score for these 38 airports was 8% higher in 2011 than in 2006.

⁸⁸ Amsterdam Schiphol, Frankfurt, Helsinki, London Gatwick, London Heathrow, Paris CDG, Prague and Zurich, cf. Airport CDM brochure, <http://www.euro-cdm.org/>.

⁸⁹ Athens, Dublin, Heraklion, Lyon, Manchester, Rhodes, Vienna and Warsaw, cf. Airport CDM brochure, <http://www.euro-cdm.org/>.

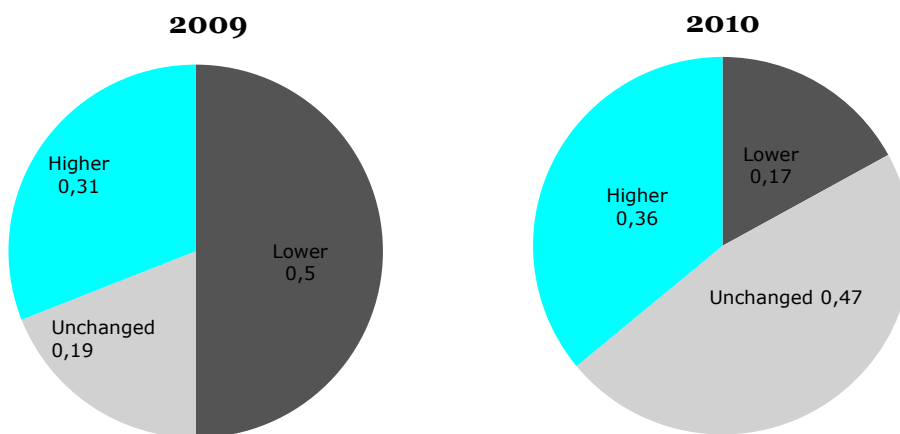
⁹⁰ The ASQ survey is conducted by DKMA, <http://www.asqawards.com/about-aci-dkma>.

Airport charges

The development in airport charges during the recent economic crisis indicates that airports see aeronautical charges as an instrument to maintain or improve their competitive positions.

During 2009, total passenger traffic at all European airports dropped by more than 5%. Although traffic growth was positive again during 2010 and 2011, it was not matched by an increase in aircraft movements which decreased by -0.2% in 2010 and increased by 4.1% in 2011.⁹¹ A competitive price response to this development would be lower airport charges, proactively responding to the needs of airline customers and potentially stimulating traffic. The development of charges seen suggests that most European airports did react in this way. Almost 70% of European airports either lowered or kept their charges stable in 2009. In 2010, the share was 64%, cf. Figure 5.11.

Figure 5.11 Changes in airport charges, 2009 and 2010



Source: ACI Europe, 'Economics report', 2010 and 2011.

This indication is supported by the Review of Airport Charges, which is produced annually by LeighFisher (previously Jacobs Consultancy) and includes a ranking of the charges of 50 large airports, of which 25 are European⁹².

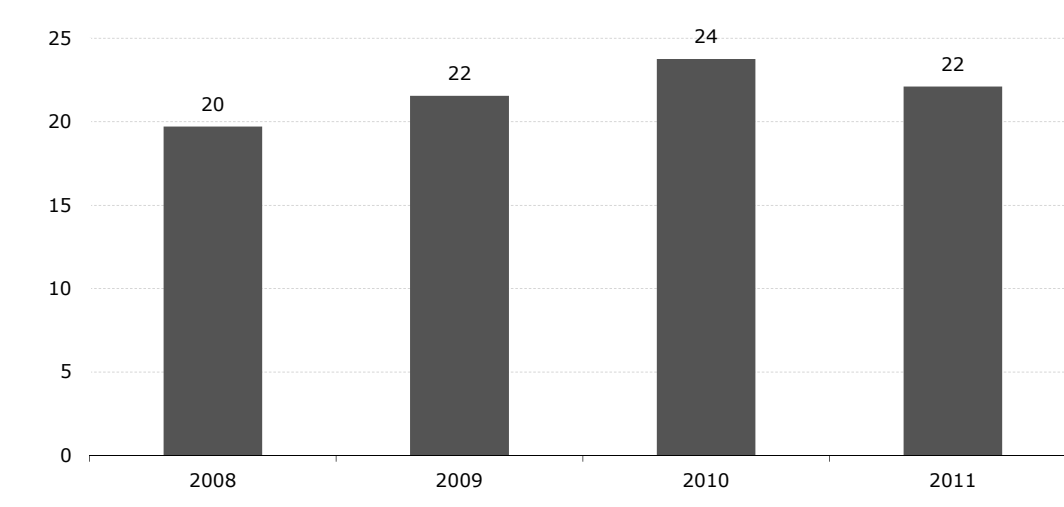
The LeighFisher ranking system is constructed based on specific aircraft types such that low charges imply a low ranking. All other things being equal (such as the level of investment), fiercer competitive pressures on Europe's airports should lead to European charges increasing more slowly than those in the rest of world. This would result in a trend towards a lower average ranking for Europe's airports in the annual Review of Airport Charges.

⁹¹ ACI Europe, 'Economics report' 2011.

⁹² It should be noted that a direct comparison of airport charges in different parts of the world might be misleading, as the scope of infrastructure covered by the charges may vary (e.g. if a terminal is financed and operated directly by an airline).

The 2011 survey confirms this intuition. A comparison of 2008 and 2011 shows that the average ranking of the 25 European airports had improved (lower average rank) from 20 in 2008 to 22 in 2011⁹³, cf. Figure 5.12

Figure 5.12 Average ranking of 25 European airports' charges, 2008 and 2011 (1=highest charges; 50=lowest charges)



Note: A total of 50 airports are in the sample, 25 are European airports. Lowest charges gives a ranking of 50, highest charges gives a ranking of 1.

Source: Copenhagen Economics based on 'REVIEW OF AIRPORT CHARGES 2011', LeighFisher, November 2011.

5.3 Expansion and entry

The airport sector has also responded strategically to the changing market conditions. This section gives examples of airport expansions and entry that have increased competition between airports to the benefit of airlines and passengers.

Expansions

Driven by the increased demand for air travel, several European airports have invested in new runways and terminals. Selected examples from recent years are summarised in Table 5.4.

⁹³ Out of the 25 European airports, comparing 2008 and 2011, 17 had improved their rankings (higher rank); 7 had worsened their ranking (lower rank); and one had an unchanged ranking.

Table 5.4 Selected major airport expansions in recent years

Airport	Expansion	Ended year
London Heathrow Airport	Terminal 5	2008
Copenhagen airport	New low cost terminal (CPH Go)	2010
Frankfurt airport	Fourth runway and Terminal 3	2011 and on-going
Munich airport	Third runway	On-going
Aberdeen airport	Extended runway	2011
Cork airport	New terminal	2006
Lisbon airport	Terminal 2	2007
Barcelona airport	Terminal 3 and third runway	2009
Madrid airport	Terminal 4 and two new runways + new rail link to high-speed rail station	2006/2010 (rail link)
Bordeaux airport	New low cost terminal	2010
Dublin airport	New terminal	2010
Birmingham airport	New runway	On-going
Alicante airport	New terminal	On-going (2014)
Malaga airport	New runway	Opening June 2012

Source: Copenhagen Economics based on information from airport's webpages and www.airport-technology.com.

There are examples of increased airport competition due to such expansion. For example, expansions have clearly influenced the hub competition between Munich and Frankfurt airports in Germany as shown in Chapter 3.⁹⁴

Entry

Competition has also been spurred by entry of new airports. As mentioned in chapter 2, there were 81 more airports in Europe with commercial jet services in 2008 than in 1996.⁹⁵

New airports are still being established. For example, a new large airport is scheduled to open in Berlin in March 2013⁹⁶. Two new Polish airports (Modlin and Oewidnik) will also begin operating during 2012.⁹⁷

Entry has in some cases been eased by adaptation of former military facilities. Examples of such entry are Modlin airport, Airport Weeze and Lübeck airport.

⁹⁴ See for example http://news.monstersandcritics.com/europe/news/article_1669978.php/Frankfurt-Airport-opens-fourth-runway-this-week.

⁹⁵ A. Reynolds-Freighan (2010), "Characteristics of airline networks: A North American and European Comparison, *Journal of Air Transport Management*, Vol. 16, pp. 121-126.

⁹⁶ Cf. http://berlin-airport.de/DE/Presse/BilderDownloadOrdner/BER_Wegweiser_Screen.pdf.

⁹⁷ Modlin, a former military aircraft facility located near Warsaw, is being modernized at a cost of PZN 300 million and will check in its first passengers just in time for Euro 2012. Maximum capacity is planned at 2 million passengers annually. An airport near Lublin, called Oewidnik by the Polish media, will handle its first flights in October and will be the first Polish greenfield airport to be built since World War II. Airport management is planning for a total of 300 000 passengers during the first year, but its capacity could be expanded to 1 million annually. Source: ACI World AIRPORT DEVELOPMENT NEWS, Issue 01 – 2012.

The entry of Airport Weeze illustrates how airport entry can create more competition between airports. Airport Weeze is one of the Europe's youngest airports with no civil operations before 2003. Nevertheless, with a total of 2.9 million passengers, it was in 2010 the third biggest airport in North Rhine Westphalia. Its main client is Ryanair which has turned the airport into its third base in Germany, cf. Box 5.2.

Box 5.2 Timeline for Weeze Airport (opened May 2003)

1954-1999: Used as Royal Air Force (RAF) base

2001: Purchased by a group of Dutch investors and approved for civilian air traffic operations.

May 2003: Regular flight services start from the new airport. Three times per day London Stansted is served by the low cost carrier Ryanair. At the beginning, passengers are cleared in a provisionally converted hangar.

August 2003: A new terminal of 15,000 sqm is opened. Legal complaint from the neighbouring town Bergen results in air traffic restrictions for the weekends.

2004: Sky Airlines has its first take-off from Weeze to Antalya. Ryanair extends its flight offerings in the Lower Rhine region: starting with winter flight schedule, the airline adds Glasgow/Prestwick and Barcelona/Girona as destinations served on a daily basis.

2005: Sum of air traffic in 2005: 591,774 passengers and 7,370 takes-offs and landings.

2006: On the 3rd of January, the higher administrative court in Muenster approves a lawsuit from 16 local residents and the Dutch community Bergen to cancel the aviation law approval. An appeal of the lawsuit is not permitted. The District Council of Dusseldorf lodges a complaint against the non-permission of an appeal. Flight operations continue. Due to the legal insecurity, Hapagfly, Hamburg International and the tour operators TUI, Thomas Cook, REWE Touristik, Alltours and Schauinsland-Reisen discontinue their flights to Mallorca and Antalya. In the meantime, Ryanair once again broadened its Weeze network: The Irish carrier takes off to London (Stansted), Barcelona (Girona), Glasgow (Prestwick), Rome (Ciampino), Stockholm (Skavsta) and Shannon. Sum of air traffic in 2006: 585,403 passengers and 8,262 take-offs and landings.

2007: Air traffic results in 2007: 848,852 passengers (rise of 45% compared to prior year) and 10,009 take-offs and landings (rise of 21% compared to prior year).

2008: Ryanair opens two new routes from Weeze to Poland: From the 30th of March onwards, the low cost airline operates flights to Bydgoszcz (formerly known as Bromberg) and to Wroclaw (formerly known as Breslau). Result of the annual passenger survey: for the first time more Dutchmen than Germans use Airport Weeze as an airport of departure. 52% of all departing passengers originate from the neighbouring country. Air traffic results in 2008: 1.5 million passengers which is an increase of 80%.

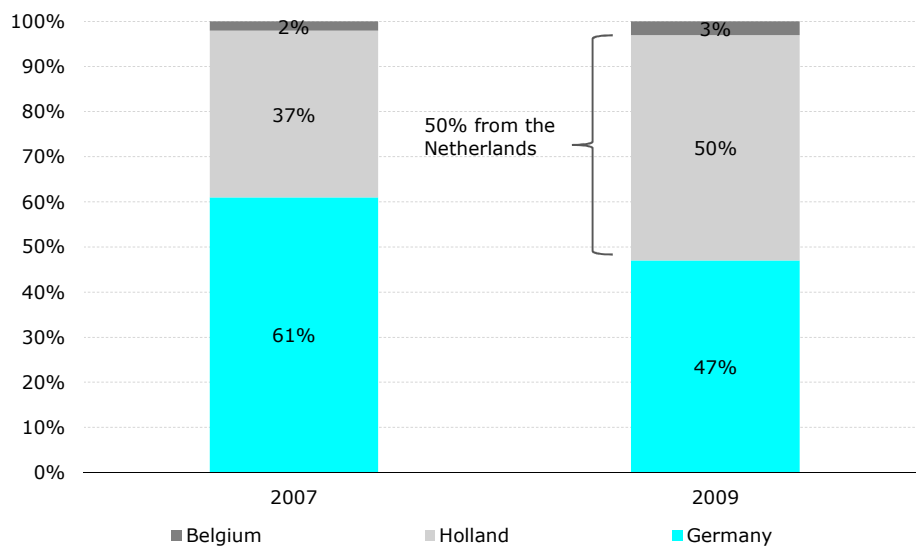
2009: Air traffic results in 2009: 2.4 million passengers, an increase of 58%. Highest annual growth rate among the 23 international airports in Germany.

2010: Air traffic results in 2010: 2.9 million passengers, an increase of 20.6%.

Source: Copenhagen Economics based on Weeze Airport's homepage.

The origin of the departing passengers illustrates an effect on competition, not only in Germany, but also in the Netherlands. Airport Weeze has conducted studies of the geographic origins of its passengers. A study from 2009 revealed that a total of 53% of departing passengers came from the Netherlands and only 47% from the Germany (mainly Lower Rhine region, Ruhr and Rhineland), cf. Figure 5.13.

Figure 5.13 Origin of passengers at Weeze airport, 2007 and 2009



Note: Based on passenger survey conducted by Weeze airport, 2007 and 2009.

Source: Effects of the Air Passenger Tax Behavioural responses of passengers, airlines and airports', Ministry of Infrastructure and the Environment, February 2011.

Chapter 6

Impact of changes on competitive constraints

In the previous chapters we have shown that carriers are footloose, that passengers have more choice, and that airports have responded in a way that is consistent with a competitive market. In this chapter we assess the general degree and direction of airport market power.

Main findings

- **Five indicators are applied to assess strength of competitive constraints:** We have identified five indications of competitive constraints:
 - If many local departing passengers have choice, they can switch away
 - If many transfer passengers have choice, they too can switch away
 - If the airport is hosting a multi-hub carrier, there is scope for buyer power
 - If one carrier is very large there is scope for buyer power
 - If there are many inbound tourists there is scope for destination switching.
- **Increased competitive pressure on all airports:** Applying these indicators to data for 2011 across the 250 largest airports in Europe shows that a majority of airports in all size categories are affected by at least one of these constraints, and in many cases by several competitive constraints with a cumulative impact on market power. The trend is increasing, and market power weakening across the board.
- **Market power can no longer be presumed:** The above shows a general picture where all types of airports are affected, and market power can no longer be presumed, only assessed case-by-case.
- **Category 1 airports:** 4 out of the 10 largest airports have a large share of local departing passengers with choice. 6 out of 7 hub airports have a large share of transfer passengers with choice, and 6 out of 7 hub airports are hosting a multi-hub carrier. The largest carrier provides more than 40% of capacity at 9 out of 10 airports.
- **Category 2 airports:** 9 out of 20 airports between 10 million and 25 million passengers have a large share of local departing passengers with choice. 7 out of 7 hub airports have a large share of transfer passengers with choice, while only 2 out of 7 hub airports host a multi-hub carrier. The largest carrier provides more than 40% of capacity at 13 out of 20 airports.
- **Category 3 and 4 airports:** Many of the smaller airports have a large share of local departing passengers with choice, but limited transfer traffic. The largest carrier provides more than 40% of capacity at 137 out of 188 cat. 4 airports. Furthermore, many of the smaller airports in are prone to destination switching.

We conclude that airports of all sizes are often subject to many competitive constraints and that the cumulative impact of these is likely to be significant in many cases. Furthermore, these competitive constraints are increasing in strength over time. As a consequence, airport market power generally is declining, and based on the assessment of a number of indicators we conclude that there is sufficient evidence to challenge the old presumption of airports having significant market power.

In section 6.1 we summarise the main findings from the empirical evidence. In section 6.2 we propose how the cumulative effect of these many changes on the competitive constraints applying to European airports should be assessed. In section 6.3 we combine the collected indicators to provide an overall assessment of the strength of competitive constraints anno 2011. Finally, section 6.4 summarises the development over time of the competitive constraints.

6.1 Summary of main developments and their implications

The preceding chapters have set out a range of evidence and data which suggests that not only has there been a trend towards increasing competitive constraints on European airports, but that the choice now available to airlines and passengers questions how far many of these airports can be assumed to possess significant market power. We recognise that, as in other sectors, the definitive assessment of market power needs to be done on a case-by-case basis, taking into account the particularities of individual airports but there is sufficient evidence to question old assumptions and to establish some alternative starting points for regulators and policy makers.

In *Chapter 2* we showed that airports have significant fixed costs, and that this gives airports a natural incentive to attract traffic to defray those costs, an incentive which has been accentuated by the growing importance of commercial revenues which increase with traffic. Airports therefore have to respond to increased passenger and airline choice by competing to retain and attract traffic. We also showed that while airports are geographically fixed, competition will play out amongst those passengers that do have a choice between airports and amongst airlines which are the most footloose. As a result, airport behaviour is constrained by the presence of competing airports and by the willingness of passengers and airlines to take their business elsewhere if price or quality is not satisfactory.

In *Chapter 3* we have shown that European airlines are increasingly footloose. High route churn and the ability to close or down-size bases creates the potential for a competitive constraint on airports. If airports do not offer an adequate service in terms of quality and price to airlines, which operate throughout Europe, they can relocate routes or based aircraft to other airports; and in many cases those routes may be difficult for the airport to replace at all, or only with routes which yield less revenue. Conversely, the high degree of churn offers opportunities for airports willing to offer terms to attract traffic from elsewhere. These developments create the basis for airline buyer power whereby airlines have bargaining power when negotiating commercial terms for the use of an airport. In the increasingly rare cases where airports retain market power, the buyer power of airlines might therefore have increased sufficiently to countervail such market power.

In *Chapter 4* we have shown that passengers have genuine and increasing choice. A high degree of geographic overlap of airport catchment areas offers the potential for competition, and greater route overlap shows that airports are offering an increasing real choice. This is apparent across all airport sizes, with most airports seeing an increasing share of passengers having more choice between 2002 and 2011.⁹⁸ For transfer passengers there

⁹⁸ In addition, for many passengers high speed rail offers even further choice.

is also a large degree of choice and the trend is continuing. Based on a relatively strict definition of ‘realistic alternatives’, we have shown that the majority of European transfer passengers have at least two hub itineraries to choose from. We also show that in addition the ability to fly directly has also increased.

In *Chapter 5*, we document that airports have responded to the pressures from greater airline and passenger choice by more active marketing and refining of their offers to differing airline and passenger types.

Implications of these developments on possible market power of airports

The above developments all point to stronger competitive constraints on airports and increased competition between them which has implications for the possible market power of airports.

These changes need to be viewed alongside the fundamental drivers of the airport business, as shown in Chapter 2, which incentivise airports to increase airline and passenger volumes:

- Fixed cost businesses
- Two-sided businesses
- Geographically fixed

These, and other factors, bear on airport market power generally and will need to be taken into account case by case. However, our assessment of overall airport market power focuses only on the strength of three distinct developments all increasing the competitive constraints on airports. These are summarised in Table 6.1.

Table 6.1 Summary of main developments and their implications

	More footloose airlines	More passenger choice	Airport responses
Main developments	<p>Point-to-point carriers:</p> <ul style="list-style-type: none"> • Generally: More active in switching than hub carriers • Have gained market share • Have increased base switching activity <p>Hub Carriers:</p> <ul style="list-style-type: none"> • Generally: Less active in switching than point-to-point. However: • Consolidation is giving hub airlines more choice of where to place capacity <p>All carriers:</p> <ul style="list-style-type: none"> • High churn rate with 20-25% of routes changing annually • Bases and hubs are closed or down-sized 	<p>Local departing passengers:</p> <ul style="list-style-type: none"> • More airports to choose from • More and better airline connections to choose from • More and better road and high speed rail and road connections <p>Transfer passengers:</p> <ul style="list-style-type: none"> • More connections to choose from • More direct routes to choose from <p>All passengers:</p> <ul style="list-style-type: none"> • More price sensitive due to higher leisure share • Increased market transparency (Internet search) • More willingness to use alternative airports • More destination switching 	<p>Privatisation and corporatisation</p> <ul style="list-style-type: none"> • More privatised airports • More airports are operated on commercial terms at arms-length from government <p>More marketing activities:</p> <ul style="list-style-type: none"> • Larger marketing staff • Establishment of and participation at <i>Routes</i> conferences • European airports most developed in marketing <p>Greater use of incentives:</p> <ul style="list-style-type: none"> • Marketing support • Lower airport charges and rebate schemes • Working with local government to develop new routes (e.g. route development funds) <p>Quality/price response:</p> <ul style="list-style-type: none"> • Focus on investments reducing total costs for airlines • Quality improvements and more choice for passengers (lounges, fast track, short and long-term parking, more retailing) <p>Entry and expansion:</p> <ul style="list-style-type: none"> • New airports: e.g. Berlin airport • Conversion of old airfields: Oslo-Moss, Lübeck, Frankfurt Hahn Weeze, Doncaster • New LCC terminals: Bordeaux Milla, Copenhagen Go etc • Expansion at hubs: LHR T5, MUC T2
Implications	<p>Increased competitive pressure on all airports:</p> <ul style="list-style-type: none"> • Pan-European airlines • More airline flexibility • More credible switching threat • More buyer power 	<p>Increased competitive pressure on all airports:</p> <ul style="list-style-type: none"> • More price sensitive passengers • Increased ability to switch 	<p>Increased competitive pressure on all airports:</p> <ul style="list-style-type: none"> • Actions indicate the strengthened competition for airlines and passengers • Passive airports will be punished
Conclusion	Less market power for airports		

Note: For more details on "Footloose airlines" we refer to Chapter 3. For details on "Passenger choice", we refer to Chapter 4. For "Airport responses" we refer to Chapter 5.

Source: Copenhagen Economics

6.2 Cumulative effect of many changes

Individually, many of these developments would have been significant but they are both cumulative and self-reinforcing. The internet, for example, has increased passenger awareness of choice but also enabled airlines to switch more easily because the costs of getting that information to passengers have been reduced. And if passengers switch away from an airport, airlines offering services from that airport will lose passengers and consider switching away too, so magnifying the impact of passenger switching.

All types of airports are likely to experience competitive pressure from one or more of the sources identified in the previous chapters, but not all will have been affected equally by the developments identified. Competitive constraints will affect different airports differently, and the strength of the impact is a matter of degree. In Table 6.2 we have identified where the different sources of competitive constraints might impact on airports in the four different ACI size categories. All types of airports can be exposed to greater catchment area competition for local departing passengers, just as any airport, in principle, can be exposed to airline buyer power and passenger destination switching, but the degree to which these constraints apply will vary from airport to airport and in places where there are concerns of a high degree of market power, the strength of these constraints can be further assessed. Naturally, airports that do not offer transfer traffic are not exposed to competition for transfer traffic. This implies that this source of competitive constraint is irrelevant to the smallest airports in category 4 and to most airports in category 3.

Table 6.2 Competitive constraints and possible impact on airports according to size

Type of airport by ACI category (number of passengers)	Possible source of competitive constraint			
	Catchment area competition	Competition for transfer traffic	Airline buyer power	Passenger destination switching
ACI Airport Category 1 (+25 million)	✓	✓	✓	✓
ACI Airport Category 2 (10-25 million)	✓	✓	✓	✓
ACI Airport Category 3 (5-10 million)	✓	(✓)	✓	✓
ACI Airport Category 4 (0-5 million)	✓	-	✓	✓

Note: Table shows where the identified source of competitive constraint possibly could influence the assessment of market power. Airports are grouped in ACI categories according to number of passengers in 2010. (✓) indicates that only few airports in category 3 operate a hub and consequently the majority of airports in the category are not affected by this source of competitive constraint.

Source: Copenhagen Economics.

The impact of these competitive constraints varies in degree from airport to airport. We see from our analyses in this report, that the increased competition in the catchment area from increasing route overlaps with other airports may affect airports in all categories, albeit some of the smaller airports in category 4 are located in more remote areas and for this reason may be subject to less catchment area competition. As mentioned, the increase in competition for hub traffic mainly affects the larger airports in categories 1 and 2, and only category 3 airports to a limited degree, since few of these airports operate a hub for transfer traffic, and none in category 4. However, the smaller airports are likely to be affected by choice of destination by in-coming leisure passengers and by airline buyer power, given the likelihood that a single carrier will constitute a large share of total traffic and that the threat of exit is therefore likely to be most credible. Airline buyer power may affect any airport category. We note that some airports (in particular in category 3) are hosting a diversified set of airlines without a single carrier in a strong position, which – all other things equal – will make them less prone to airline buyer power. Passenger destina-

tion switching may also affect all categories, but it may be less of a significant factor for larger airports in categories 1 and 2 than for the smaller airports in categories 3 and 4.

6.3 Assessment of the level of airport competition in 2011

The above provides an identification of different sources of competitive constraint and a qualitative discussion of how it may impact on different types of airports. In this section we consider, based on the most recent data for 2011, the numbers of airports likely to be impacted by different competitive constraints. The more marked any individual constraint, and the more it operates in combination with others, the less likely that there is significant market power.

We have therefore developed, from the analyses earlier in this report, five key indicators that can be evaluated in a systematic and comparable way across airports and over time. The indicators show the presence of competitive constraints and we have applied these to the 250 largest airports and analysed the results across the four ACI airport categories. To provide a broad assessment of the level of airport competition, we have applied thresholds for each of these indicators indicating where there are significant competitive constraints and where caution should be exercised before concluding that an airport has significant market power.

We recognize, of course, that the results will not provide a definitive assessment of whether there is significant market power or not. That is often a matter of degree, detail and judgment as there are no commonly accepted thresholds that indicate definitively whether market power is present or not. Our use of these indicators is intended, rather, at least to raise questions about whether airports across ACI's categories have the market power that is commonly attributed to them.

The indicators are:

- **Local departure choice:** If a significant share of local departing passengers at an airport has a reasonably good choice of reaching the desired destination from a different airport, it is less likely that the airport has substantial market power in the market for origin-destination travel (OD market)⁹⁹. For each airport we have estimated the market share of that airport in the markets for journeys from each region around the airport to all intra-European destinations served by that airport. Each airport is naturally competing in a large number of such markets (region-to-destination airport pair) and we have calculated the average passenger-weighted market share for each airport. We have applied thresholds of 40% to 50% average market share in the region-to-destination-airport markets it competes in to assess an airport's potential for market power for O&D traffic (i.e. to

⁹⁹ See chapter 4 on detailed results. The thresholds of 40%-50% are taken to represent a reasonable "rule of thumb" below which an airport may not be considered to have significant market power. Thresholds around this level are sometimes used as an indication of a possibly problematic market share in competition assessments, but it should be noted that such a threshold is only indicative, and airports with a high market share may not be found to have market power, just as airports with a lower market share may not necessarily be found free of market power.

what extent a large share of potential passengers has a choice between one or more airports)¹⁰⁰.

- **Transfer choice:** If a large share of transfer passengers has a choice of a least one reasonably good transfer alternative that constitutes a competitive constraint on the airport's transfer business.¹⁰¹ We have applied a threshold of 40% market share.¹⁰²
- **Multi-hub:** Airports hosting a hub carrier with multiple hubs are less likely to possess market power than airports hosting a hub carrier with no outside options.¹⁰³
- **Buyer power:** Airports that are subject to airlines' countervailing buyer power, for example if a single carrier has a dominant share of total traffic, are less likely to possess market power than airports not facing buyer power. We have applied thresholds of 40%-50% of total capacity offered by the largest carrier at each airport.¹⁰⁴
- **Inbound leisure:** Airports having a large share of inbound leisure traffic and therefore subject to destination switching are less likely to possess market power.¹⁰⁵

Applying these thresholds on the available data for 2011 across the 250 largest airports in Europe shows that a majority of airports in all categories are affected by at least one of these constraints, and that in many cases by several competitive constraints with a cumulative impact on market power.

¹⁰⁰ This corresponds to requiring that 60% of local departing passengers have a reasonably good alternative at another airport. This group of passengers may (in combination with other sources) constitute a sufficient competitive constraint to significantly reduce any locational market power.

¹⁰¹ See chapter 4 on share of transfer passengers with choice.

¹⁰² For transfer passengers, we have applied a 40% market share to say that airports with an average market share below 40% in the markets where they compete may be significantly constrained by the availability of alternative transfer routes via other airports.

¹⁰³ For multi-hub airports, we have simply assessed the hub structure of the hub carriers at the 16 largest European hubs and indicated which of these 16 hubs are hosting a hub carrier with multiple hubs. The argument is that hub airlines with outside options as to where to place their long-haul routes can exert a competitive pressure on the hub airport.

¹⁰⁴ There is no guarantee that the airline will possess or choose to exercise buyer power above this level. It does however provide a broad metric of the likelihood of this source of competitive constraint being relevant.

¹⁰⁵ There is very limited data available at the airport level on the share of inbound leisure traffic, but the available data for very different airports such as Lisbon, Riga and Bologna all showed that around 40% of total passengers are inbound leisure passengers.

Table 6.3 Number of airports with competitive constraints reducing market power, 2011

Indicator							
Type of airport	Local departure market share		Transfer market share* < 40%	Hosting multi-hub airline*	Buyer power largest carrier		In-bound leisure share
	< 50%	< 40%			>50%	>40%	
ACI Airport Category 1 (10 airports)	40% 4 of 10 airports	10% 1 of 10 airports	86% 6 of 7 hub airports	86% 6 of 7 hub airports	50% 5 of 10 airports	90% 9 of 10 airports	Likely to be low
ACI Airport Category 2 (20 airports)	45% 9 of 20 airports	15% 3 of 20 airports	100% 7 of 7 hub airports	29% 2 of 7 hub airports	20% 4 of 20 airports	65% 13 of 20 airports	Likely to be low
ACI Airport Category 3 (32 airports)	69% 22 of 32 airports	44% 14 of 32 airports	100% 2 of 2 hub airports	0% 0 of 2 hub airports	25% 8 of 32 airports	38% 12 of 32 airports	Likely to be high
ACI Airport Category 4 (188 airports)	72% 135 of 188 airports	51% 95 of 188 airports	Not relevant	Not relevant	43% 81 of 188 airports	73% 137 of 188 airports	Likely to be high

Note: The analysis in this table covers the top 250 airports in Europe. In Chapter 3, we presented the buyer power indicator for all European airports with traffic in the two years (close to 600 airports). *) 16 European hubs are analysed in detail.

Source: Copenhagen Economics.

The analysis shows that the majority of the seven hub airports in category 1 face competition for transfer passengers from other hubs, and that the majority of airports in category 1 face competition from other hubs to attract traffic from the same hub carrier. We also show that 4 out of the 10 airports in category 1 are facing competition for local departing passengers at the 50% threshold. However, this metric is very sensitive to the choice of threshold: 1 out of 10 category 1 airports would meet the 40% threshold and, as chapter 4 shows, this element of competition is increasing.

For category 2 airports, the analysis shows that all of the seven hub airports in the group are facing competition for passengers in transfer markets from other hubs, and that two of the hub airports in category 2 face competition from other hubs to attract transfer traffic from the same hub carrier. We also show that 9 out of 20 category 2 airports are also facing competition for local departing passengers at the 50% threshold. However, 3 at a 40% threshold.

For the remaining smaller airports in categories 3 and 4, transfer traffic is largely irrelevant. Competition for locally departing traffic is, however, present. Around 70% of the airports are facing competition for local departing passengers at the 50% threshold and around half in the case of a 40% threshold. In addition, these airports generally see a larger share of inbound leisure passengers and consequently face more destination switching, which is an additional source of competitive constraints on these airports.

While it is impossible to assess precisely the degree of market power from a broad indicator-based analysis such as this, the majority of the indicators point to a significant degree of choice and the presence in many cases of a number of significant competitive con-

straints, which questions whether and how far most European airports possess significant market power.

We note that the above only provides an assessment of some of the competitive constraints on airports, and that the natural operation of the airport business works against abuse of market power even where that exists, because airports have incentives to maximise traffic by continuously attract new or better traffic to their airport, as described in Chapter 2.

6.4 Assessing the development in airport competition 2002-2011

The above analysis assessed the level and the strength of existing competitive constraints based on data for 2011. Three of the indicators can be calculated over time and we have summarised their development since 2002 as shown in Table 6.4 below. We realise that many of the changes we analyse commenced before 2002, but the available data do not allow us to make consistent comparison further back in time than 2002, although we are of the view that if it were possible to compare 2011 with, say, 1997, when the European single aviation market was completed, one would see a very marked change indeed.

Passenger departure choice has increased for the majority of airports between 2002 and 2011. We also note that all category 1 airports have experienced an increase in local departure choice. In category 2 we find that 19 out of 20 airports have experience greater choice. The smaller airports in categories 3 and 4 also see increased choice for local departures, but less pronounced than for categories 1 and 2. This is noteworthy because larger airports are generally expected to possess more market power than smaller airports, and therefore it is interesting that the trend towards less market power seems to be stronger in categories 1 and 2 than in categories 3 and 4, which are less likely to have market power in the first place.

Since 2002, a number of airlines have developed multi-hub operations as a result of alliances or mergers. Air France and KLM merged in 2004 to form the Air France/KLM group with the result that hubs in Paris and Amsterdam became hosts of a multi-hub airline. Lufthansa was already a multi-hub airline with the two hubs at Frankfurt and Munich in 2002. With the integration of Swiss in 2005, and Austrian Airlines in 2009, hubs at Zurich and Vienna came under the same multi-hub airline group. The British Airways – Iberia merger which created the International Airlines Group (IAG) was completed in January 2011. Airports at London Heathrow and Madrid now host a multi-hub airline. These developments alone imply that eight of the nine largest European hubs now host multi-hub airlines, with Rome as the exception.

The indicator on buyer power, i.e. the share of the largest carrier at each airport, generally shows a decline over time in the share of the largest carrier, but many airports still face a single carrier with a large share of capacity, and as airlines' ability to switch has increased over time, we assess that the possibility of their exercising buyer power also to have increased over time.

Table 6.4 Development in indicators since 2002

Type of airport	Indicator		
	Local departure choice	Hosting multi-hub airline*	Buyer power (largest carrier increases share)
ACI Airport Category 1	Increase for 10 of 10 airports	Increase for 6 of 7 hub airports	Increase for 4 of 10 airports
ACI Airport Category 2	Increase for 19 of 20 airports	Increase for 2 of 7 hub airports	Increase for 7 of 20 airports
ACI Airport Category 3	Increase for 28 of 32 airports	No change for the two hub airports	Increase for 9 of 32 airports
ACI Airport Category 4	Increase for 125 of 188 airports	Not relevant	Increase for 45 of 188 airports

Note: Including top250 airports in Europe *) 16 European hubs are analysed in detail

Source: Copenhagen Economics

Transfer market shares have changed over time for most airports. By definition, market shares cannot be expected to move uniformly up or down, rather in a competitive market one would expect market shares to move up for some airports and down for others as competitive forces have their effect. This is also confirmed in our analysis of hub competition in Chapter 4 showing that due to improvements in the transfer product some hubs have improved their ranking and become well positioned in certain hub markets introducing new competition. Helsinki airport is an example of this. Overall, the important information with respect to transfer market competition is really that only one of the 16 hubs analysed has a market share above the 40% threshold and that changes are broadly consistent with a competitive market.

Table 6.5 Development transfer market indicators since 2002

Type of airport	Transfer market share
ACI Airport Category 1	Decrease for 3 of 7 hub airports
ACI Airport Category 2	Decrease for 2 of 7 hub airports
ACI Airport Category 3	Decrease for 0 of 2 hub airports
ACI Airport Category 4	Not relevant

Note: 16 European hubs are analysed in detail.

Source: Copenhagen Economics

Chapter 7

Implications for airport regulation

The preceding chapters have shown the extent of competitive constraints on airports generally and how these have grown with developments in airline business models and increased passenger choice. We have also shown how airports have responded to the resulting competitive challenges. In this chapter we assess the implications of enhanced airport competition for regulation and policy.

Main findings

- **Increased competition lessens the need for regulation:** The increase in airport competition leads us to question whether economic regulation is still required in much of the European airport sector. Economic regulation of airports should be the exception rather than the rule
 - **Regulating can be harmful when competition is effective:** Economic regulation where competition is likely to be effective can do more harm than good. Regulation can be slow moving and so constrain airports in making competitive investment or pricing decisions.
 - **Regulation should not get in the way of competition:** Where regulation is still needed, it should be adjusted to take account of the continuing development of competition and to avoid constraining the marketing and service innovation that is, increasingly, a feature of today's airport scene.
 - **Ex-ante or ex-post?** Our results warrant a move in the direction of more reliance on competition law (ex-post) and less reliance on sectoral economic regulation (ex-ante).
- Our recommendation: Regulate less, but more effectively**
- 1) **Avoid economic regulation of airports in areas where competition is already effective:** Sector-specific economic regulation of European airports should not be needed where competition is effective. Competition law should, as elsewhere in the economy, be sufficient.
 - 2) **Rethink economic regulation of airports in areas where competition has yet to develop:** Economic regulation may still be needed in these circumstances. However, our results suggest that there is a need to regulate less, but more effectively, taking full account of the competitive constraints that already exist and the potential for them to develop further.

Some of the current airport regulation looks more appropriate to the 1980s or early 1990s. Much current airport regulation is likely to be inappropriate now that airlines and passengers have more choice.

In section 7.1 we suggest that there is a need for a reappraisal, or fitness check, of European airport regulation. In section 7.2 we discuss the general direction that could follow from this. The first, to avoid economic regulation where competition is likely to be effective,

tive, is dealt with in section 7.3. The second, to rethink economic regulation where competition has yet to develop fully, is dealt with in section 7.4. Finally, section 7.5 concludes.

7.1 Need for a fitness check of airport regulation

Airport regulation needs to be considered in light of the general European approach to smart regulation which suggests ‘fitness checks’ to ensure that regulation remains suitable:

“Fitness checks” will assess if the regulatory framework for a policy area is fit for purpose and, if not, what should be changed. The aim will be to identify excessive burdens, inconsistencies and obsolete or ineffective measures and to help to identify the cumulative impact”

- Communication on “Smart Regulation in the European Union” Brussels, 8.10.2010.

Based on our assessment of airport competition in Europe, and the stronger competitive constraints upon European airports, such a fitness check seems warranted for airport regulation. It should be based on a sound understanding of what constitutes effective competition; and also of the risk that regulation may constrain some of features of competition that yield greatest benefit to airlines and passengers. Our suggestions for the general direction of such a fitness check are outlined below.

7.2 Less need for economic regulation of airports

When assessing the fitness of European airport regulation, it is not a question of regulation versus no regulation. Overall, it is rather a question of the fitness of different approaches and how they interact. A key choice relates to when to use economic regulation specifically of the airport sector (ex-ante regulation) and when to use general tools of competition law to detect and punish unlawful conduct (ex-post regulation)¹⁰⁶. In our view this need not in all circumstances be a question of either economic regulation *or* competition law. There can be more reliance on competition law even where an airport continues under sector regulation. In such circumstances the priority is ensuring that the mix is appropriate.

With evidence of greater airport competition, the first element in a fitness check could be to consider whether this warrants a move in the direction of more reliance on competition law (ex-post) and less reliance on economic sector regulation (ex-ante).

Economic regulation of a specific sector (ex-ante regulation) can in general be advantageous over competition law (ex-post regulation) in areas where there are *inter alia*:

- Low degrees of competition and high risk of abuse of dominant positions
- Stable and predictable market conditions and limited market dynamics
- Little need or scope for finding cooperative solutions between market actors
- Good regulatory information and insight into a sector or industry
- High costs of detecting abusive conduct

¹⁰⁶ In most countries economic regulation of the airport sector (ex-ante regulation) is handled by independent aviation regulator, while competition law (ex-ante regulation) is enforced by the relevant competition authority. However, in many countries, sector authorities also have competition law powers, e.g. in the UK.

Our analyses of the developments in the European aviation market lead us to conclude that these arguments in favour of economic regulation have been significantly weakened as a result of increased airport competition. Consequently, policy makers should consider a change in a direction towards relying more on competition law where possible, with a more ex-post oriented sector specific regime where regulation is still needed.

More concretely, we have two recommendations:

- 1) **Avoid economic regulation of airports in areas where competition is already effective:** Sector-specific economic regulation of European airports should not be needed where competition is effective¹⁰⁷. Competition law is designed to protect airlines and passengers (or any other economic actor) against the potential abuses of market power, and rightly applied it should work in the airport sector too.
- 2) **Rethink economic regulation of airports in areas where competition has yet to develop:** Economic regulation may still be needed in these circumstances. However, our results suggest that there is a need to regulate less, but more effectively. Economic regulation needs to take full account of the competitive constraints that already exist and the potential, demonstrated by this study, for them to develop further.

In the following we elaborate on these two main recommendations.

7.3 Avoid regulation when competition is likely to be effective

Economic regulation where competition is likely to be effective is likely to do more harm than good. That is widely recognised, and the standard argument in regulated sectors is that sectoral regulation can be relaxed, or done away with as competition develops.

We have shown that competition between airports in Europe has increased in general, and consequently that competition is more likely to be effective today than it was 10-20 years ago. Yet regulation has been slow to respond to this emerging reality.

Policy makers have yet fully to recognise the extent of competition in the airport sector and therefore the disadvantages of regulating where competition is effective or is likely to become so. First of all, controls on charges to avoid excessive profits should be unnecessary where competition is effective. Controls on charges in those circumstances risk discouraging the investments that the European aviation market now requires. This is because such regulation risks leaving those investments which make insufficient return for the airport to bear but, whenever investment becomes profitable, subjecting that to price controls. There is also a risk that the regulator, rather than the market, becomes the arbiter of the competitive outcome.

¹⁰⁷ That economic regulation of airports is not always needed is also demonstrated by the successive judgements of the Australian Productivity Commission, see Australian Productivity Commission inquiry report on *Economic Regulation of Airport Service* from 30 March 2012, accessed at <http://www.pc.gov.au/projects/inquiry/airport-regulation/report>.

It also be recognised that there are other aspects of competition than charges. Competition, as pointed out by Littlechild¹⁰⁸, is also a process of finding out what customers want, and about finding effective ways of producing. Regulation which is inevitably slow moving, focussed on the present and the past rather than the future is likely to work against those aspects of competition which relate to discovering more effective ways of producing and investing, and discovering what customers want.

This suggests that policy makers need to question how far current regulation is required and whether there may be scope for greater reliance as elsewhere in the economy on ex-post regulation, including through competition law, rather than ex ante setting of standards and prices. This would give the airlines the confidence that, should abuse of any remaining market power occur, it would be acted upon but, at the same time, give an opportunity for the development of competition to continue and the discovery process to proceed without the constraints of prescriptive regulation.

7.4 Rethink regulation where competition has yet to develop

Our findings suggest that few (if any) airports are untouched by some form of competition and that these competitive pressures will increase with technological change, competition from hub airports outside Europe and further advances in the use of the internet. Nevertheless, some airports may still exhibit sufficient market power to merit at least some form of regulatory surveillance. But that does not mean that current regulation remains appropriate.

The general trend in airport competition and towards reduced market power, means that the market environment airports operate in is very different than it was 10-20 years ago. This suggests that regulation needs to take more account of the scope for competition to exert a disciplining effect and to develop over time. Regulation needs to ensure that it does not get in the way of this evolution.

Seeking to mimic all relevant aspects of the process of competition

In order to design effective regulation it is necessary to ask what competition is supposed to do, and to base the design of good airport regulation on an understanding of the meaning of effective competition.

Effective competition can be described as a process of rivalry, rather than an absolute outcome. According to Littlechild (2011), effective competition is a process with three main properties:

- A: eliminating excessive profits,
- B: discovering more efficient methods of production,
- C: discovering what customers want.

The standard approach to airport regulation focuses on competition property A: how to set prices so as to prevent excessive profit. Following this approach, which has also been the default approach in network industries with more natural monopoly characteristics,

¹⁰⁸ Littlechild's views on competition as a process rather than a specific outcome is explained in the following section 7.4.

the regulator seeks to set prices (or income) in a way that reflects costs and so at levels that might be assumed to derive from competition.

But effective competition is also about properties B and C: How to discover new and more efficient ways of producing and investing; and also how to discover what customers want. In the case of airports discovering efficient ways of producing can include investments made in collaboration with airlines to lower their overall cost of operations, as shown in chapter 5¹⁰⁹. That airports are also attempting to discover what customers want can be illustrated by recent attempts to differentiate airport service offerings with the construction of new low cost terminals, e.g. *Bordeaux Billi* or *Copenhagen Go* as is also shown in chapter 5. These investments are designed to meet the needs of low cost airlines and low cost passengers, but the regulatory set up has not always been helpful in that process¹¹⁰.

A key point from our analysis is the diversity of competitive constraints and the variety of ways it can impact on airports of all sizes. Consequently, we see no basis for a uniform approach to regulation using a size threshold so that, say, airports above X million passengers should be subject to economic regulation, while airports below a certain threshold are not¹¹¹. What we have shown (see chapter 6) is that there are many large airports that are subject to a lot of competitive constraints, and that there is no direct correlation between size and the magnitude or strength of competitive constraints. Bigger airports face a different situation than smaller airports, and they face different competitive constraints, but we see no evidence to suggest that the constraints on bigger airports – in general – need be any weaker than the constraints on many smaller airports.

Therefore, a regulatory approach based on size as the only indicator of potential need for regulation seems misguided. What is needed is a differentiated approach that takes the particular features of each airport and the multitude of the competitive constraints into account. We note that we have only addressed some of the important competitive constraints, but individual assessments will need to incorporate all competitive constraints case by case (as e.g. the regulatory authorities have done for Amsterdam Schiphol or the London airports).

Moreover, the design of airport regulation needs to recognise that future needs are unknown and may be changing rapidly in volatile markets. One of the problems of traditional approaches to regulation, with a focus particularly on price, is that they pay insufficient attention to dynamic development, including investment, and so risk distortions to behaviour and outcomes that may be more disadvantageous to consumers than the risk of abuse of airport market power. Indeed, where competition is emerging and the market operating, imposing or maintaining regulation risks a form of regulatory failure where the regulator rather than the interplay of parties in the market determines commercial out-

¹⁰⁹ For example, we mention the concept of Collaborative Decision Making (CDM), whereby airports and airlines seek to make better investment decision in coordination in order to maximize the overall value creation for both the airline and the airport, and ultimately for the passengers.

¹¹⁰ The regulatory process of approving charges may be lengthy and complicated, and according to some airports, the process of gaining regulatory acceptance of new commercial approaches, such as for example a new low cost terminal with differentiated charges, may be slow and in cases counter-productive in terms of ensuring the lowest possible charges as soon as possible.

¹¹¹ The Airport Charges Directive which came into force in March 2009 serves as an example. The requirements of the Airports Charges Directive introduce regulatory arbitration on – and therefore setting of – prices, as well as consultation and transparency. It extends to all airports above 5 million passengers and the biggest airport in each EU member state.

comes. This could warrant a regulatory design seeking to avoid this through a more ex post approach whereby the regulator stands back and only intervenes where there is clear evidence of abuse.

Options to consider where some form of regulation is still warranted

One option is to allow more scope for airports and their customers to take decisions. The direction would be that the regulator facilitates the “discovery process”, instead of replacing it. In these circumstances, the regulator stands back, providing oversight to avoid abuse of monopoly power. Market participants can then determine an acceptable outcome for themselves.

Another, related approach would be to adopt the Australian model whereby the regulator monitors developments across airports and reviews the case for intervention on a periodic basis. In the Australian case the review is conducted generally on a five year cycle. This leaves unfettered the development of airport-airline relationships in the meantime, and would allow greater scope for the discovery elements in competition to develop. It is notable, indeed, that the Australian system has worked in a country where, because of the distances involved, locational market power for airports is likely to be significantly greater than enjoyed by most European airports.

In broad terms, the ‘regulatory case’ is significantly weaker, than 10-20 years ago. We invite policy makers to review these new regulatory options.

7.5 Conclusion

In conclusion, we are of the view that some of the current airport regulation looks more appropriate to the 1980s or early 1990s before airline markets had been liberalized and airline business models had become as flexible as they are today; and when there were fewer airports offering airline services and when these airports had a less commercial outlook than today’s commercial enterprises several arms-lengths from Government departments.

Much current airport regulation is likely to be inappropriate now that airline liberalisation has transformed the demand side of airport markets, has increased airline switching (as shown in chapter 3) and passenger choice (as shown in chapter 4) and led to inter-airport substitutability which has significantly strengthened the competitive constraints on airports.

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Glossary

Aeronautical revenue

Aeronautical revenue is the airport's income from aeronautical charges, often referred to as airport charges. Airport charges are imposed on passengers and airlines for the use of an airport. They consist of passenger-related charges (e.g. for the use of the terminal), paid by the passenger to the airport via the airline ticket, and aircraft-related charges (e.g. landing charges for the use of the runway, aircraft parking charges) paid by the airline directly to the airport. On average, aeronautical revenues accounted for 52% of European airports' total revenues in 2010.

Buyer Power

Buyer Power is the ability of one or more buyers, based on their economic importance in the market in question, to obtain favourable purchasing terms from their suppliers. Buyer power is an important aspect in competition analysis, since powerful buyers may discipline the pricing policy of powerful sellers, thus creating a "balance of power" in the market concerned. However, buyer power does not necessarily have positive effects. When a strong buyer faces weak sellers, for example, the outcome can be worse than when the buyer is not powerful.

Catchment area

Catchment area is a term used to describe the geographic area from which a large proportion of an airport's outbound passengers originate, and to which a large proportion of an airports inbound passengers travel. The size of catchment areas, and overlaps between catchment areas of neighbouring airports, can provide useful evidence of the potential for, and strength of, competition between these airports. The sizes of relevant catchment areas may vary, for example, according to passenger type and surface access possibilities.

Hub airport and hub airline

A hub airport is an airport hosting a *hub airline*, sometimes also referred to as a *network airline*. A hub is an airport that an airline uses as a transfer point to get passengers to their intended destination. It is part of a hub and spoke model, where passengers (often not served by direct flights) change planes at the hub airport en route to their final destination. Some airlines may use only a single hub, while other airlines use multiple hubs. Hubs maybe used for both passenger and cargo flights, although there are specialised cargo hubs.

Low-Cost Carrier

Low-Cost Carriers are airlines that generally have lower fares, fewer services and lower costs through streamlined operating practices (such as fast turnaround times). These airlines typically have a lower operating cost structure than traditional network carriers. One particular feature of Low-Cost Carriers is the unbundling of service options charged in addition to the airfare e.g. for services like on-board food, priority boarding, seat allocation, and baggage etc. While the term is often applied to any carrier with low ticket prices and limited services, regardless of their operating models, low-cost carriers should

not be confused with regional airlines operating point-to-point flights (see below) or with full-service airlines offering some reduced fares.

Market Power

Market Power refers to the strength of a firm in a particular market. In basic economic terms, market power enables a firm profitably to raise its prices or reduce the quality of its service or product beyond what consumers would tolerate in a competitive market. In competition analysis, market power is assessed by analysing the market in question, including calculation of market shares. This necessitates an examination of the availability of other producers of the same or of substitutable products and consideration of barriers to entry or growth (entry barriers) or to innovation. It is important that the assessment of market power takes account of all the competitive constraints to which a firm may be subject, including their cumulative impact

Non-aeronautical revenue

The term *non-aeronautical revenues* refers to all revenues from the commercial operations of an airport outside its aeronautical activities. These revenues usually come from diverse categories such as airport retail, food&beverage, car parking, advertisement or real estate activities (*airport cities*). In 2010, European airports earned 48% of their total revenues from non-aeronautical revenues.

O&D Traffic/Passenger

O&D Traffic/Passenger is an abbreviation for origin and destination traffic/passengers. O&D passengers are those passengers who are either boarding or deplaning at a particular stop, as distinct from those remaining on the plane or those transferring to another flight at the airport to reach their destination.

Point-to-Point Carrier

Point-to-Point Carriers refers to airlines with a route system where passengers travel directly to a destination, rather than going through a central hub. This differs from the spoke-hub system (see hub carrier) in which the airline operates a distribution point in the network at a central location where passengers can transfer to another flight to reach their destination. Point to point carriers include, but are not restricted to, LCCs (see above). In the analyses of this study, the main distinction is made between hub carriers on the one hand and point-to-point carriers (including LCCs, regional airlines and charter airlines). A precise list of the hub airlines operating scheduled flights within Europe can be found in the technical annex of this study.

Price Elasticity

Price elasticity (of demand) is a measure used in economics to show the responsiveness, or elasticity, of the quantity demanded of a good or service to a change in its price. More precisely, it gives the percentage change in quantity demanded in response to a one percent change in price (holding constant all the other determinants of demand, such as income). Such elasticities may be calculated at the level of the product as a whole (e.g. leisure travel) or at, say, the route level. The latter elasticity will be higher as consumers have a choice of other suppliers of a route as well as possibly other modes of transport.

Transfer Traffic/Passenger

Transfer Traffic/Passenger describes passengers changing aircraft at an airport where the airport is used as connection point between two flights on a journey.

Two-sided business

Two-sided businesses, also called *two-sided markets*, provide platforms for two distinct user groups that both gain from being networked through the platform. Airports are generally considered two-sided businesses, offering services to both passengers and airlines. Other examples of such markets include credit cards, composed of cardholders and merchants; operating systems (end-users and developers); travel reservation services (travelers and airlines); yellow pages (advertisers and consumers); and communication networks, such as the Internet. Benefits accrue to each group. Consumers, for example, prefer credit cards honoured by more merchants, while merchants prefer cards carried by more consumers.

**Copenhagen
Economics**



Sankt Annæ Plads 13 / DK – 1250 Copenhagen
Contact: + 45 2333 1810 / ce@copenhageneconomics.com