
Low-Cost Airlines

Bringing the EU closer together



CEPS Research Report



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European air travel has witnessed a tremendous evolution since the late 1990s following the liberalisation process, with many new entrants to the market. Several of these new entrants are low-cost carriers (LCCs), offering lower fares and thereby making air transport accessible to a larger number of people. This broader access and increased connectivity have the potential to bring people and regions closer together in Europe.

Against this background, the objective of the current report is to understand to what extent, and through which channels, LCCs have contributed and can contribute to European integration. Relying on a mixed set of approaches including desk research and data analysis based on quantitative and qualitative data sources, the study initially sets out the evolution of the air travel market in terms of the regulatory framework and economic principles. It then moves on to a mapping exercise showing the sharp increase in the number of air passengers carried over the last few decades and the large, yet still uneven, increases in seat capacity across Europe. The network of routes, thanks to point-to-point connections as the main focus of LCCs, has also expanded over time. Overall, the evidence from the literature and data analysis points to the enhancement of connectivity resulting from the entry of LCCs into the market.

As regards the channels through which LCCs can foster European integration, the study examines the significant increase in labour mobility, business travel, international student mobility and leisure tourism and their close links with corresponding developments in air travel and affordable fares in an expanded network of routes throughout Europe.

Qualitative data analysis based on LCC passenger interviews also reveals interesting travel patterns, reflecting a combination of personal preferences, family circumstances and career decisions. These results largely confirm the quantitative analysis and findings from the literature highlighting the contribution of LCCs to European integration through various channels, e.g. labour mobility, business commuting, international student commuting and leisure/tourism travel, as identified and analysed in the study.

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List of Abbreviations

CEE	Central and Eastern Europe
EEA	European Economic Area
EU	European Union
HSR	High speed rail
LCC	Low-cost carrier
SME	Small and medium enterprises
TFEU	Treaty on the Functioning of the European Union

Executive Summary

For a long time, travelling by plane was considered a luxury that was accessible to individuals with relatively more affluent socioeconomic backgrounds. However, this picture has changed as the European air transport industry has been rapidly evolving ever since the liberalisation process of the 1990s. In fact, one of the main results of this evolution is the subsequent increase in the number of passengers carried by air travel. In this regard, the availability of low fares in air travel, especially in the last two decades with the appearance of low-cost carriers, has generated a radical shift by making air transportation accessible to a wider public. According to the European Commission, air transport can contribute to the European economy in connecting people and regions and play a vital role in the integration of Europe.

Against this background, this report asks whether low-cost airlines are bringing Europe closer together. In particular, the objective of this report is to understand to what extent low-cost airlines have contributed as well as can contribute to European integration. The research question at the heart of this report is a relevant one, especially if one considers the challenges that the European Union has been facing over recent years in terms of integration, the smooth functioning of the European Single Market and the sense of a European identity, to name a few. The report relies on a mixed method research approach, comprised of desk research covering academic and policy literature as well as quantitative and qualitative data analysis based on primary and secondary sources.

Initially describing the state-of-play in the current aviation industry, the report lays the ground for the regulatory framework by considering the levers and barriers that airlines experience, with a focus on low-cost airlines. Highlighting relevant and pending issues from the regulatory and competition perspectives, the report also overviews the economic principles behind the low-cost model such as partial reliance on secondary or regional airports with relatively low airport charges, unbundled pricing, a homogenous and young fleet to decrease maintenance costs, to name a few. However, evidence suggests that the characteristics of the low-cost model vary from airline to airline and the industry is in dynamic evolution.

Using various data sources, the report next provides an extensive mapping of air passenger transport by distinguishing legacy carriers and low-cost carriers (LCCs), showing the shifts in market shares from the former to the latter. The mapping exercise considers two main dimensions including seat capacity (both international and domestic) and route network. Regarding the former, empirical analysis suggests sharp increases in seat capacity across Europe from the early 2000s until 2017, albeit there are variations across different regions. The market share of LCCs is expanding, but it also shows variation across countries in Europe. This significant expansion in LCC market share also suggests that they are essential players in the airline transport market. In terms of route network, by focusing not only on secondary airports but more recently also on main airports, LCCs increase regional connectivity by linking remote areas to larger cities. The focus on point-to-point flights illustrates the strong presence of LCCs in connecting remote areas with each other as well as with the major hubs. Measured by the share of reachable populations, the evidence shows the important contribution made by LCCs at the disaggregated regional level to the air connectivity index developed by the European Commission and Eurocontrol.

Alternative modes of transport, such as train and coach, are also considered, but research and evidence from LCC commuter interviews suggest that travel time by other transport modes are not sufficiently competitive in terms of travel time vis-à-vis LCCs. On the cost aspect, while coaches can compete with LCCs in terms of fares, train fares are generally less affordable than those offered by LCCs.

To assess the extent of the contribution of LCCs to European integration, the report considers a number of channels, such as labour and student mobility, business travel and leisure tourism. Mobility of individuals is generally increasing in Europe and this seems to coincide with the expansion of the LCCs in the last decades. In particular, LCCs decrease migration costs and thereby facilitate the mobility of people. Several other factors, such as the economic and financial downturn of 2008 and Eastern Enlargement of the European Union in the mid-2000s, also foster mobility of labour as economic opportunities vary across different member states. Mobility patterns are evolving, and temporary or repeated migration is increasing. For example, data analysis from secondary sources as well as interviews with LCC commuters suggest that availability of lower airfares fosters domestic and international commuting. Post-migration travel to visit family and friends is rising, in which LCCs appear to play an important role. International student mobility is also increasing and seems responsive to the expansion of low-cost airlines in Europe, as students are usually constrained in their budgets and therefore responsive to lower airfares.

Business travel is expanding, notably among employees of SMEs, who tend to use LCCs. Research suggests that a more connected business world is likely to generate investment and employment opportunities. Interregional linkages are also developing, albeit at an uneven pace across Europe, but the presence of LCCs appears to play a role, not only in creating employment opportunities in the airports where they operate, but also in attracting passengers to diverse routes in popular destinations as well as in previously less travelled regions.

Furthermore, leisure tourism is expanding and taking different forms such as vacation, second-home ownership or short-term city breaks with cultural tours. Overall, it seems that low fares are helping create a new and growing market for people who would have never travelled before. As they are now travelling, this is connecting and integrating Europe.

In terms of the local economy, there are a number of positive impacts from increased passenger flows with the expansion of LCCs, such as employment opportunities at airports and increased tourism expenditure, which overall can lead to transformational economic impacts for the areas concerned. At the same time, given the dependency of regional airports on airlines, the ease of relocation by LCCs can create certain challenges for local economies, which without LCCs would not be served by legacy carriers.

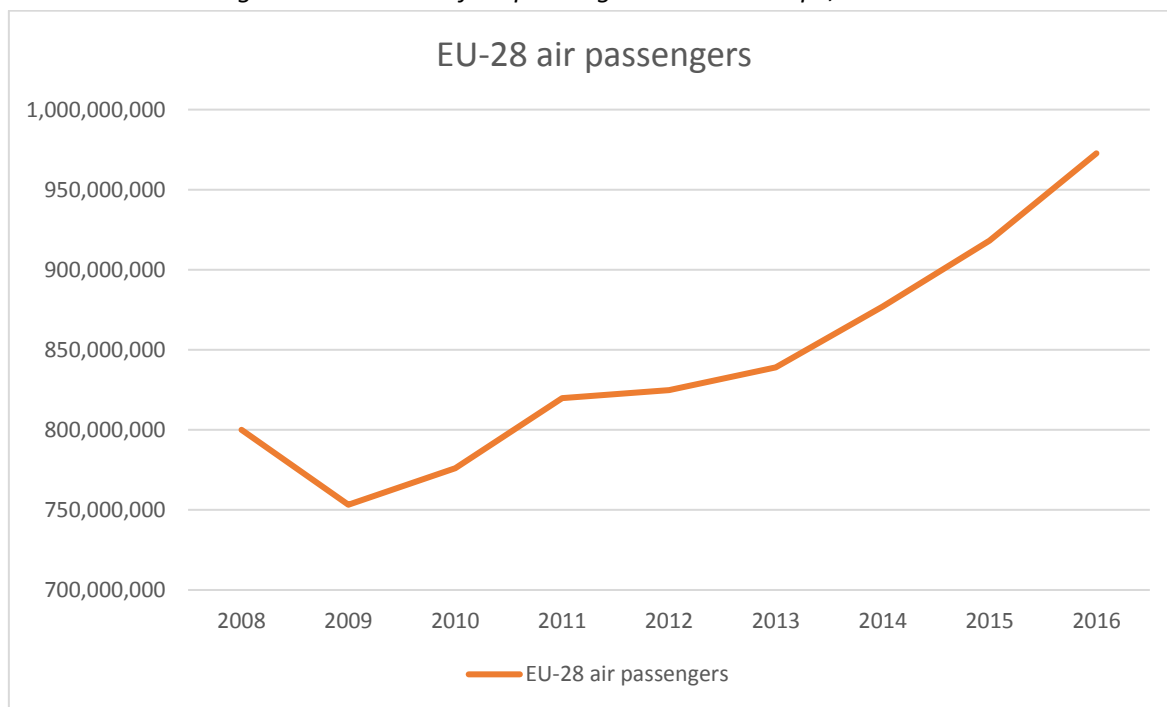
All in all, the qualitative data analysis collected from passenger interviews largely confirms the quantitative analysis and suggests that LCCs help people to be more mobile. For example, the findings from analysing the interviews confirm the increasing variety of mobility – for example, more temporary, circular or repeated nature of movements – in Europe and how this closely relates to the availability of low fares. At the same time, it could also be that these people are more open to travel in the first place and the availability of LCCs creates a further positive loop.

Chapter 1 Introduction

Many years ago (in 2005 to be precise), one of the authors read a column in *The Economist* that later became an inspiration for this report. The column, by the magazine's Charlemagne columnist, was called "Low-cost founding fathers" and it began: "Brussels is full of monuments to the 'builders of Europe'. There is the Schuman district, the Monnet circle, the Spinelli building. It may now be time for a Stelios Square or a Boulevard O'Leary. For in recent years, Stelios Haji-Ioannou and Michael O'Leary, the two pioneers of Europe's low-cost airlines, have done more to integrate Europe than any numbers of diplomats and ministers. They have helped to create a new generation for whom travelling to another European country is no longer exotic or expensive, but utterly commonplace."¹ This idea – that LCCs could play an important role in bringing Europe closer together – stuck in our minds until an opportunity presented itself to test this thesis using hard data. The result is this report.

In 2016, about 970 million passengers travelled by air from European airports, which corresponds to a nearly 25% increase from 2008 (see Figure 1). The majority of passengers travelled within domestic borders (17%) or to other European countries (47%).² All these numbers highlight the size and importance of the European aviation industry, which could drive economic growth, create jobs, facilitate trade and allow people to travel. For a long time, travelling by plane was seen as a luxury good generally not accessible to people of less affluent socioeconomic backgrounds. The availability of low fares in air travel, especially in the last two decades, has radically shifted this picture by making air transportation accessible for a wider public. The aviation industry is in this way making a vital contribution to the connectivity of the EU and its citizens (European Commission, 2017e).

Figure 1. Evolution of air passenger travel in Europe, 2008-2016



Note: The numbers include arrivals and departures.

Source: Eurostat.

¹ See the *Economist* article here: <https://www.economist.com/node/3598896> (27 January 2005).

² These numbers are taken from Eurostat: http://ec.europa.eu/eurostat/statistics-explained/index.php/Air_transport_statistics

As recognised in numerous communications by the European Commission, “air transport contributes significantly to the European economy and plays a vital role in the integration and competitiveness of Europe” (European Commission, 2014). However, before reaching the current levels of connectivity and diversity of routes provided by a large set of alternative airlines (see Chapter 1), the air transport market witnessed a series of regulatory developments over previous decades. Air transport in the EU had been a highly regulated industry, characterised mainly by – mostly national – legacy carriers and state-owned airports (European Commission, 2013). The liberalisation of the aviation industry in Europe in the early 1990s completely changed the picture (see Chapter 1) by allowing new entrants into the market. The cabotage rights given to new airlines meant that an airline company is allowed to operate within the domestic borders of another country and in the case of the European Union, all member states now grant cabotage rights to each other (European Commission, 2001).

With the entry of new airlines into the industry, competition increased and prices decreased, especially on the most popular routes, while new routes, airports and different airlines became available. In particular, since the early 2000s, the entry and rapid growth of LCCs has redistributed market shares among the major airline actors. Based on different business models to traditional legacy carriers, LCCs are known variously as low fare airlines, no frills airlines, etc. In this report, we use the low-cost carrier terminology to refer to the overall group, even though it is acknowledged that different LCCs might have diverse business models and there is no one single low-cost model as such.

Various analyses of the aviation sector suggest important developments in the evolution of market shares of different air carrier types since the late 1990s. In particular, LCCs increased their market share from 5% in 1998 to 30% in 2008, while the market share of legacy carriers declined from 78% to 60% over the same decade (Reichmuth et al., 2008). The remaining market share was attributed to regional carriers or charters. In fact, as of 2012, the market share of LCCs (44.8%) exceeded that of legacy carriers (42.4%) and this trend seems set to continue (European Commission, 2013): LCCs represented 48% of the seat capacity in 2015 (European Parliament, 2017).

Against this background of an increasing presence of LCCs as a major actor in air services in recent years, the current report aims to answer the following research question: are low-cost airlines bringing the European Union closer together? If so, what are the main channels and impacts of LCCs in contributing to European integration? The research question at the heart of this report is a relevant one, especially considering the challenges that the European Union has been facing in recent years in terms of integration, the smooth functioning of the European Single Market and establishing a European identity, to name a few.³ Our goal is to understand and illustrate with various research techniques the contribution of the LCCs to the European integration and regional cohesion using quantitative data as well as qualitative data based on LCC passenger perspectives.

By considering a number of channels, such as labour and student mobility, business travel, leisure tourism, etc., the report finds interesting results in terms of European connectivity and integration related to air transport in general and LCCs in particular. It appears that low fares have helped the creation of a new and growing market, as people who would have never travelled before are now travelling and this is connecting and integrating Europe.

Mobility of individuals is generally increasing in Europe and this seems to coincide with the expansion of LCCs in recent decades. Several factors, such as the economic downturn or the Eastern European enlargement,

³ We note that one could also claim a reverse causality in the sense that perhaps LCCs flourished because of an integrated Europe rather than Europe being integrated as a result of LCCs. While such reverse causality does not seem likely given the empirical evidence as reviewed and illustrated in this report, to estimate econometrically and properly identify the direction of causality is not what we pursue in this report, but it could be the subject of future research with access to more granular data over time.

appear to have encouraged mobility and people who would not have been able to travel by air can now fly by relying on LCCs. Moreover, mobility patterns have been changing, with an increase in temporary and circular migration. Domestic and cross-border commuting is also becoming more common with cheaper fares and LCCs appearing to play an important role in serving this segment of the market.

Student mobility is also rising thanks to subsidised exchange programmes at the European level and a significant part of the transport demand appears to be captured by LCCs, as this group of passengers are more price sensitive. Leisure tourism is also expanding in different forms such as vacations, second home ownership or short-term city breaks with cultural tours. In parallel, visits to friends and families is becoming another important passenger category. Mostly offered by LCCs, the availability of diverse routes, which include niche tourism areas and remote cities, boost regional connectivity and increase cultural interaction in Europe.

Business travel is expanding among a wider range of people including employees of SMEs, who tend to use LCCs. Research suggests that a more connected business world is likely to draw investment and create employment opportunities. Interregional linkages are also developing, albeit at an uneven pace across Europe, but the presence of LCCs appears to play a role, not only in creating employment opportunities in secondary airports where they operate, but also in attracting passengers to diverse routes in popular destinations as well as previously less travelled regions. However, given the dependency of regional airports on airlines, the ease of relocation by LCCs can create certain challenges for local economies.

Methodologically, this study of LCCs and their potential role in the integration of Europe relies on a mixed approach, consisting of desk research incorporating findings from academic contributions as well as policy and legislative documents complemented with supplementary data analysis composed of quantitative and qualitative parts. The quantitative data analysis is implemented based on secondary sources as well as raw data received from Ryanair to illustrate the evolution of connectivity and the channels through which LCCs can contribute to it. The qualitative analysis is based on the views of LCC passengers, who were interviewed by phone during February 2018.

Collaboration with Ryanair is what made this report possible – through financial support, provision of quantitative data and access to LCC passengers for interviews. As to whether this corporate collaboration gives rise to any bias in the work, we address this as follows: First, the contributions of Ryanair are fully transparent, including where/how data provided by Ryanair are used. Second, CEPS has been fully independent not just in drafting the report, but also in selecting data sources, devising questionnaires for interviews, overseeing interviews and other key aspects. Third, the report is focused on the theme of how LCCs are helping to bring Europe closer together rather than on commercial issues. Finally, the reader is invited to keep in mind the collaboration behind the report.

The plan of the report is as follows: chapter 2 provides an overview of the policy framework by considering the levers and barriers in the aviation sector in Europe with a focus on these issues for LCCs. Chapter 3 overviews the underlying economic model and principles behind the low-cost model and illustrates the developments of the LCC sector together with its alternatives over time and across the European geography. Chapter 4 provides further analysis on the different channels through which LCCs can contribute to integration and connectivity in Europe alongside the challenges faced. Chapter 5 introduces the qualitative case study based on passenger perspectives gathered through phone interviews. The last section provides some concluding remarks on the role of LCCs in bringing Europe closer together, by highlighting not only future prospects, but also the challenges ahead.

Chapter 2 The regulatory framework: Levers and barriers

This chapter presents the pros and cons of the rules and policies shaping air transport in Europe. This allows a better understanding of the role played by EU legislation in fostering air connectivity as well as identification of remaining barriers and areas for improvement. More specifically, the chapter: summarises the regulatory framework affecting EU and international air services; examines air passenger rights; details EU legislation regulating the functioning of airports (airport charges, slots and ground handling services); provides an overview of the role played by competition law in the air transport market; and, finally, touches upon forward-looking EU policies aiming to tackle some of the unresolved issues in air transport.

2.1 Air services

As a result of the Chicago Convention of 1944,⁴ regulation has played a crucial role in the development of civil aviation for many years. Air transport services were controlled by national authorities. In many countries, both airlines and airports were usually state-owned monopolies, service fares and capacities used to be regulated, and inter-state air traffic was mainly based on bilateral air service agreements. In the US, this situation was ended by the 1978 Airline Deregulation Act.⁵ In recent decades, the liberalisation of many domestic aviation markets and the gradual evolution toward ‘open skies’ agreements (setting rules for international traffic) deeply changed the industry worldwide.

Learning from the US lesson, in the late 1980s the EU began a liberalisation process primarily aimed to create the internal market for air services and break down any national barrier. The process started with the first (1987) and second (1990) air transport ‘packages’ and was completed in 1992 by the third ‘package’, which established the Single European Aviation Market and removed all commercial restrictions for European airlines in serving the entire EU market. The Single European Aviation Market was then extended to Iceland, Norway and Switzerland. In a nutshell, an EU-owned (and licensed) air carrier is now able to access any intra-EU route and set its own airfares for both passengers and cargo. This liberalisation progressively led to the appearance of new business models (especially LCCs), which brought about a sharp decrease in prices as well as a wider choice for passengers travelling in the EU.

2.1.1 Air services in the EU

The third air transport package is now replaced by Regulation (EC) 1008/2008,⁶ which recasts and consolidates the package and sets out the fundamental rules for the provision of air services in the EU and EEA. To carry air passengers for remuneration in the EU, any company that is majority-owned and effectively controlled by nationals of a member state⁷ can request an operating license from the national civil aviation authority of the country where its principal place of business is located. The competent authority must grant the operating license to any applicants who have the professional ability and organisation to ensure the safety of air transport operations and comply with the financial conditions, insurance requirements and good repute criteria spelt out in Chapter II of Regulation 1008/2008.⁸ The licensed air carrier is then allowed to operate air services anywhere in the EU, with autonomy in terms of business decisions about capacity and fares. The only exception is represented by routes serving peripheral or under-served regions that are subject

⁴ Convention on International Civil Aviation (also known as Chicago Convention) (<https://www.icao.int/publications/pages/doc7300.aspx>).

⁵ Public Law 95-504, 24 October 1978 (<https://www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg1705.pdf>).

⁶ Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community (Recast), OJ L293.

⁷ Rules on ownership and control, which are a common feature in the international aviation sector, are further clarified by *ad hoc* interpretative guidelines issued by the Commission (European Commission, 2017a).

⁸ Additional insurance requirements are established by Regulation 785/2004 (Regulation (EC) No 785/2004 of the European Parliament and of the Council of 21 April 2004 on insurance requirements for air carriers and aircraft operators, OJ L138).

to public service obligations.⁹ Other constraints to air carrier freedom may stem from operational rules limiting traffic distribution between airports and exercise of traffic rights in relation to safety, security, the protection of the environment and the allocation of airport slots. Regulation 1008/2008 was deemed ‘fit for purpose’ by the 2013 Commission Fitness Check on the Internal Aviation Market (hereinafter, the ‘Fitness Check’; European Commission, 2013); however, the Fitness Check focused only on a limited number of provisions. For instance, the relevance and effectiveness of the financial requirements spelt out in Chapter II was not assessed. On the one hand, approaches of national authorities to assess the financial stability of airlines are largely heterogeneous and may generate some ‘red-tape’ (Simonelli and Caroli, 2013); on the other hand, the large number of airline defaults (and therefore stranded passengers) shows that in many cases the operating license for the airline has been maintained up to insolvency, irrespective of deteriorating financial conditions.

2.1.2 International air services

The EU also started to play a progressively more central role in the creation of a global aviation market as of November 2002 when the Court of Justice of the European Union requested member states act in close cooperation and coordination with the European Commission when negotiating bilateral agreements with non-EU countries.¹⁰ In fact, each member state used to have in place its own bilateral agreements with a number of third countries, granting international traffic rights only to selected, national air carriers. These provisions tend to favour legacy carriers (incumbents) over LCCs (new entrants). Following the so-called ‘open skies’ judgment, in order to restore legal certainty, while existing bilateral agreements have been progressively amended to allow for attributing international traffic rights in a transparent and non-discriminatory manner to all EU carriers, new bilateral agreements have to follow procedural rules set out at the EU-level.¹¹ In this context, the EU formulated its external aviation policy for the first time in the 2005 Roadmap (European Commission, 2005), which entitled the EU to negotiate both: i) horizontal agreements, to bring all existing bilateral air services agreements between EU member states and a given third country in line with EU law; and ii) comprehensive agreements (upon Council authorisation), to replace existing bilateral agreements and integrate the EU aviation market with those of its key international trading partners. The Roadmap also aimed to create a Common Aviation Area with neighbouring countries, which represents an interesting opportunity for European LCCs.

So far more than 1,000 bilateral agreements have been amended to comply with EU law either directly or via horizontal agreements; comprehensive agreements have been signed with USA, Canada and Brazil (under renegotiation); agreements to build the Common Aviation Area have been concluded with the Western Balkans, Georgia, Israel, Jordan, Moldova and Morocco. More needs to be done, however, to enable the EU to become a leading player in the global aviation market, as international traffic is still dominated by national fragmentation and subject to national interests. This is particularly true if one considers that global connectivity is key to competitiveness. Against this background, the 2012 Communication on the EU External Aviation Policy (European Commission, 2012), endorsed by the Council (European Council, 2012), sets out two main objectives. First, ensuring that open markets are accompanied by fair and open competition; in this respect, Regulation (EC) 868/2004,¹² which was intended to protect EU airline against subsidisation and unfair

⁹ Rules on public service obligations are clarified by *ad hoc* interpretative guidelines issued by the Commission (European Commission, 2017 b).

¹⁰ Judgments in Cases C-466/98, C-467/98, C-468/98, C-469/98, C-471/98, C-472/98, C-475/98 and C-476/98, Commission v United Kingdom, Denmark, Sweden, Finland, Belgium, Luxembourg, Austria, Germany.

¹¹ Regulation (EC) No 847/2004 of the European Parliament and of the Council of 29 April 2004 on the negotiation and implementation of air service agreements between Member States and third countries, OJ L157.

¹² Regulation (EC) No 868/2004 of the European Parliament and of the Council of 21 April 2004 concerning protection against subsidisation and unfair pricing practices causing injury to Community air carriers in the supply of air services from countries not members of the European Community, OJ L 162.

pricing practices from non-EU airlines, is viewed by some to have proven ineffective (in 14 years it has never been applied) and is now in the process of being revised. Second, completing the Common Aviation Area, entering new comprehensive agreements and reviewing the existing ones to allow the European industry to grow in new markets while promoting and defending EU interests through regulatory cooperation and convergence; in this context, one of the main obstacles to overcome is the current ownership and control rules, which artificially fragment the international aviation industry.

2.2 Passenger rights

2.2.1 Denied boarding, cancellation, long delays and upgrading/downgrading

EU rules aim to set minimum standards for air passenger protection, irrespective of the travel class and air carrier they choose. More specifically, Regulation (EC) No 261/2004¹³ set common rules on compensation and assistance for passengers (in case of denied boarding, cancellation, long delays¹⁴ and upgrading/downgrading). The Regulation indicates the minimum amount to be compensated, thus increasing legal certainty and, in turn, reducing litigation costs. Air carriers are obliged to inform passengers about their rights (which cannot be limited or waived) and are subject to sanctions for infringements of the Regulation.

In 2010, Regulation 261/2004 was subjected to a detailed evaluation, which highlighted areas of improvement to ensure that passenger rights are adequately protected (Steer Davies Gleave, 2010a). This evaluation indicated that some carriers (irrespective of the relevant business model) were still not complying with the Regulation. Ineffective enforcement, especially in terms of inadequate mechanisms for complaint handling (by national enforcement bodies) and limited sanctions for non-compliance, was still harming the effectiveness of EU rules and distorting competition between airlines.¹⁵ In fact, non-compliant carriers face lower costs than compliant ones.

This evaluation was followed by a Commission Communication in 2011 (European Commission, 2011a) and an exploratory study on possible revision of Regulation 261/2004 in 2012 (hereinafter ‘the exploratory study’; Steer Davies Gleave, 2012a). Interestingly, both documents acknowledge that the Regulation generates considerable economic burden on airlines. These costs are relatively more burdensome for LCCs, as some expenses are fixed and independent from the distance travelled; in addition, LCCs may have more difficulties in providing options for re-routing as well as assistance in regional airports. Reportedly, the average claim value for LCCs is a multiple of their average fare. At the same time, it was confirmed that non-compliance (by all types of airlines) is a significant issue¹⁶ and that enforcement is largely inadequate¹⁷. More specifically, the 2011 Communication identified four main shortcomings: i) lack of uniform interpretation of the Regulation; ii) lack of uniform enforcement across the EU; iii) lack of harmonised and easily accessible complaint handling procedures and means of redress; and iv) lack of information provided to passengers. Against this background, the exploratory study tested several options to revise the regulation ranging from a purely

¹³ Regulation (EC) No 261/2004 of the European Parliament and of the Council of 11 February 2004 establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91, OJ L46.

¹⁴ See also relevant court cases (Joined Case C-402/07 and C-432/07).

¹⁵ Similar problems were identified in the 2007 Communication (European Commission, 2007).

¹⁶ The exploratory study reported that “provision of information on disruption and the rights of passengers under the Regulation is poor, and in a large proportion of cases airlines are failing to offer disrupted passengers the assistance required under the Regulation” (p.171). Stakeholders interviewed for the same study emphasised the failure of some airlines to pay compensation and provide assistance in case of delay (p.171).

¹⁷ The exploratory study explains that sanctions to non-compliant airlines are seldom imposed; in addition, several national enforcement bodies do not assist passengers with their claims and have limited power to oblige carriers to pay for compensation in individual cases. However, there is now increasing recourse to Online Dispute Resolution (ODR) and Alternative Dispute Resolution (ADR) mechanisms, which have been established in EU legislation.

market-based approach relying on private insurance to an increase in air passenger protection compared to the *status quo*. Eventually, the study suggested improving the clarity of the Regulation and reinforcing airlines' obligations to provide care and assistance while reducing the level and scope of monetary compensation¹⁸. The study was followed by a Proposal for amending Regulation 261/2004, which has yet to make it through the legislative procedure as it was put on hold by the Council.

In 2016, the Commission issued interpretative guidelines on the topic (European Commission, 2016), which contribute to clarifying most of the grey areas and gaps in the current text. As a result, the airline industry has moved on considerably with regards to the application of Regulation 261/2004. The guidelines, however, did not contribute to reducing the economic burden on airlines.

2.2.2 Other aspects

Disabled air passengers and passengers with reduced mobility benefit from additional rights set out in Regulation (EC) No 1107/2006¹⁹ to protect them from discrimination and ensure they receive assistance. In a nutshell, with few exceptions, these passengers have the right to make a reservation for and subsequently board any flight, irrespective of their disabilities or reduced mobility. They also have a right to assistance at airports: the managing body of the airport is responsible for providing such assistance, in compliance with quality standards and without additional charges. However, a specific (reasonable, cost-related and transparent) charge can be levied on all airport users to fund this assistance. Air carriers are in charge of assistance in the cabin and the transport of mobility equipment. In 2010, the evaluation of Regulation 1107/2006 (Steer Davies Gleave, 2010b) concluded that most EU airports and airlines had implemented the relevant requirements. The variation in the quality of services provided by both airports and airlines was, however, large. Little was done by member state authorities to ensure a better implementation of the Regulation; and in some member states the new charge levied on airport users for funding this assistance was not cost-related, thus potentially inflating airport charges and, in turn, airfares (see section 2.3.1 for further details on airport charges).

Finally, air passengers' protection is completed by rules on price transparency. In fact, Regulation 1008/2008 sets out, *inter alia*, provisions ensuring the transparency of airfares offered to the public which have to indicate the final price to be paid, including any tax, charge, surcharge or fee applied on top of the airfare. A clear distinction between airfares and other costs has to be made. In addition, any optional price supplements should be communicated in a clear, transparent and unambiguous way and their acceptance by the passenger should be on an 'opt-in' basis. In this respect, the 2013 Fitness Check (European Commission, 2013) concluded that only 22% of airlines fully comply with airfare transparency rules and that enforcement of such provision was still poor in some Member States. Ineffective enforcement may distort competition between compliant and non-compliant airlines. Interestingly LCCs appeared to perform better than legacy carriers when it comes to the presentation of the final price and the application of the same airfares irrespective of the consumer's place of residence (Steer Davies Gleave, 2012b). While more recent empirical evidence on the topic is missing, compliance with price transparency provisions has reportedly improved for all types of airlines in the recent past.

2.3 Airports

Airports play a central role in the air transport sector, as they link airlines with their passengers. In the 2011 Communication on Airport Policy in the European Union (hereinafter, the 'EU Airport Policy'; European Commission, 2011b), the Commission identified key challenges for EU airports that should be addressed to

¹⁸ Either by extending the time threshold (in hours) for compensation in case of delay or extending the number of exceptions covered by the notion of 'extraordinary circumstances'.

¹⁹ Regulation (EC) No 1107/2006 of the European Parliament and of the Council of 5 July 2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air, OJ L204

ensure growth, connectivity and sustainable mobility and allow the European aviation sector to maintain its global leadership. First, a growing gap between available capacity and demand in many EU airports is foreseen, which will harm air traffic growth and increase barriers to entry for new airlines in congested airports. Second, the quality of services offered at airports, which is a determinant of the passenger and airline experience (especially for those air carriers such as LCCs that rely on third-party ground handling services), needs improvement. Finally, the EU Airport Policy also acknowledged the need to enhance transparency and cost-relatedness of airport and security charges to avoid the final price paid by consumers being inflated.

2.3.1 Airport charges

Airport charges are paid by airlines to use airport facilities. Their impact is relatively more pronounced on low-cost tickets, as airfares applied by LCCs before charges are generally lower than airfares of legacy carriers. Airport charges are very often regulated, as many airports are characterised by monopolistic market power, especially when they serve large cities and there is no other (independent) airport in the same catchment area.

In this context, the EU intervened with Directive 2009/12/EC,²⁰ which seeks to establish common principles for setting airport charges. The Directive applies to EU airports with more than five million passengers per year (irrespective of their market presence) and, at any rate, to the largest airport in each member state. It aims to increase transparency for the costs covered by airport charges and to remove any discrimination across air carriers, thus ensuring that airlines receiving the same service pay the same charge. To achieve these objectives, the Directive introduces a system of consultation between the airport managing body and airlines that is expected to lead to an agreement on the airport charging system as well as on the level of service to which users are entitled in return for airport charges. Airport users should also be consulted on plans for new infrastructure projects, to avoid charges rising to cover unnecessary investments.

The Directive so far appears to fall short of improving airport charging systems and delivers little benefits compared to the previous national rules, especially when it comes to restraining airport market power. Both the 2013 mid-term evaluation (Steer Davies Gleave, 2013) and the 2017 *ex-post* evaluation (Steer Davies Gleave, 2017) pointed out that the Directive focuses on the process (i.e. how airports and airlines should interact) rather than on specific targets (i.e. the expected outcome of the interaction). Whereas consultation systems are now formally in place, airports and airlines are often far from agreement on airport charging systems, let alone on investment plans. Administrative costs linked to the consultation process are even considered higher than the actual benefits stemming from changes (if any) in airport charges. Some forms of discrimination are still in place such as the application of transfer passenger discounts or the increasing preference for passenger-related charges rather than aircraft-related ones, which usually penalise LCCs as they fly point-to-point and have a higher load factor. The Directive does not necessarily lead to cost-related airport charges: for instance, it explicitly allows for cross-subsidisation between airports belonging to the same network, which appears to be at odds with cost-relatedness. Finally, large differences persist across member states in terms of economic regulation still applied to airport charges, options for pre-financing new investments, the role and effectiveness of independent supervisory authorities (which in principle should ensure that airports operate efficiently without abusing their market power) and availability and costs of appeals mechanisms. In a nutshell, both the mid-term and *ex-post* evaluations conclude that a major revision of the Directive is needed.

2.3.2 Slots

Slots are permissions to use the full-range of airport infrastructure necessary to land or take-off at a specific time. Slots are key assets for operating flights in a given airport and their availability represents a major

²⁰ Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges, OJ L70.

barrier to entry at congested airports. The allocation of slots at EU congested airports currently follows the rules established by Council Regulation (EEC) No 95/93²¹ (hereinafter, the 'Slot Regulation').²² The Slot Regulation was introduced to ensure an efficient use of airport capacity and that slots are allotted on the basis of principles of neutrality, transparency and non-discrimination. In fact, slots are now allocated by a national independent coordinator, twice per year (summer/winter), taking into account the available airport capacity and expected air traffic. Based on the so-called 'grandfather rights', an airline that has operated its slots for at least 80% of the time during the summer/winter scheduling period is entitled to the same slots in the equivalent period of the following year. By contrast, based on the 'use it or lose it' rule, airlines that have used slots for less than 80% of the time risk losing them, as such slots are included in the 'pool' of slots to be allocated (without grandfather rights) by the coordinator in the next period. In specific circumstances (e.g. airlines belonging to the same group, partial or total takeover, one-for-one exchange), slots may be exchanged or transferred between airlines. Interestingly, 50% of the slots included in the 'pool' have to be distributed among new entrants.

The Slot Regulation has several weaknesses, which were identified by the 2007 Communication on the application of Regulation (EC) 793/2004,²³ the 2008 Communication on the application of the Slot Regulation (European Commission, 2008a) and the study published by the Commission in 2011 to revise the Slot Regulation (Steer Davies Gleave, 2011). For instance, the provision favouring new entrants may also limit the capacity of such new entrants to consolidate their position in a certain airport and compete with established carriers. In fact, over the years, many new entrants have been able to obtain a small number of slots each, thus resulting in the fragmentation of slots among many small operators and preserving the competitive advantage of incumbent carriers (usually legacy carriers) at hub airports. In the same vein, grandfather rights and the 'use it or lose it' rule do not appear to stimulate the efficient use of airport capacity, as incumbent carriers have little incentive to give up slots in favour of new entrants. In addition, many slots are used by a high proportion of small aircraft or by aircraft with low load factors, thus limiting the number of passengers transported. In this respect, the efficient use of airport capacity would benefit from, for example, an increase in the slot usage rate to grant grandfather rights or market-based slot allocation schemes. Concerns still exist regarding the neutrality of national coordinators, transparency of slot data and the way slot coordination systems are operated. The current system prevents optimal use of airport capacity and creates barriers to entry for new airlines in congested airports. These weaknesses become even more critical when coupled with growing demand for air transport and increasing shortage of airport capacity. Against this background, a proposal to reform the Slot Regulation was filed by the Commission in 2011. It was suggested, *inter alia*, to introduce market-based mechanisms for secondary trade in slots, to broaden the definition of new entrant, to modify the system for grandfather rights (e.g. going from 80% to 85% usage rate) and to increase transparency of the slot allocation process and independence of slot coordinators (with an option to create a European coordinator). The proposal, however, did not make it through the legislative procedure, as it was blocked by the Council.

2.3.3 Ground handling services

Ground handling services involve a wide range of support activities necessary for airlines to operate their flights, including passenger handling, baggage handling, freight and mail handling, ramp handling, fuel and oil handling, aircraft services and maintenance and transport within the airport. Traditionally, these services

²¹ Council Regulation (EEC) No 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports, OJ L14.

²² This Regulation was amended by Regulation (EC) No 894/2002, Regulation (EC) No 1554/2003, Regulation (EC) No 793/2004 and Regulation (EC) No 545/2009.

²³ Regulation (EC) No 793/2004 of the European Parliament and of the Council of 21 April 2004 amending Council Regulation (EEC) No 95/93 on common rules for the allocation of slots at Community airports, OJ L138.

were provided by a monopoly supplier in most EU airports. Directive 96/67/EC²⁴ opened up the market for ground handling services in EU airports above a certain air traffic threshold. Some caveats, however, apply. For instance, the number of competitors may be limited (not fewer than two and at least one independent from the managing body of the airport or large airport users) in some specific segments (baggage, ramp, fuel and oil, freight and mail). Self-handling is allowed but may be limited to a maximum of two users in the abovementioned specific segments. Exemptions (limited in time) may apply when certain constraints make it impossible to open up the market or allow for self-handling. The management of the centralised infrastructures required to provide handling services may be reserved to one single entity, and access is provided to ground handlers in exchange for a fee.

Several studies have identified a number of shortcomings in the current legal framework. For instance, a study published by the Commission in 2002 (SH&E, 2002) identified delays in implementing the Directive, weakness in tender process and selection criteria for new ground handling providers, problems with access fees and fees for the use of centralised infrastructure, and deterioration in safety and security. A subsequent study published by the Commission in 2009 (Airport Research Center, 2009), confirmed differences between member states in terms of conditions for market access and slower implementation in new member states; in addition, while identifying positive impacts in terms of greater competition (especially in airports with legacy handling monopolies), it stressed that centralised infrastructures are often congested, generate major costs for third-party ground handlers and represent a barrier to effective competition. Finally, a study published by the Commission in 2010 explored options for a possible revision of Directive 96/67/EC and identified the following problems to be addressed: i) remaining barriers to entry into the ground handling market, limiting competition in some airports and inflating prices paid by airlines; ii) negative impact of increased competition on quality of service and staff conditions; iii) regulatory and litigation costs stemming from the enforcement of the Directive. Such shortcomings are particularly burdensome for LCCs as they mostly rely on third-party ground handling services.

2.4 Competition

Air transport market players (e.g. airlines, managing bodies of airports, providers of ground handling services, etc.) are subject to EU (and national) competition law, as is any other business operating in the EU. In a nutshell, Article 101 TFEU²⁵ prohibits cartels and any other agreement between companies that prevent, restrict or distort competition in the Internal Market. Article 102 TFEU prevents companies which hold a dominant position in the Internal Market or in a substantial part of it from abusing that position. Article 107 TFEU prohibits, with some exceptions, aid granted by member states (or through state resources) that distorts or threatens competition by favouring certain companies over others. Finally, Council Regulation (EC) No 139/2004²⁶ established a procedure to control concentrations with a Community dimension (identified by measuring the annual turnover of the combined businesses, at the EU and global level) to prevent mergers and acquisitions reducing competition in the Internal Market.

In this context, some special rules apply to air transport. For instance, with regard to agreements, Council Regulation (EC) No 487/2009²⁷ allows the Commission to exempt (by granting so-called ‘block exemptions’) certain categories of agreements in the air transport sector from the application of Article 101. No block exemption in the air transport sector, however, is currently into force.

²⁴ Council Directive 96/67/EC of 15 October 1996 on access to the ground handling market at Community airports, OJ L272.

²⁵ Consolidated version of the Treaty on the Functioning of the European Union, OJ C326.

²⁶ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation), OJ L24.

²⁷ Council Regulation (EC) No 487/2009 of 25 May 2009 on the application of Article 81(3) of the Treaty to certain categories of agreements and concerted practices in the air transport sector (Codified version), OJ L148.

The case for state aid is more interesting, as member state support for airports and airlines is quite frequent.²⁸ In 2014, the Commission issued new Guidelines on state aid to airports and airlines²⁹ (hereinafter, the ‘state aid guidelines’) to ensure uniform conditions for the granting of state aid to air transport market players (DG COMP, 2014). Operating aid (aimed to cover the positive difference between operating costs and revenues) can now be granted only to small airports (up to 3 million passengers) for a limited timeframe (10 years) and amount (between 50% and 80% of the gap between costs and revenues).³⁰ In the same vein, investment aid can be granted only where: i) there is a clear transport need (so no duplication of existing capacity); ii) positive effects in terms e.g. improved accessibility, regional development and less traffic congestion are apparent; and iii) investment would not be undertaken without state aid (the so-called ‘additionality’). Also, for investment aid, the state aid guidelines set a maximum amount (between 25% and 75% of the total investment costs, based on airport size).³¹ Start-up aid covering up to 50% of airport charges can be granted for a limited period (3 years) to airlines in order to operate new destinations or new schedules with increased flight frequencies from regional airports (key for increasing connectivity in peripheral regions).³² Start-up aid are pivotal to increase connectivity in peripheral regions. As most of the regional airports are publicly owned and rely on public support to fund their operations, state aid rules apply also to arrangements concluded between airlines and airports. Such agreements are deemed free of aid if they are profitable for airports, taking into account all sources of airport revenues (airport charges as well non-aeronautical revenues stemming e.g. from shops and parking); otherwise, they are covered by provisions applying to start-up aid for airlines.

2.5 EU Aviation policy: The way forward

The central role played by transport in the EU economy and society is officially acknowledged by the 2011 Roadmap to a Single European Transport Area (hereinafter, the ‘Roadmap’; European Commission 2011c), which puts forward a 10-year strategy to transform the European transport system via a combination of initiatives for all transport modes. Besides representing by itself a significant portion of the EU economy, the transport sector enables economic growth and job creation. In addition, by allowing all EU regions to remain connected not only within Europe, but also to the world economy, it is key to ensuring future prosperity and territorial cohesion, as corroborated later in this study. Against this background, the Roadmap emphasises that much more needs to be done to complete the internal market for transport (the so-called Single European Transport Area). In this respect, the Roadmap calls for an EU transport policy which is forward-looking and provides enough clarity to foster investment and allow for planning, building and equipping transport infrastructures fit for future needs.

Air transport is expected to play a key role and contribute to the consolidation of large numbers of passengers for transfers over long distances, thus reducing the overall environmental footprint of transport in the EU. To achieve this result, besides ensuring the completion of the Single European Sky,³³ the efficiency of aircraft and traffic management operations needs to be improved. This requires, *inter alia*, the expansion and more efficient use of airport capacity (to cope with the increasing demand for air transport). Special attention is finally paid to passenger security, safety and rights to ensure the quality, accessibility and reliability of

²⁸ The 2005 guidelines on aviation state aid (Communication from the Commission — Community guidelines on financing of airports and start-up aid to airlines departing from regional airports, OJ C312) were applied in almost 100 decisions over eight years.

²⁹ Communication from the Commission — Guidelines on State aid to airports and airlines, OJ C99. These guidelines replaced similar guidelines dating from 2005 (see above).

³⁰ Small airports based in e.g. isolated, remote or peripheral regions, however, may receive compensation for their operating costs also after the 10-year limit.

³¹ Again, small airports based in remote or peripheral regions may benefit from investment aid of larger size.

³² Rules are more flexible for airlines connecting airports in remote regions.

³³ For further details see: https://ec.europa.eu/transport/modes/air/single_european_sky_en

transport services, which will gain in importance in coming years, especially in light of the ageing of the EU population.

The Roadmap is complemented by the 2015 Aviation Strategy for Europe (hereinafter, the 'Aviation Strategy'; European Commission, 2015a), and the 2017 Communication on Aviation: Open and Connected Europe (hereinafter, the 'Open and Connected Europe Communication'; European Commission, 2017d), which acknowledge aviation as a strong driver for growth, jobs, trade and mobility in the EU, and define the way forward to safeguard the global competitiveness of the European aviation sector while maintaining high standards of safety and security and reducing the environmental footprint of the sector. The Aviation Strategy and the Open and Connected Europe Communication aim to achieve the same targets and principles of the Single European Aviation Market but on a global scale, thus promoting consumer interests, reducing barriers to trade, maintaining a level playing field for aviation players, fostering innovation and ensuring the safety and security of the international air service market. In this context, the Commission has identified three key priorities:

- Improving services and access to growing markets. After completing the EU Single Aviation Market, the EU is aiming at an ambitious external aviation policy to target markets where significant growth opportunities are expected in coming years. This will require, *inter alia*, negotiating EU-level comprehensive aviation agreements with third countries. At the same time, the EU needs to ascertain that market access is based on a regulatory framework ensuring fair and sustainable competition and protecting EU players against subsidisation and unfair pricing practices. The Commission will also consider the relaxation of ownership and control rules to facilitate foreign investment in EU aviation companies, if reciprocated through bilateral/multilateral air service and trade agreements.
- Tackling limits to growth both in the air and on the ground. This priority aims to remove the capacity and efficiency constraints that limit the European aviation sector's ability to grow and are generating congestion and delays. First, it requires the completion of the Single European Sky, where fragmentation costs about €5 billion a year and impinges on the environmental performance of the EU aviation sector, and the promotion of cooperative arrangements with extra-EU air traffic networks (European Commission, 2015b). Second, it requires addressing capacity shortages expected to affect several European airports in the near future by ensuring the best use of existing capacity (e.g. via better management of slots) and planning capacity expansions well in advance (European Commission, 2015b). Third, it requires improving the quality and efficiency of airport services by ensuring: i) that airport charges are not inflated by airport market power; ii) effective competition in ground handling services; and iii) the development of multimodal connections. Finally, it requires fostering air connectivity both within the EU and worldwide by ensuring an acceptable level of air transport services to all EU regions, especially the most remote.
- Maintaining high EU safety and security standards. This entails maintaining current high safety standards alongside growing air traffic, while making room for new business models and technologies, such as electric engines and drones, and reducing 'red-tape'. As for security, the Commission aims, *inter alia*, to alleviate the burden of security checks on passengers and to address cyber risks.

Against this background, it is worth mentioning that Brexit is expected to have a major impact on the EU air transport market. More than 53 million passengers travel by air between the UK and other EU member states. The highly unlikely scenario of air transport being completely interrupted between the EU and the UK (i.e. with the UK leaving the Single European Aviation market in a 'hard Brexit') has been estimated as possibly costing up to €210 billion, with over 3.1 million jobs lost (Frontier Economics, 2016). However, no doubt a comprehensive agreement (or multiple bilateral agreements) to allow airlines to transport passengers

between the EU and the UK will be achieved, though its form will depend on the outcome of the Brexit negotiations (IATA, 2016). In any case, such an agreement may limit available capacity and reduce the current levels of air connectivity on the EU-UK route. In the same vein, rules on ownership and control will have an impact on the ability of air carriers which are majority-owned by UK nationals to operate intra-EU flights. To limit disruption of air traffic and avoid major economic and social damages, ‘transitional’ measures should be introduced in time.

2.6 Summary of main levers and barriers

The liberalisation of the EU air transport market allowed new business models and, more specifically, LCCs to flourish. In the same vein, the progressive integration of the EU aviation market with those of key international partners and especially neighbouring countries may create new opportunities for LCCs to serve international routes, which would boost connectivity beyond Europe.

While airlines’ compliance with Regulation 261/2004 on passenger rights has progressively improved, the Regulation still generates considerable costs for airlines and such costs tend to be relatively more burdensome for LCCs. In the same vein, Directive 2009/12/EC fell short of improving airport charging systems and ensuring that airport charges (including charges for passengers with reduced mobility) are cost-related, thus inflating the final price paid by air passengers (with relatively more pronounced impact on low-cost tickets). With regards to airports, current rules affecting slot allocation in congested airports appear to preserve the competitive advantage of incumbents (which are usually legacy carriers), do not stimulate the efficient use of available capacity and often create barriers to entry for new airlines. In addition, barriers to entry are still in place in the ground handling market as well, which implies increasing prices paid by airlines and reducing quality of service. Again, these shortcomings of the current legal framework are more burdensome for LCCs, as they mostly rely on third-party ground handling services. Addressing all the issues mentioned above is critical for ensuring an adequate growth of the European aviation sector.

Progress has also been made regarding state aid rules, with the 2014 Commission Guidelines setting clearer rules for agreements between airports and airlines. Last but not least, Brexit represents the main and most impactful regulatory issue for the EU aviation sector in the near future.

Chapter 3 Mapping and evolution of the low-cost airline sector and its alternatives

3.1 Appearance of LCCs in Europe

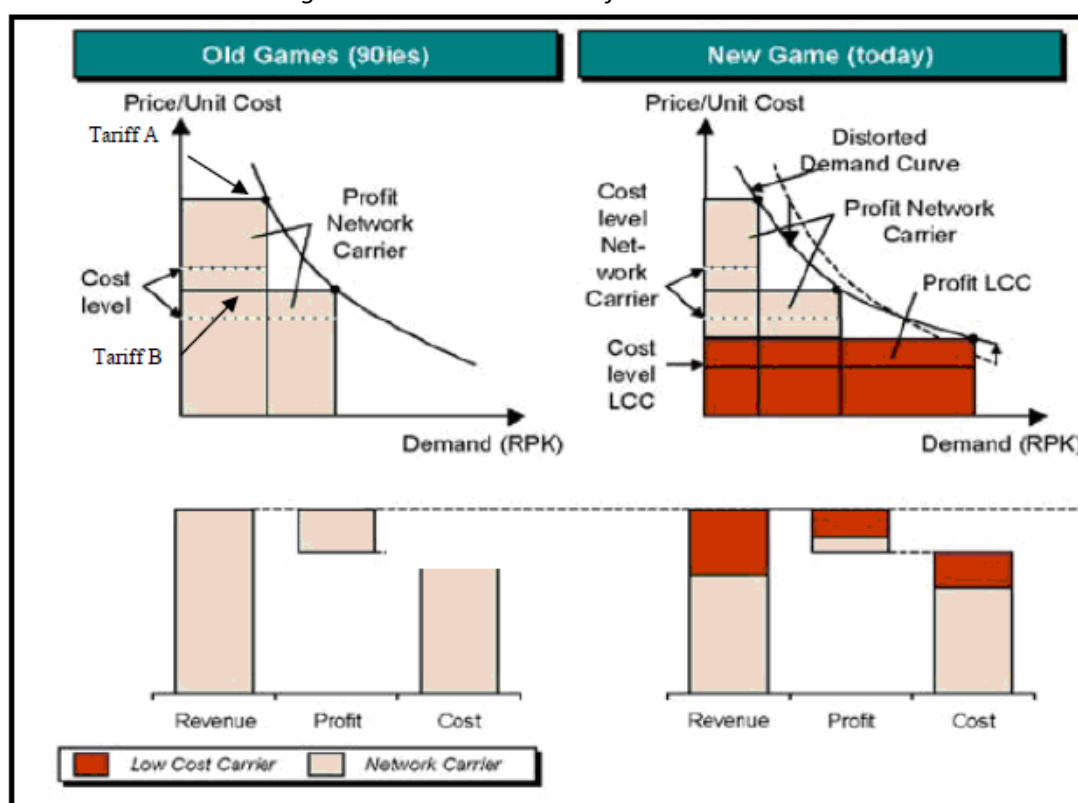
The low-cost airline model first appeared in the US slightly before the deregulation of the aviation market in the late 1970s, which opened a new era of airline services (Uittenbogaard, 2009). During the deregulation process, airlines reorganised their management structures to become more competitive. The first company, Southwest Airlines, had pioneered the LCC concept in the US since 1960s. The main idea, a strategy that is the basis for low-cost airlines nowadays (Uittenbogaard, 2009), is to provide fewer services to offer the flight at a cheaper fare and this is achieved through a variety of operational processes that provide cost advantages to a LCC as opposed to full service carriers (Schlumberger & Weisskopf, 2014). The evolution of the aviation market in Europe took at least a decade longer than in the US: LCCs only came into the picture in the aftermath of the liberalisation process, which happened in several stages starting in late 1980s until the mid-1990s. Ireland-based Ryanair became the first European LCC, completely changing its business model from operating as a regional carrier to adopt the Southwest low-cost model from the US (Dobruszkes, 2006; Reichmuth et al., 2008). It was followed by UK-based easyJet, a new entrant. Hungary-based LCC Wizz Air was founded in 2003 and mainly serves to connect CEE to the rest of Europe. Overall, as the European aviation market evolved together with the economic and political expansion of the European Union, more airlines have appeared as LCCs over the last two decades. While, as mentioned earlier, it is not straightforward to define one unique low-cost model for airlines, carriers such as Ryanair, easyJet, Vueling, Wizz Air are regarded as LCCs for the purposes of this report.³⁴

3.2 Economic principles of LCCs

Before mapping or analysing the low-cost airline sector and its alternatives, it is worth understanding its underlying economic model. The airlines generally optimise their revenues by offering different segments or different booking classes such as economy, business, and first class (European Parliament, 2007). Correspondingly different fares apply, depending on various factors such as unit costs, and naturally target different customer types. A simple model by Franke (2004) considers two market segments consisting of two prices, Tariff A and Tariff B, where the lower tariff is defined based on the unit cost and potential competition from other airlines, while the higher tariff is based on the willingness to pay of the customers, illustrated in Figure 2. Assuming a downward sloping demand curve, this basic economic model of LCCs distinguishes two types of scenarios: aviation industry before the liberalisation took place named as “old games (1990s)” and the new scenario after the entry of low-cost carriers as well as the modified demand curve named as “new game (today)”. The idea is that an important part of the demand corresponds to individuals for whom even the lowest tariff of the network carriers is higher than their willingness to pay and hence these individuals are mostly excluded from air travel in the old scenario of 1990s. When LCCs enter the market offering lower fares – which also increases the air service supply modifying the demand curve as seen on the right hand side of the figure, they target and capture a particular part of the customer segment. For example, the upper right corner of the darker (red) rectangle corresponds to a demand of customers with lower willingness to pay, which is considerably below the lowest tariff of the network carriers. In the absence of low-cost airlines, such customers would be economically excluded from air travel (European Parliament, 2007). Therefore, allowing economically constrained individuals to travel by air is one of the most important contributions of low-cost airlines to the mobility of people, which, in turn, contributes to connectivity between geographical areas.

³⁴ See the table in the Appendix for a list of LCCs included in the quantitative data used in several figures in the report.

Figure 2. Economic model of low-cost carriers



Source: Franke (2004).

On top of the underlying economic model, there are certain characteristics shared by LCCs, if not common to all, in order to be able to offer an appealingly low fare in passenger air transport. However, as the business models of airlines are in constant evolution, not all of these characteristics are present simultaneously in or relevant to all LCCs. These characteristics include (i) simple service offering without frills (such as free baggage, on-board meals or drinks); (ii) short-haul and point-to-point routes instead of the hub-and-spoke model of legacy carriers; (iii) using mainly secondary airports with lower airport charges; (iv) higher aircraft utilisation with shorter turnaround times; (v) homogeneity of the fleet to minimise maintenance costs and boost flexibility through being able to transfer cabin crews across similar aircraft models; (vi) more recent and fuel-efficient fleet to reduce fuel costs; (vii) high-density seating with a single class to maximise aircraft capacity; (viii) direct ticket selling through online website without passing through travel agencies; (ix) high labour utilisation through higher passenger-per-employee ratios; (x) lower salary for flight crews compared to legacy carriers (Campisi, Costa, & Mancuso, 2010; Olischer & Dörrenbächer, 2013; Reichmuth et al., 2008; Schlumberger & Weisskopf, 2014). This list of characteristics varies between different LCCs in Europe. There is also a deviation from these characteristics over time as the markets mature and business strategies are adapted accordingly: for instance, while there seems to have been a tendency to focus on secondary or regional airports initially, more and more LCCs have started establishing themselves in major airports in Europe (Dobruszkes, Givoni, & Vowles, 2017). Last but not least, hybrid models are being developed, whereby LCC practices have been mainstreamed throughout the industry: for instance, more carriers started charging for checked luggage or offering paid in-flight services.

Related to the price differentials between legacy carriers and LCCs, a European Flight Index³⁵ study conducted by Kelkoo, which is a travel and shopping comparison website, collected information on 5,000 airfares from 20 different airlines at 192 airports. The study finds that LCCs offer, on average, 33% lower fares as opposed

³⁵ For an online version of the summary of the findings from the Kelkoo European Flight Index study, see <http://www.breakingtravelnews.com/news/article/low-cost-airlines-add-up-to-44-in-extras-to-price-of-a-ticket/>

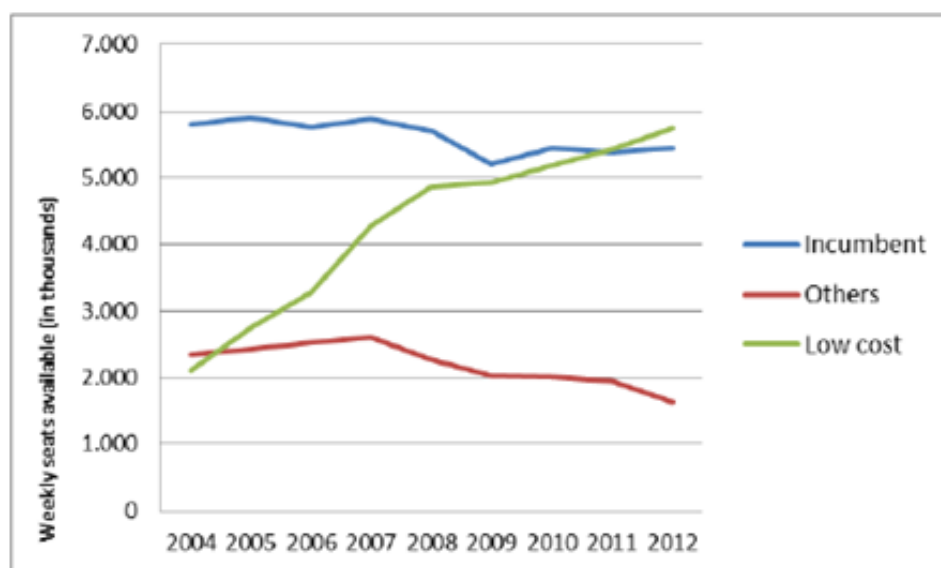
to full service carriers, without taking into account additional charges. If the latter are taken into account as well, the average price differential can exceed 50%. Moreover, the differences in ticket fares of LCC and legacy carriers are also higher when tickets are purchased very much in advance. Additionally, the price differential between low cost and legacy carrier fares shows important variations for domestic and international fares. For example, LCC fares are found to be about 40% cheaper on international flights compared to 20% cheaper on domestic flights. This means people from relatively lower income backgrounds, who would not otherwise be able to travel by air, now have the chance and not only domestically, but also internationally. Significantly lower airfares are therefore one of the main contributions of LCCs towards connecting people and places.

3.3 Mapping of LCCs in air transport market in Europe

3.3.1 Evolutions in seat capacity

In addition to the fare differences between LCCs and legacy carriers, which can constitute one of the most important factors why the former are preferred over full service carriers by an increasing number of passengers, the evolution of the market share of the LCCs is also worth noting. Figure 3 shows the weekly available seats of legacy carriers (incumbents), LCCs and others, which include charter and regional carriers, from 2004 to 2012. The evolution of the available seats offered by different carriers shows the sharp increase – especially from 2004 to 2008 followed by a relatively less steep slope from 2008 to 2012 – in the supply provided by LCCs in Europe. In fact, as of 2011, the weekly seats supplied by LCC surpassed those of incumbent airlines, which displays a relatively flat, sometimes decreasing, trend over this period.

Figure 3. Weekly seats (in thousands) by carrier types, 2004-2012



Notes: The data cover EU27 countries. The category 'others' covers independent carriers, regional carriers and charter carriers.

Source: The figure is taken from the Internal Aviation Market Fitness Check report of European Commission (2013) based on data from OAG summer schedules.

As regards the relative market shares of different carriers, the airline industry fitness report by the European Commission (2013) suggests that while the majority of passenger seats (65.6%) belonged to incumbent carriers in 1992 in contrast to a 1.5% share to low-cost carriers, there has been a major shift in market share over time. In particular, low-cost airlines exceeded the market share of incumbent air carriers for the first time in 2011 and the upward trend has continued, with 44.8% of market share belonging to LCCs as opposed to 42.4% for incumbent carriers in 2012.

Seat capacity offered by the different types of carriers developed both over time and geographically: Figure 4 and Figure 5 show the evolution of seat capacity provided by different airline types broken down by domestic – with origin and destination cities being in the same country – and international flights within Europe over the period from 2002 to 2017.^{36,37} These figures cover a more recent period until 2017 and add several additional dimensions, such as market share variations between countries and the domestic/international air transport breakdown, compared to the relative market shares from the previous Figure 3. Looking at the disaggregated data by air travel type (domestic versus international) gives an impression of how different carriers have seen their respective market shares in domestic and international flight sectors evolve over time across countries.

Figure 4 displays interesting developments in seat capacity in international (within Europe) flights offered by airlines from 2002 to 2017. We use dark and shaded colours to distinguish between legacy carriers and LCCs, respectively. First, there is a general expansion in international air travel in Europe across all countries with 379 million more in seat capacity (corresponding to a 113% increase), but expansion patterns are not homogenous across Europe.³⁸ The air transport market in terms of seat capacity is clearly more developed in Western Europe compared to Central and Eastern Europe (CEE), even though large expansion patterns have also been observed in the CEE region in recent years. Poland, for instance, has seen a 460% increase in capacity and Romania has increased by 399% compared to 54% in France. The corresponding figures are shown in Table 1.

Second, the legacy carriers, indicated by darker slices of the circles in the maps, were the largest providers of seat capacity in all European countries in 2002. This dominance has shifted as new LCC entrants started capturing important segments of the market. Of the 379 million increase in seat capacity, 269 million came from LCCs, which highlights that it is this sector of the airline industry that is driving inter-European connectivity. For example, in countries such as the UK, Ireland, Spain, Italy, Hungary and Poland, the number of seats offered by LCCs is higher than those of legacy carriers in 2017. Third, though closely connected to the second point, the LCC market has been relatively more developed in the UK, where the LCC share is higher than for other large EU countries such as France, Germany and Spain. Related to this, Reichmuth et al. (2008) suggest that the largest LCC capacity increase is observed in the UK as opposed to the other countries during the early 2000s.

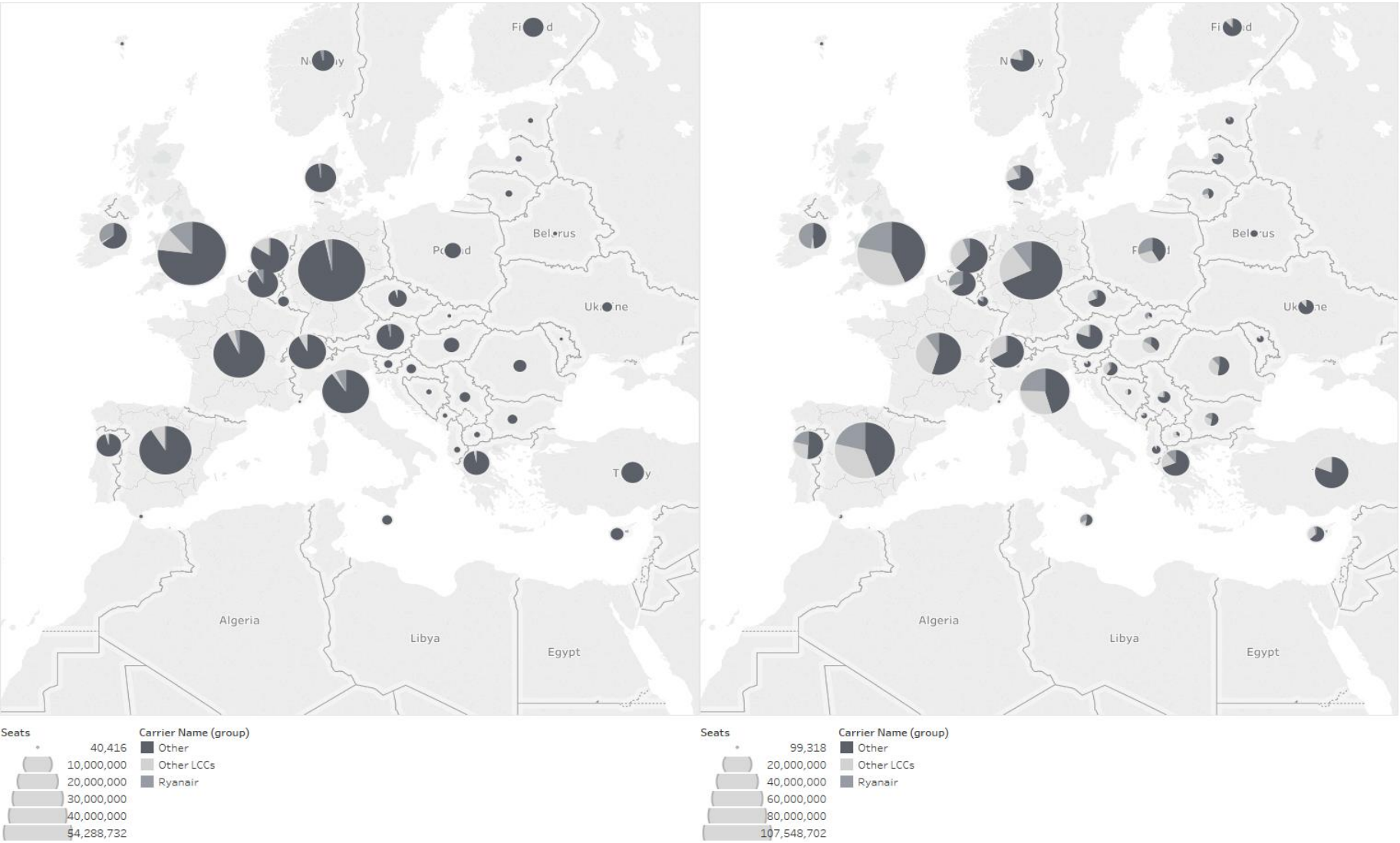
Finally, the recent expansion of air transport in CEE is closely related to the accession of the countries from that region to the European Union, which led to more travel between east and west using LCCs. For example, when Poland joined the European Union in 2004, the seat capacity in international flights was 4.6 million, of which 9% came from LCCs. As of 2017, the capacity offered by LCCs in international flights grew to more than 10 million seats and accounted for 59% of capacity. This suggests that the availability of LCCs has likely generated new travel demand in Europe.

³⁶ The yearly capacity data (sourced from Cap-Stat), broken down by domestic and international flights offered by different carriers is provided by Ryanair.

³⁷ The different carrier types are LCCs, Ryanair and other carriers, where the latter is not classified as LCCs and mainly consist of legacy carriers or charter carriers.

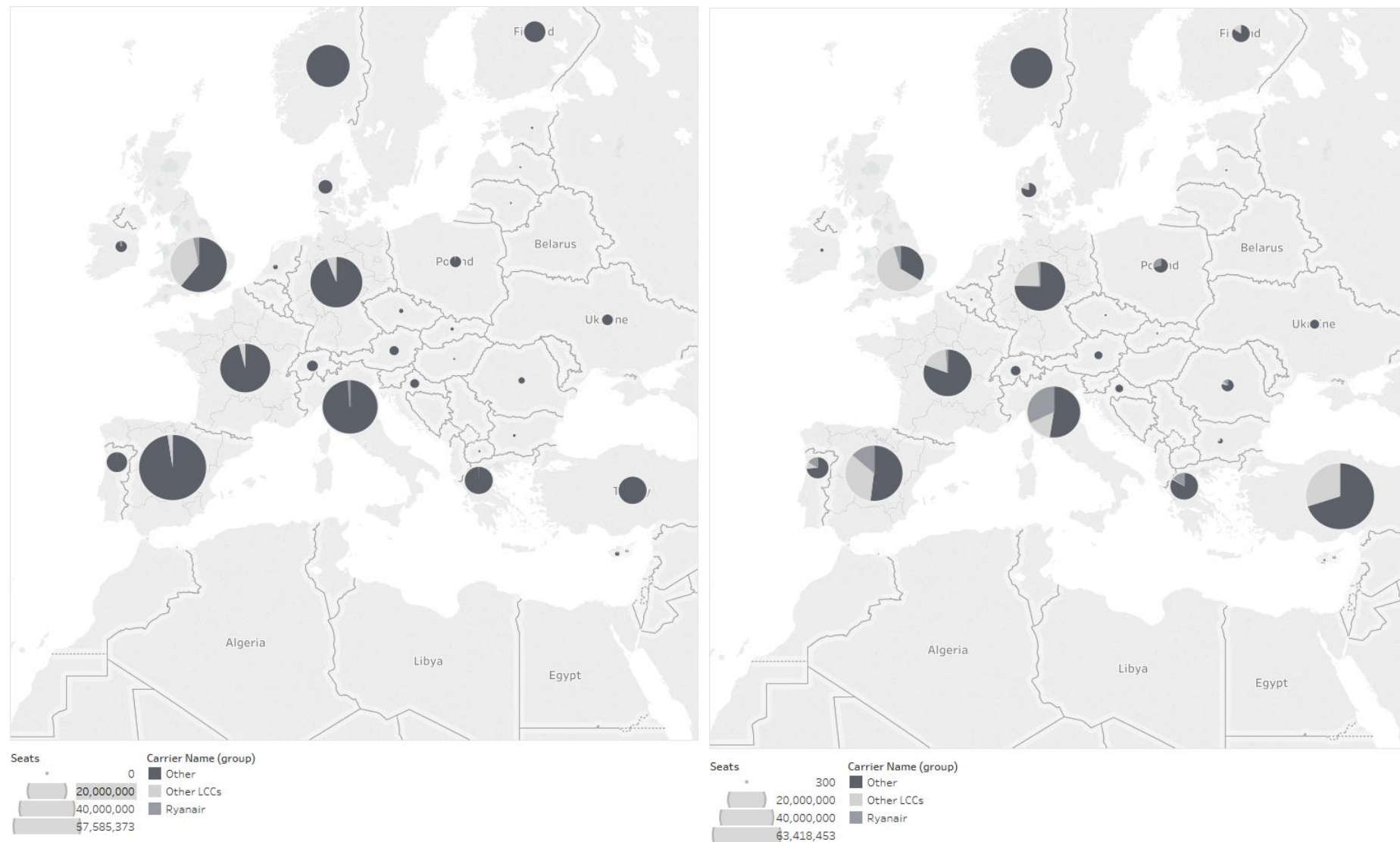
³⁸ At this stage, this is hard to see visually from the figures because of the different scales used in the graphs. Keeping the same scales, we would observe how the circles get larger from 2002 to 2017 across countries, for example.

Figure 4. International seat capacity by carrier type in Europe (2002 and 2017 - at different scales).



Source: Seat capacity data are provided by Ryanair (2017) based on Cap-Stat. For a list of LCCs considered in these maps, see the Appendix.

Figure 5. Domestic seat capacity by carrier type in Europe (2005 and 2017)



Source: Seat capacity data are provided by Ryanair (2017) based on Cap-Stat. Due to data limitation for a larger set of countries in 2002, the benchmark figure is taken from 2005. For a list of LCCs considered in these maps, see the Appendix.

Table 1. International seat capacity (2002-2017) and LCC shares

Capacity growth 2002-2017			Growth coming from LCCs		LCC share		
Country	Seats	%	Seats	% of capacity growth	2002 (%)	2017 (%)	% point increase
UK	53,259,970	98	48,300,710	91	23	57	33
Spain	52,181,790	165	43,904,467	84	9	56	47
Germany	38,864,946	74	27,252,008	70	3	32	28
Italy	30,834,874	121	28,220,064	92	10	55	45
Turkey	20,170,012	336	5,001,263	25	0	19	19
France	16,606,367	54	19,145,867	115	7	45	38
Netherlands	15,231,702	91	9,344,112	61	16	37	22
Poland	14,490,821	460	10,344,525	71	0	59	59
Portugal	13,620,805	193	9,802,672	72	5	49	44
Switzerland	11,487,513	71	7,933,063	69	8	33	26
Greece	9,972,654	127	5,231,977	52	3	31	28
Ireland	8,749,536	99	5,967,638	68	35	52	16
Romania	7,895,606	399	4,778,238	61	0	48	48
Sweden	7,738,477	85	3,450,513	45	5	23	18
Norway	7,418,417	126	2,709,299	37	4	22	18
Austria	6,996,736	78	2,918,852	42	3	20	17
Denmark	6,132,410	55	4,837,215	79	2	29	27
Belgium	6,028,337	57	5,061,651	84	9	36	27
Czech Republic	3,821,667	97	2,228,388	58	5	31	26
Finland	3,472,135	70	1,054,003	30	0	12	12
Grand Total	379,350,992	113	268,555,272	71	10	42	33

Source: Seat capacity data are provided by Ryanair (2017), based on Cap-Stat.

Figure 5 displays the parallel evolution of seat capacity for domestic flights from 2005 to 2017.³⁹ While the air transport market since liberalisation has witnessed large expansions in cross-border air travel, an expansion, yet at a much lower scale, has also been observed for domestic air travel. As in international air travel, the domestic air travel market is more developed in countries in Western Europe. This could be related to presence of major hubs in Western European capitals as well as the larger population sizes of the countries and their physical size. Regarding market share developments between legacy carriers and LCCs, in countries such as France, Germany, Italy, Spain, Portugal and the UK, the LCCs became major providers of domestic air travel capacity from 2005 to 2017, even though the capacity distribution between different carriers shows variation by country. For example, in the UK, more than 60% of domestic flights are offered by LCCs, compared to slightly less than 50% in Spain and Italy and less than 20% in Greece (see Table 2).

Looking at both Figure 4 and Figure 5, one observes that a lot of the expansion of cross-border travel by LCCs is attributed to Ryanair (displayed by the medium shaded slices of the circles in the maps), which is the largest LCC in Europe. This pattern is observed in countries like Belgium, Ireland, Italy, Poland, Portugal and Spain, where Ryanair is the largest operating LCC in terms of seat capacity and routes in international flights within Europe. As regards LCCs operating on domestic routes in Europe, Ryanair again constitutes the majority of the LCC market share, for example, in Italy, Portugal and Greece. For domestic flights, easyJet is the largest LCC in the UK; while Vueling and Wizz Air are the largest LCCs on domestic routes in Spain and Hungary respectively (Dobruszkes, 2013; PwC, 2014). Table 3 gives an idea of the size of the passenger traffic carried by major LCCs in Europe.

³⁹ Please note that as in Figure 4, the scales in Figure 5 are slightly different in years 2005 and 2017.

Table 2. Domestic seat capacity growth (2002-2017) and LCC shares

Country	Capacity growth 2002-2017		LCC share		
	Seats	%	2002	2017	% point increase
UK	-4,307,114	-13	35	66	31
Germany	1,798,933	5	3	25	21
Spain	3,166,342	8	0	48	48
Italy	3,175,913	9	0	47	47
France	-4,177,113	-12	1	19	19
Norway	2,369,915	11	0	0	0
Sweden	1,380	0	0	0	0
Netherlands	-411,570	-100	0	-	-
Switzerland	-659,190	-33	0	0	0
Greece	2,978,767	40	0	16	16
Portugal	1,664,094	34	0	26	26
Denmark	482,279	19	0	20	20
Ireland	-1,371,537	-91	0	0	0
Belgium	748	0	0	0	0
Austria	-227,856	-20	0	0	0
Poland	1,459,018	101	0	29	29
Finland	4,302,124	0	0	16	16
Romania	1,415,010	225	0	21	21
Czech Republic	-51,566	-48	0	0	0
Hungary	0	0	0	-	-
Grand Total	13,136,729	6%	6%	32%	26%

Source: Seat capacity data are provided by Ryanair (2017) based on Cap-Stat.

Table 3. Passenger traffic by major LCCs in Europe (in millions)

	2016	2017
Ryanair	106.4	120.0
easyJet	75.2	80.8
Vueling	27.8	-
Wizz Air	22.8	28.3

Source: Authors' own elaboration of data based on information on passenger traffic obtained from respective LCC company websites or other secondary sources (accessed in April 2018).⁴⁰

Finally, these maps lead to another interesting observation regarding the domestic travel sector: in some of the relatively smaller countries such as Austria, Czech Republic, the Netherlands and Slovakia, domestic airline seat capacity has actually decreased over time.⁴¹ This finding could be related to the intermodal substitution as a result of the development and expansion of other modes of transport, such as railways or coach, in these countries. We turn to such alternative modes of transport in section 3.5.

⁴⁰ For Ryanair, see <https://investor.ryanair.com/traffic/>

For EasyJet, see <http://corporate.easyjet.com/investors/traffic-statistics/2017/english>

For Vueling, see https://en.wikipedia.org/wiki/Vueling#cite_note-2016_report-36

For Wizz Air, see http://corporate.wizzair.com/en-GB/investor_relations/traffic_statistics

⁴¹ While this might not be visible in the graphs due to small sizes, we analysed the raw data to confirm these figures.

3.3.2 Evolutions in the route network

To illustrate the status of the route network via air transport, Figure 6 maps the most important flight routes in Europe in 2015 and several observations can be made. First, the most important and busiest routes are operated on the north-south axis. Second, domestic flights are among the busiest in relatively larger (e.g. Germany, France and Spain) or spread out countries (e.g. Italy and Greece). Third, among the busiest international routes, UK has the lead and is well connected to other countries such as Ireland, France, Spain and Netherlands. Finally, the presence of LCCs among the busiest routes is greater in countries such as the UK, France, Germany, Italy and Norway.

Figure 6. Most important air routes in Europe in 2015



Source: Own elaboration on the basis of Eurostat and a report entitled "Market Segments in European Air Traffic 2015" prepared by Eurocontrol (2016).

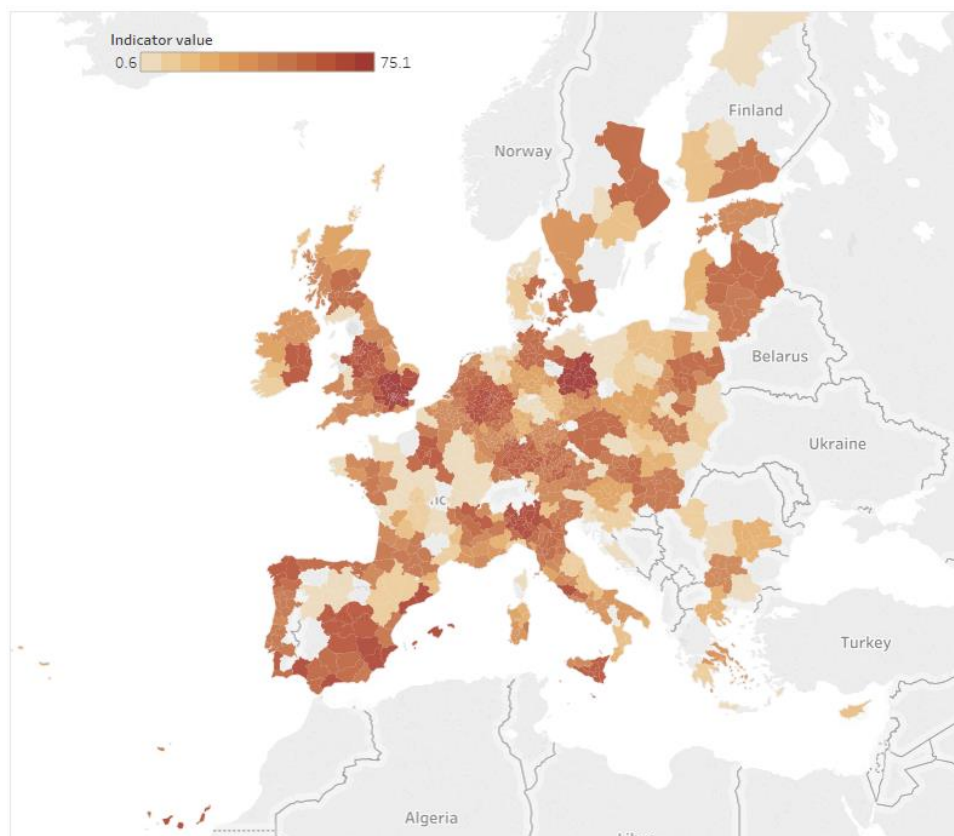
For more visualisation on the route network served by LCCs, we created separate maps for several regions covering the major axes in Europe. These maps are shown in the Appendix. Using web scraping methods to generate the routes data (not weighted by volume), the maps show significant and dense route network along the north-south axes in Western Europe compared to the rest. The diverse route networks also suggest the connectivity provided by LCCs by linking remote areas to the major cities (e.g. many Greek islands or Canary Islands are connected to continental Europe through LCCs).

3.4 Air connectivity index in Europe

Connectivity is a key theme in the European Commission's 2015 Aviation Strategy. The European Commission and Eurocontrol have collaborated to develop an (air) connectivity index that has been published since the end of 2017.⁴² Composed of several indicators including reachable population, travel time in hours (including ground access), flight choices and the number of carriers, it aims to identify connectivity gaps more precisely and benchmark different levels or air services between EU regions (European Commission, 2017d).

The following Figure 7 displays the share of reachable population by air services provided by LCCs at the disaggregated region level (NUTS3). It shows a large variation across European regions in terms of the population reached through air services. While regions surrounding the capital cities have higher shares of reachable population (displayed by the darkest shades) by LCCs according to the connectivity index, the peripheral regions also have important shares of population reached through LCC services. For example, certain regions of Spain (e.g. Andalusia, Catalonia), Italy (e.g. Sicily, Lombardy), northern parts of Germany, eastern parts of Poland and most of the UK have relatively high shares (around 60% or more) of population reached through air services provided by LCCs. Given the recent appearance and rapid expansion of LCCs in the last two decades in Europe, this illustrates the important contribution made by LCCs to air connectivity in Europe.

Figure 7. Intra-EU Connectivity – Reachable Population (%) (2017, 1st quarter)



Source: Intra-EU connectivity indicator displaying the share (%) of reachable population at NUTS3 level including only LCCs in the first quarter of 2017, part of the Air Connectivity Index published by the European Commission's DG MOVE. Retrieved from <https://public.tableau.com/profile/connectivity#!/vizhome/EUConnect-TEST/IntraEUAverage> (accessed in April 2018).

⁴² The interactive air connectivity dashboard can be accessed from <https://public.tableau.com/profile/connectivity#!/vizhome/EUConnect-TEST/IntraEUAverage>

3.5 Alternatives to air transport

In this section we briefly review alternative modes of collective passenger transport compared to (low-cost) air travel and discuss their pros and cons.⁴³

3.5.1 Transport by rail

In the European context, one of the main alternatives to air travel is rail transport. Rail is one of the most heavily subsidised industries around the world and Europe is not an exception. Many national or regional authorities subsidise the rail industry as well as rail infrastructure, especially in cases of services that are not commercially viable in remote communities (Air Transport Action Group, 2012). Western European countries have also heavily invested in high-speed rail (HSR), which is a particularly relevant alternative to air travel.

Regarding the comparative evolution of supply in rail and air transport (measured in kilometre-passengers) in Europe, Dobruszkes (2011) notes that while air transport has undergone a very dynamic development with a steady growth path since 1990s, except for slight slowdowns in early 2000s and following the crisis in 2008, the trend in rail transport services has been relatively flat and sometimes even slightly downward over recent decades. HSR, the main alternative to LCCs in Europe, has been steadily increasing in kilometre-passenger terms, but this does not impact the overall trend as air travel is five-times greater in kilometre-passenger terms than rail.⁴⁴

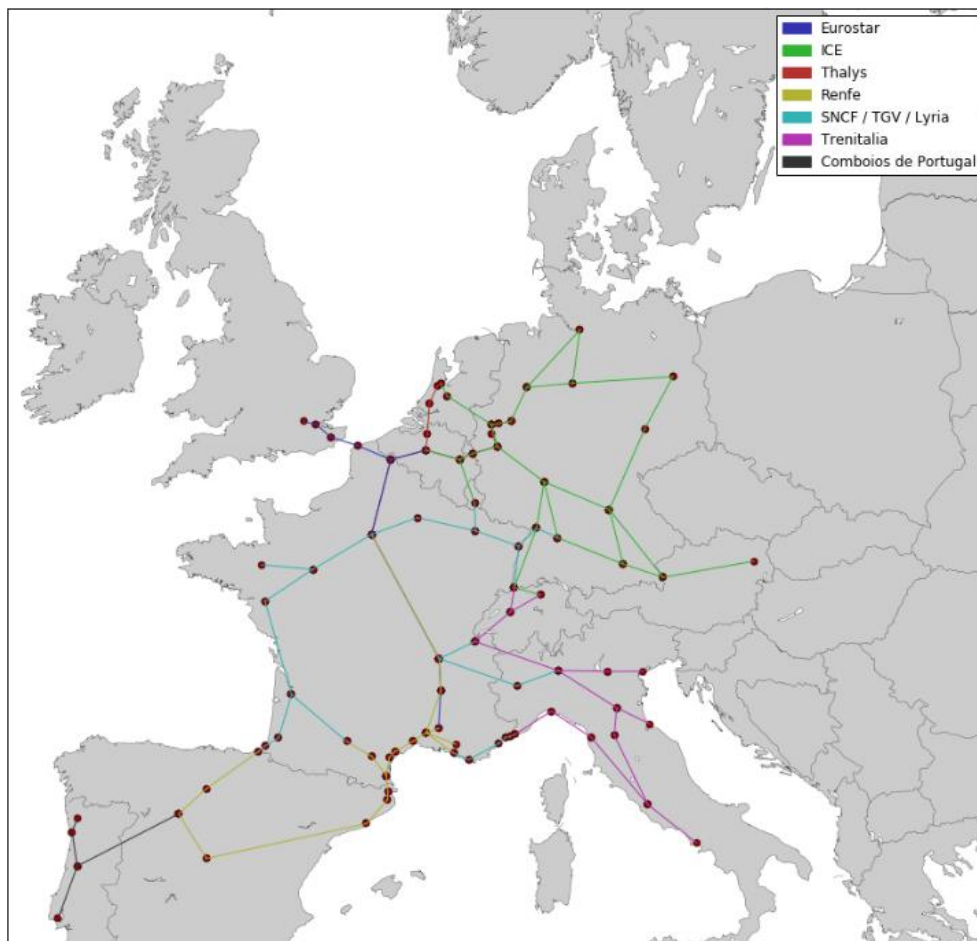
Figure 8 shows international train connections in west Europe, where they are largely concentrated, especially in neighbouring countries such as France, Germany, Belgium, the Netherlands, Switzerland and Italy. Especially countries like France have very advanced train connections, as they are the pioneers of HSR, also known as *TGV*, in Europe. The London-Brussels-Paris train, operated by Eurostar, is one of the main and most frequently used routes, connecting three countries (France, Belgium, and UK) within less than four hours. Similarly, the Thalys train operates (partly as a HSR) over the Paris-Brussels-Amsterdam or Paris-Brussels-Cologne/Essen routes.

One of the main advantages of rail transport is city-centre to city-centre connections as opposed to air travel, which brings passengers to airports usually located at the outskirts of a city. Dobruszkes et al. (2017) argues that the reason why LCCs are expanding operations to major airports closer to city centres rather than in secondary or regional airports could be related to the tougher competition with HSR, which also provides more city-centre to city-centre connections than in secondary or regional airports.

Moreover, the hassle of arriving at the airport several hours before travel takes place is not an issue for travellers by train, as security checks are not as prevalent and long as for air travel. However, for a long distance trip, travel time is usually much longer with a train than with a plane. Even though the presence of HSR has decreased travel times, it can still take many hours to go from Italy or Spain to England by train. As a comparative advantage of air transport, the travel time aspect between far flung areas appears to constitute one of the main reasons why the commuters in our passenger sample tend to prefer LCCs rather than other modes of transport (see Chapter 1).

⁴³ We understand that transport by car is also an important alternative in Europe, but we only consider collective transport modes such as air, rail, coach and maritime travel in the context of this report.

⁴⁴ See the figure in Dobruszkes (2011) on page 873.

Figure 8. International train connections in Western Europe

Source: Own elaboration of the main international train connections in Western Europe based on data collected from the websites of the train companies (2017).

Another issue for rail transport is that it tends to be expensive (Blayac & Bougette, 2017). In particular, HSR is even more expensive and therefore not widely used by passengers from lower income classes and is instead used by more affluent people (Delaplace & Dobruszkes, 2015). In this respect, low airfares make LCCs a more attractive alternative. This is probably the reason behind the recent phenomenon of low-cost rail services (Delaplace & Dobruszkes, 2015). This has been the case in France (OUIGO) for a few years, but the business model of this type of transport mainly targets price-sensitive car-users. More research is needed to assess the comparative impacts on use of HSR and LCCs. All in all, it seems that travel times together with lower prices are the main factors to be considered, if trains are to compete with LCCs.

3.5.2 Transport by coach

Together with rail, coach transport constitutes another alternative to air transport. As used to be the case for the airline sector, it has been a highly regulated industry and a market relatively closed to international competition. However, unlike for rail and air transportation, there is not much EU level regulation, coach transport being mainly regulated by individual member states. Nevertheless, the coach industry has been developing over the last years and covers not only domestic but also international markets, even if the latter is much smaller relative to the former (Steer Davis Gleave, 2016). For example, recent legislation in France opened up the country's long-distance coach industry to competition (Blayac & Bougette, 2017).

While coach transport is usually not competitive in terms of travel time compared to air or even rail transport (particularly HSR), it can compete on price with LCCs. However, given the long travel time, regular long distance commuting by coach is not an attractive option for most people despite lower prices. This is also

confirmed by LCC passenger interviews (see Chapter 1), where we see examples of individuals who favour using LCCs to travel regularly between Poland and Germany as taking a bus would not be feasible with work schedules. Similarly, an individual who wants to travel from Madrid to Paris (distance between the two cities being about 1,200 km by car) would need to spend about 17 hours in a coach compared to a 2-hour flight, even though the fare would be similar for the two modes of transport.

Even though there is – strictly speaking – no constraint in terms of road infrastructure as to how many coaches can be on the road, except to the extent that it creates traffic congestion and a negative externality for other road users, the passenger capacity of a coach is still much lower than a train or most planes. LCC fares are comparable to coach fares (and sometimes even lower), even though coach companies do not pay for the costs of intercity road networks unlike in the aviation sector, where carriers pay for infrastructure costs through airport charges. Therefore, LCCs are able to offer faster connections for similarly affordable fares, which is particularly relevant over longer distances.

3.5.3 Transport by boat

A final alternative transport mode is boat or ferry. However, given the lack of access of many European countries to the sea, geographical constraints prevent this transport mode from being developed to reach the connectivity levels of other modes. Moreover, for regions where maritime transport is relevant (e.g. between islands or neighbouring countries with a sea border), the travel times are relatively long.

3.6 Conclusions from the mapping and evolution of the LCC sector

This chapter provided an overview of the aviation sector with a particular focus on LCCs. It described the rapid expansion of LCCs over recent decades following the liberalisation process of air travel in Europe. Briefly going over the basic economic model and some common principles of the low-cost model ranging from simple service offering with paid services on board, short-haul and point-to-point routes instead of hub-and-spoke model to high-density seating with efficient use of aircraft utilisation and relatively higher load factor. Nevertheless, diverse business models are observed under the low-cost model and even a sort of mainstreaming of certain LCC principles by some legacy carriers.

The redistribution of relative market shares between legacy carriers and LCCs has evolved tremendously over time, whereby LCCs exceeded the incumbents by capturing nearly half of the market by 2015. The seat capacity offered by air transport has been developing rapidly with the entry of LCCs into the market, and capacity is more developed in Western Europe compared to CEE, even though large expansion patterns have been observed there in recent years, which appears to be linked to the expansion of the EU to CEE. Overall, the analysis suggests that the availability of LCCs has likely generated new travel demand in Europe, both domestically and internationally.

In terms of routes network, the most important and busiest routes lie on the north-south axis, with expanding routes in the CEE regions. As regards air connectivity, which is measured through an index developed by the European Commission and Eurocontrol, the share of reachable population by air services is expanding to remote regions in addition to major hubs and LCCs are contributing to this development through point-to-point flights and lower fares.

The report also briefly considers alternative transport modes to LCCs (mainly train and coach). The overall analysis suggests that while trains, particularly HSR, constitute relevant alternatives to planes, the fares remain relatively high compared to LCCs. Coach travel is more competitive in terms of price, but travel times are longer.

Chapter 4 How low-cost airlines can foster mobility and integration: Channels and impacts

When considering the benefits of aviation in terms of integration and connectivity, a report by the Air Transport Action Group highlights that “increasing cross-border travel is a reflection of the closer relationships developing between countries, both from an individual perspective and at a country level. In the same way, eased restrictions on the movement of goods and people across borders facilitates the development of social and economic networks that will have long-lasting effects. This increased flow of people and goods benefits both the host and originating countries, encouraging increased social and economic integration (Air Transport Action Group, 2012, pp. 4).” Against this background, in this section, we focus on the main channels through which LCCs can have an impact on mobility and integration in Europe. These range from facilitating labour and student mobility and business travel to visiting family and friends and leisure tourism. Further potential impacts of LCCs on local economies in terms of connectivity, territorial cohesion and regional development are also discussed, considering benefits as well as challenges experienced by various actors in the local economy, where mainly LCCs operate.

4.1 Labour mobility

Globalisation and technological progress influence all types of economies and can result in the growth of the service sector, the emergence of more flexible manufacturing techniques, the reduction in trade barriers and the creation of more complex and connected financial markets (Button & Vega, 2008). This implies that the mobility of the fundamental factors of production, such as capital and labour, has become all the more relevant. Considering labour, freedom of movement is one of the main rights of European citizens. With the creation and expansion of the Single Market, labour mobility in Europe has been increasing over recent years (Barslund & Busse, 2016; European Commission, 2018). According to European Commission (2018), there were roughly 11.8 million mobile workers in the EU in 2016. Among those workers, the large majority lives and works in a member state other than their country of birth (Barslund & Busse, 2016).

In this context, the expansion of the EU to CEE in the mid-2000s triggered further increases in labour mobility within the EU.⁴⁵ Economic developments also generated opportunities for mobile labour, such as the economic downturn of 2008, where some countries were affected more than others. In this respect, the extent to which the availability of LCCs impacts European integration by facilitating labour mobility can also be considered as being relevant in terms of European economic integration. We consider the role of cheaper air transport in three types of labour mobility: mobile workers who leave to live and work in another country; cross-border commuters who work in another country and return home regularly; and domestic commuters who work and live in different regions of the same country.

A great deal of literature on labour migration attempts to understand the determinants of the movement of workers. A standard approach is to identify pull and push factors of labour migration at the destination and source, respectively. While there could be a diverse set of pull and push factors influencing migration decisions, the principle argument based on economic theory suggests that a migrant responds to economic opportunities and maximises her or his utility subject to a budget constraint, which involves, among others, initial endowments, financial and emotional costs of migration. Availability of lower fares in air travel thanks to LCCs enters into the decision process mainly by affecting the transaction cost of migration. As evidenced by Button and Vega (2008), who look at the longer-term effects of the modern air transportation system on labour markets and labour migration, air transportation facilitates migration, makes short-term and long-distance migration viable and allows migrants to stay in touch with their countries of origin through regular

⁴⁵ The access to labour markets for citizens of ‘new’ member states was restricted in certain ‘old’ member states until transitional measures were gradually lifted over time.

visits back and forth. Therefore, one could argue that the developments in the air transportation following liberalisation are particularly relevant in the context of labour migration.

The movement of labour migrants from ‘new’ member states to ‘old’ member states subsequent to EU enlargements in 2004 and 2007 created a new demand for air travel from east to the west. The UK is a striking example, becoming host, thanks to its open labour market policy, to more than a half million migrants from CEE (mainly from Poland, followed by Hungary and others) between 2004 and 2006 (Blanchflower & Lawton, 2009).⁴⁶ As of 2015, there are nearly 1.5 million residents from CEE in the UK and work is the main reason for migration (ONS, 2018). Not surprisingly, this development coincides largely with the commencement dates of various LCC routes from CEE regions to the west. Ryanair has developed an extensive route network covering a large number of cities in CEE since the early 2000s and is one of the largest LCCs in the region. Founded in 2003 right before the country’s EU accession, a Hungary-based LCC, Wizz Air has also become one of the largest low-cost airlines in CEE in recent years (Wizz Air, 2017). Table 4 lists the starting year of flights offered by the two main European LCCs, Ryanair and Wizz Air, in selected airports in CEE. The commencement years largely, if not always, reflect the EU’s expansion to CEE countries.

Table 4. Commencement years of Ryanair and Wizz Air flights in selected airports in CEE

Airport	Country	Commencement year	
		Ryanair	Wizz Air
Sofia	Bulgaria	2016	2007
Brno – Turany	Czech Republic	2005	-
Prague – Ruzyně	Czech Republic	2007	2010
Budapest Airport	Hungary	2007	2003
Riga	Latvia	2004	2014
Gdansk	Poland	2005	2006
Krakow Balice	Poland	2005	-
Poznan – Lawica	Poland	2005	2008
Katowice International	Poland	2007	2004
Warsaw – Frederic Chopin	Poland	2007	2013

Source: Information in this table is based on network data shared by Ryanair and information retrieved from the internet on Wizz Air.

Furthermore, the availability and affordability of air transport can influence the evolution of labour mobility over time. Put differently, cheap air travel might not only affect the quantity of movement, but also the nature or type of movement of workers. For example, it is one of the main facilitators in the shift from long-term, permanent types of settlement towards more temporary migration, sequential migration, and circular migration (Button & Vega, 2008; Constant, Nottmeyer, & Zimmermann, 2013). In other words, LCCs can influence not only the volume of labour flows, but also their composition. Moreover, since air travel is faster than other modes of transport, it also makes within-country as well as cross-border commuting more convenient. Empirical evidence collected through LCC passenger interviews confirms such trends in labour mobility (see Chapter 1). For example, many passengers highlight the possibility of being able to live and work in different countries in Europe due to the availability of LCCs. Some individuals are able to work in a country during the week in northern Europe and return home to southern Europe over the weekend using LCCs, while others spend more time in their second home in southern Europe and work at a distance during those periods. The availability and affordability of low air travel lets people adopt different work-life patterns.

⁴⁶ Together with Sweden and Ireland, the UK was among the first EU countries to open up its labour market to the citizens of ‘new’ member states, while other EU countries maintained transition periods.

Either type of commuting is directly related to the geographical location of a country and is common in relatively large or spread out countries, such as Germany, Italy and Spain, or island countries such as Ireland and the UK – in the latter, the main mode in international travel is usually by air transport. This type of labour mobility through commuting has largely benefited from and increased with the availability of LCCs, as decreased travel costs made frequent travel more affordable. Moreover, the wider geographical network of air transport provided thanks to the use of secondary airports offers air services to a larger market. In Italy, for example, there are important differences in economic activity between the northern and southern regions and, as a consequence, there is high internal mobility from the south to the north (this observation is also justified by the availability of a large domestic seat capacity as displayed in Figure 5 of the previous section). For example, more than one million passengers used Ryanair to go from the south of Italy (e.g. from Bari, Cagliari, Catania, Palermo) to Milan and Rome between April and October 2017.⁴⁷

To put things in perspective, Table 5 compares the domestic seat capacity and domestic seat capacity per inhabitant (using country population numbers) in the largest European countries such as Germany, the UK, France, Spain, Italy and Poland.

Table 5. Domestic seat capacity by LCCs in the largest European countries

Country	Domestic seat capacity by LCC	Population	Domestic seat capacity by LCC per inhabitant
Spain	21,462,280	46,398,000	0.463
UK	19,894,484	65,397,000	0.304
Italy	18,097,162	59,504,000	0.304
Germany	8,635,767	81,708,000	0.106
France	6,177,722	64,457,000	0.096
Poland	841,878	38,265,000	0.022

Source: Authors' own elaboration based on domestic seat capacity data from Cap-Stat provided by Ryanair (2017) and country population statistics from United Nation Population Division statistics (2015). The domestic seat capacity of Spain also includes Canary Islands.

The numbers in Table 5 point to the significant proportion of domestic air transport covered by LCCs in Spain, Italy and the UK relative to that in the other countries in the table. Nevertheless, the effects are expected to be similar: the presence of LCCs likely facilitates domestic or cross-border commuting to larger cities. Such regular travel to the region or country of origin, in turn, allows migrants to broaden career opportunities elsewhere by staying in touch with people left behind (Button & Vega, 2008). For example, in our passenger sample, we have an example of a domestic commuter from Puglia (in the south of Italy) to Milan, which illustrates the possibility of combining professional decisions of working far from home with personal decisions of continuing relationships at home through regular visits between the city of work and home town. The commuter respondent in the sample of interviewees asserts that if there were no LCCs, he would travel less frequently, which would have a significant emotional impact on his life.

However, while labour mobility is facilitated by LCCs, which could foster European integration, the labour market integration of the migrant workers at the destination does not always follow. Analysing the labour market outcomes of young European workers at other European destinations using a recent representative survey, Akgüç & Beblavý (forthcoming) find that mobile workers usually end up in occupations for which they are overqualified given their educational and sociodemographic background. A number of studies also find significant labour market outcome gaps between native-born and foreign-born in major destination countries, even though the gaps tend to decrease the longer migrants spend at the destination (Adsera & Chiswick, 2007). From the perspective of subjective attitudes, looking at the labour market effects of the eastern enlargement of the EU in the specific case of the UK and using data on attitudes of individuals,

⁴⁷ This information is based on seats data on the top 50 city pairs provided by Ryanair to the authors.

Blanchflower and Lawton (2009) show that labour migrants from eastern Europe were generally unhappy with their lives and dissatisfied with their jobs. This means that while the affordability and ease of labour mobility thanks to the availability of LCCs can broaden career options for mobile workers in Europe, integration in the labour markets of the destination country is not without costs for the migrant worker and it takes time.

4.2 Business travel

Similar to labour mobility, the affordability of air travel due to lower fares and availability of routes in a number of secondary as well as main airports offered by LCCs constitute one of the essential factors stimulating business flows and travels. While recent developments in communication technologies, such as video conferencing and similar tools, might reduce the need to travel for business purposes, face-to-face meetings are still considered essential for reaching out to new clients and developing business relationships further. As stated by Williams & Baláž (2009), flows of knowledge and interregional business travel impact on the business environment, which can then influence investment flows and knowledge transactions. In particular, improved connectivity with other countries thanks to LCCs can enhance an economy's performance by facilitating foreign direct investment (FDI) (Air Transport Action Group, 2012). In a similar vein, a report prepared by Oxford Economic Forecasting (2006) finds a positive link between air transport usage and connectivity as well as investment levels in the UK, while a more recent report by Frontier Economics (2016) highlights the contribution of air connectivity to the positive loop in economic prosperity through increased business relationships fostering trade and investment links.

While the majority of business travel is concentrated in Western Europe, the expansion of the Single Market appeared to trigger new business travel patterns from the west to the east as well. For example, looking at the aggregate data on core customer segments of Ryanair, most business travellers are from Italy and the UK, making up nearly 40% of the total bookings in this category, and they usually fly to London, Milan, Brussels, Rome and Paris, and to a lesser extent also to Budapest, Bratislava and Riga. These routes data seem to be in line with interlinkages between business hubs within Europe. According to Dobruszkes (2009), the opening of high-ranking international hotels in capitals such as Bratislava, Budapest, Prague and Warsaw, which are also main cities in the CEE region where LCCs operate with relatively significant shares of capacity, could be seen as an indication of increased business links between the west and the east. To give an idea of the role of LCCs in the CEE region, an important part of the market share is captured by Ryanair in cities such as Warsaw (Modlin airport) and Plovdiv (100% each), Krakow (42%), Bratislava (22%) and Budapest (14%).⁴⁸

In line with the increasing presence of LCCs in the CEE region, further business links with Western Europe have been developing. For example, Williams & Baláž (2009) assert that the existence of the Bratislava-Paris route offered by SkyEurope, a Slovakia based LCC that operated between 2002 and 2009, possibly played an important role in persuading PSA Peugeot Citroën to build a car assembly plant in Trnava, Slovakia, in 2003. Similarly, the existence of a number of LCC air connections from Prague was likely a key factor in DHL's decision to build an IT centre in the Czech Republic. While historically, business travellers from larger companies or multinationals used to choose legacy carriers, as there are often corporate agreements with these incumbent airline companies (Williams & Baláž, 2009), the examples from CEE business partnerships might suggest that there could be new demand from business travellers for LCCs.

Moreover, observing the tendency of business travellers towards using LCCs, some low-cost airline companies started offering air services somewhat similar to the business class segment of legacy carriers. For example, Ryanair offers Flexi Plus to attract customers from the business world by giving them flexibility for flight reservation (one day earlier or after) without additional cost as well as reserved front seats and a more generous baggage allowance. Such a shift in customer services could attract more business travellers, who

⁴⁸ Market share data by departing capacity per airport is provided by Ryanair.

would otherwise have flown business class with legacy carriers, and this could contribute to the business flows generated by LCCs.

Furthermore, the employees of SMEs tend to choose LCCs as the airfare constitutes a major item in their travel budget; such travellers prioritise the essential service, *the air travel*, provided by the LCCs. Based on passenger survey data collected at airports, O'Connell & Williams (2005) similarly find that LCCs are attracting self-employed and employees of SMEs. Our empirical analysis of the passenger survey (see Chapter 1) also suggests that small businesses mainly benefit from low cost travel through decreased client acquisition costs. Given that the Single Market is host to more than 20 million SMEs,⁴⁹ facilitating business travel for this customer group can significantly boost cross-border business in Europe. In other words, by providing easier mobility and connectivity through cheaper airfares and diverse routes, LCCs can contribute to the smooth functioning of the Single Market.

4.3 Educational mobility

Enshrined in the Article 45 of TFEU as part of the freedom of movement, cross-border mobility of individuals is one of the main channels for promoting European integration. In particular, international student mobility is an important element in Europe as well as globally. Not only does it relate directly to high-skilled migration, but it also provides an early experience for mobile youth of different education systems, languages and cultures. In the European context, international student mobility has been supported and subsidised officially under the Erasmus Programme which has been operational since the mid-1980s.⁵⁰ This EU funded student exchange programme, which provides opportunities to study abroad within the EU for 3-12 months, involves many of the best universities on the continent and fosters learning and understanding of the host country.⁵¹ If planned in advance, Erasmus students can undertake a complementary traineeship abroad, which also offers the experience of temporarily working abroad. The underlying principle of the programme promotes a European identity by allowing early exchanges between young people from different cultures in Europe and this diversity is an integral part of feeling European.⁵² Since its launch, more than 9 million students have benefited from this programme⁵³ and various studies find that studying abroad has helped socialising with other Europeans, even if contact with host country students remained limited (Sigalas, 2010). Using survey data among university students at Sussex University spending a year abroad, the results of King and Ruiz-Gelices (2003) confirm that such international study experience gave students a more European identity or consciousness as well as a greater insight into European issues, and that such students are more likely to pursue a subsequent career path in continental Europe.

Against this background of the importance of student mobility and its effect on European identity and cultural integration, the expansion of low fare air travel enters into the costs calculation of mobile students, who are likely budget constrained and hence are more likely to be sensitive to price differentials. In this vein, Dobruszkes (2013) argues that LCCs determine the travel decisions of international students and highlights how several European universities try to attract Erasmus students in their information documents or webpages by pointing to the availability of LCCs in their cities. One example of such an advertising campaign cited by Dobruszkes (2013) is of a Maltese university highlighting the connectivity of the island to major destinations in Europe through LCCs. Looking at the main determinants of choice of travel mode – including

⁴⁹ For details, see https://ec.europa.eu/growth/single-market_en.

⁵⁰ Erasmus stands for European Action Scheme for the Mobility of University Students.

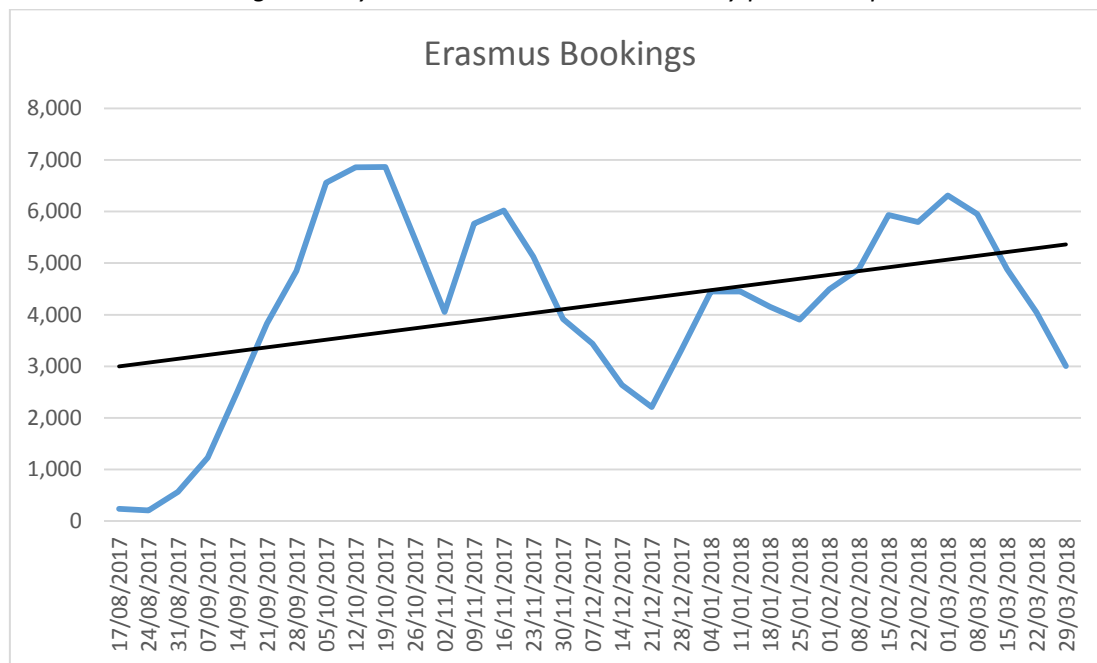
⁵¹ For details, see http://www.erasmusprogramme.com/the_erasmus.php.

⁵² See the article on Erasmus programme titled “Quietly sprouting: A European Identity” from <http://www.nytimes.com/2005/04/26/world/europe/quietly-sprouting-a-european-identity.html>.

⁵³ In a recent speech at the CEPS Ideas Lab in February 2018, President Jean-Claude Juncker of the European Commission said that since its launch, about 9 million students had participated in the Erasmus programme and 1 million babies had been born as a result of it.

train, coach, car and distinguishing regular and low fare carriers among airlines, Grigolon, Kemperman, & Timmermans (2012) not only find that LCCs and costs have a major influence on the decisions of international students, but also claim that in turn, the travel needs of international students might contribute to both the expansion and the geographical spread of air travel offered by LCCs. In the qualitative data analysis as described in the next chapter, we also observe how international students rely on LCCs to travel for study abroad in the first place, but once there, they are also able to make repeated trips home to attend family occasions or see friends.

Figure 9. Ryanair Erasmus student mobility partnership



Source: Own elaboration based on bookings data with the Erasmus Partnership received from Ryanair (2018).

Another interesting development regarding how LCCs can foster student mobility is the recent partnership between Ryanair and the Erasmus Student Network.⁵⁴ The partnership offers discounted fares and free checked-in bags when travelling, significant savings for Erasmus students allowing them to travel more often. Figure 9 shows the evolution of bookings made under this partnership, which started in autumn 2017. The figure suggests an upward linear trend in terms of student mobility, even though it is a rather short time-series data and there seems to be seasonality in bookings, as observed by peaks in bookings around October-November 2017, mid-January and early March 2018. These peaks seem to coincide with periods when Erasmus grants are paid, which can suggest that students are cash-constrained and, therefore, the discount provided under the partnership with Ryanair represents a significant benefit to them.

As regards the sociodemographic profile of student travellers flying with Ryanair, a large majority (85%) of these travellers is aged between 19 and 25, female (55%) and they mostly come from Italy, Spain and the UK (nearly 40%) and travel mostly alone. The main destinations are Barcelona, Brussels, Rome, Madrid, Paris, Budapest and Porto, which suggests more geographical diversity than for migrant workers or business travellers.⁵⁵

⁵⁴ For details, see <https://www.ryanair.com/gb/en/plan-trip/explore/erasmus>.

⁵⁵ This profile information is based on customer segment data provided by Ryanair to the authors.

4.4 Leisure tourism

Air travel in the past was a luxury good reserved for a group of relatively well-off individuals. The entry of a number of LCCs into the air transport market has opened up air travel to a broader set of customers. In this context, the freedom of movement in the EU together with the availability and affordability of air travel offered by LCCs can promote further mobility via leisure tourism by facilitating travel to distant areas in Europe. Leisure tourism can comprise several dimensions such as vacation, second or residential home ownership and other short-term cultural/city visits.

According to recently released data from the United Nations World Tourism Organisation (UNWTO), international tourist arrivals in Europe have shown strong growth over the last two decades as seen in Table 6. This growth in international tourist arrivals coincides with a time period, which has also witnessed an increase in new entrants, such as the LCCs, in the air transport market in the aftermath of the liberalisation. There seems to be a significant variation in tourist arrivals between different regions, which could be related to various economic and political developments in Europe. For example, the relative flatness of tourist arrivals from 2005 to 2010 in northern Europe could be related to the economic downturn of 2008, as tourism is largely correlated with economic performance. On the other hand, a steady increase, from nearly 70 million in 2000 to about 133 million in 2017, in international tourists in the CEE region is likely related to the expansion of the EU to CEE countries, thereby increasing links between the west and the east, as well as the rapid expansion of LCCs to the eastern countries, in which the LCCs could be appealing to passengers from relatively lower income levels.

Table 6. International tourist arrivals by region (in millions)

UNWTO regions	2000	2005	2010	2015	2016	2017	Change 2000-2017 (%)
Europe	392.9	452.7	487.5	604.9	619.3	671.1	70.8
Northern Europe	44.8	54.7	56.6	69.8	73.8	77.6	73.2
Western Europe	139.7	141.7	154.4	181.5	181.5	193.4	38.4
Central and Eastern Europe	69.6	95.3	98.5	122.2	126.9	133.3	91.5
Southern & Mediterranean Europe	139.0	161.1	178.1	231.4	237.1	266.8	91.9
EU-28	336.8	367.5	382.8	478.3	500.1	537.8	59.7

Source: Tourism data are extracted from (UNWTO, 2018). Regional classifications are based on the UNWTO definitions.

The importance of air transport in the growth of tourism sector is recognised given the fact that air transport represents more than half of all international tourist arrivals, compared to other transport modes (European Parliament, 2017). In parallel, the rapid expansion of LCCs over the last decades increased the volume of international tourists. Moreover, by focusing on point-to-point services, LCCs enhanced the accessibility of not only major cities, but also secondary destinations, less travelled by tourists. For example, new routes offered by LCCs in the eastern European regions triggered more and more tourist travel to capitals such as Budapest, Prague, Krakow, Riga as well as other relatively smaller cities in the CEE region, which promote their cultural heritage to tourists from Western Europe (Dobruszkes, 2009). Therefore, one of the major contribution of LCCs to connectivity in Europe could be attributed to the fact that over recent decades they have opened up the majority of the new routes previously not operated by any other airline (Dobruszkes, 2013).

Furthermore, by operating in niche tourism areas, LCCs helped in the creation of new tourism centres and this supports territorial cohesion in Europe. A number of studies generally find a positive impact of LCCs on tourism in Italy, Spain, and Portugal especially through an increase in the number of tourists, diversity of origins, travel and consumption patterns (Alivernini, D'Ignazio, & Migliardi, 2012; Costa & Almeida, 2015; Donzelli, 2010; Myro, Rey, & Hernández, 2014; Rey, Myro, & Galera, 2011). At the same time, cheaper airfares

attract a segment of passengers who possibly being more sensitive to price differentials, could also be spending less on tourism goods at the destinations, which, in turn, can reduce the expenditure per tourist compared to the average. Nevertheless, the overall impact of LCCs on tourism is still positive as LCCs serve not only popular destinations, but also less travelled regions, which, in turn, are witnessing a growing number of tourists.

Regarding the diversity of tourism travel patterns, affordability of air travel for a larger segment of the customers also motivates some individuals to travel to relatively more distant areas for second homes. Alivernini et al. (2012) highlights the expansion of niche tourism markets in smaller regions in the form of residential or second-home tourism. The latter type of tourism has been an interesting phenomenon, whereby an increasing number of pensioners from Northern or Western Europe buy a second home in the southern regions in Europe, e.g. British and Germans owning a summer house in Spain or Portugal to spend their retirement in a milder climate (Casado-Díaz, Kaiser, & Warnes, 2004). This is also known as *international retirement migration*, which is an increasingly popular form of mobility in Europe.⁵⁶ As suggested by qualitative data based on LCC passenger interviews, this type of leisure travel of second home owners has been fostered by and followed closely the expansion and network of LCCs in Europe. For example, one of the interviewees in the passenger sample is a retired British citizen who lives half-time in Spain and who regularly comes back to the UK mainly using LCCs. Because of his disability, driving very far would not be feasible for him; however, the existence of LCCs facilitates his frequent travels to spend time in a warmer country half of the year, which largely improves his quality of life.

Another interesting characteristic of LCCs is that they can 'de-seasonalise' tourism by offering flights to remote areas in off-season periods and during the week, which can help local economies benefit from tourism throughout the year. Similarly, the accessibility of remote areas during off-season periods can also attract a different category of passengers, such as pensioners, who would be willing to travel to sunnier regions in winter. Indeed, data from Ryanair passengers suggest that such individuals, who are mostly from the UK, Germany or Ireland, generally travel to the South of Spain or Portugal during spring months or early autumn, which are relatively less crowded but still warm periods in those destinations.

Moreover, an increasingly popular leisure tourism type is city breaks. According to passenger survey findings of Dunne, Buckley, & Flanagan (2007), access and availability of cheap flights are one of the main stimuli of city breaks. Customer segment data from Ryanair suggest that these city breakers are almost all young (aged 19-35) and cost-conscious and travel to cities with social attractions (e.g. nightlife) such as London, Madrid, Budapest, Ibiza and Edinburgh. Such travel usually happens over a weekend.

Last but not least, one could argue that tourism has possibly multidimensional network effects in connecting people: tourists can discover and learn from the local population about the culture of the destination, but they could also meet and mingle with other tourists visiting the same destination at the same time. Finally the local population can also discover about other cultures by interacting with visitors. All such interactions could further boost curiosity and willingness to discover other parts of Europe. Offered by LCCs, the cheap and large route network connecting not only major cities, but also remote areas can trigger such multicultural interactions. All this, in turn, allows the visitors to discover new regions and countries, which can foster European identity and integration.

⁵⁶ For details, see http://ec.europa.eu/eurostat/statistics-explained/index.php/People_in_the_EU_%E2%80%93_statistics_on_geographic_mobility#Further_Eurostat_information.

4.5 Visiting friends and relatives

When an individual moves to another country for work or study, the connection between the migrant and his or her friends and relatives rarely comes to a halt. While the advances in internet and communication technology have radically shaped and offered a number of options in the way individuals can stay in touch (e.g. mobile and smart phones, video calls etc.), face-to-face contacts and physical presence are still important elements of personal relations. Related to this, the initial migration of an individual could trigger a post-migration flow, which entails visiting friends and relatives either by the migrant himself or herself or by others visiting him or her. In fact, this type of travel is highly regarded by airline companies because of the relative reliability and predictability pattern of demand from such travellers (Button & Vega, 2008).

While traditionally the LCCs usually do not emphasise services other than the essential one, that is *the flight*, some LCCs have started offering special (paid) programmes for attracting families who travel with kids.⁵⁷ Accordingly, this type of travel is among the fastest growing traveller categories in Europe and the upward trend is boosted further with the availability of LCCs, which facilitates such travel through lower fares with a diversity of routes.

There is also an intrinsic value or utility of the speed and connectivity thanks to air travel, which maximises the time spent with friends and family and reduces the time spent travelling. For example, instead of spending many hours travelling by other transport means, LCCs allow individuals to reach the destination to meet family and friends faster and regularly in a cheaper way. Such travel patterns are also observed in the passenger interviews, where individuals rely on LCCs (instead of taking, for example, coaches) to be able to visit family and friends regularly in the country of origin while working in another relatively distant country. This allows individuals to maintain their personal relations in their countries of origin, even after migration, and improves their quality of life. For example, one of the respondents, a divorced father of two teenage children (18 and 15) uses LCCs to travel from Barcelona to Bonn to visit them.

4.6 Local economy and regional development

All the previously discussed channels by which LCCs can contribute to European integration are pillars intertwined with local economies and thus regional development. For example, the flow of mobile workers or business travellers increases the flow of knowledge, ideas and business relations between regions. This can foster investment opportunities such as FDI, decrease transaction costs, attract more business to the region and enhance economic opportunities in other sectors through positive externalities from the improved business climate, in addition to direct employment opportunities in the aviation sector of the region. For example, increased mobility among international students can be a precursor for high-skilled migration flows across regions in the future. Meanwhile, growing numbers of tourists can stimulate intercultural interactions between visitors and local population, which can then generate further connections between European citizens and foster a greater feeling of being “united in diversity.” As Williams and Baláž (2009) put it, the implications from the emergence of LCCs contribute to the “unfolding and increasingly interconnected map of uneven regional development in Europe”, which is one of the most important contributions of LCCs to territorial cohesion and connectivity in Europe.

The activities of LCCs can also contribute to regional economic development through its use of secondary airports. To measure this impact, one can use the direct expenses of providers of airport goods and services, expenses from direct and indirect employees (induced expenses) and passengers’ expenses in the region. Beauvais-Tillé airport in France presents an interesting example. An audit⁵⁸ by consulting agency BIPE, found

⁵⁷ For example, Ryanair proposes a Family Plus package, which includes two checked bags, priority boarding and free seats for children.

⁵⁸ See <https://www.smabt.fr/impact-economique> for further details.

that the airport had created 1,235 jobs and quantified the economic benefits at 97 million euros for Beauvais and the surrounding area. However, the Paris region (Ile-de-France) is the one that benefited the most from this airport (176.8 million euros and 3,034 jobs); passengers who fly to Beauvais do not come to visit the city itself, but to visit Paris.

The use of secondary airports by LCCs can, therefore, contribute to regional development. However, if the region where the airport is located is not the one which the passengers want to visit, the impacts may be lower than expected. Nevertheless, this is not the case for most destinations in southern Europe (e.g. Italy, Portugal, and Spain). For example, Bergamo in Italy is an interesting example. Since the expansion of LCCs at its airport and despite its proximity to Milan, passengers travelling to Bergamo mostly choose it as a final destination. Overall, evidence suggests a positive impact on tourism in terms volume of arrivals, expenses per tourist, income and employment generated in the local economy (see Alivernini, D'Ignazio & Migliardi, 2012, and Donzelli, 2010, for Italy; Costa & Almeida, 2015, for Portugal, and Myro, Rey & Hernández, 2014, for Spain).

Besides cohesion and accessibility, as the LCCs have been largely operating using secondary or regional airports,⁵⁹ there are several other impacts on local economies. On the positive side, LCCs help boost the local economy by directly creating jobs in the airport management, ground handling and air services. For example, an opinion paper by the Committee of the Regions suggests that air transportation can be a substantial employer and generator of economic prosperity in a region (Committee of the Regions, 2004). A recent report on the economic impacts of European airports also suggests more than 12 million jobs are generated by the airport sector and a significant, if not the largest, contribution to such employment is made by LCCs (InterVistas, 2015), thanks to their reliance on staff provided by local suppliers.

Olischer & Dörrenbächer (2013) assert that coupled with the relative ease of executing relocations in the airline industry, the dependency of secondary airports on individual LCCs and the availability, in some cases, of a number of alternative secondary airports nearby, empowers the LCCs to engage in concession bargaining. With ease of relocation also potentially creating unpredictability for regional airport managements, they need to make efforts to attract and retain LCCs in competition with adjacent airports.

4.7 Conclusions on the channels through which LCCs foster mobility and integration in Europe

After analysing the contribution of LCCs to integration and connectivity in Europe, this chapter discusses the channels through which LCCs can foster mobility and integration in Europe. Several channels are considered: labour mobility, business travel, educational mobility, leisure travel, visiting friends and relatives, and local economy impacts.

Evidence shows that by decreasing the cost of migration, LCCs play an important role in labour mobility in Europe. While there could be other factors, the commencement years of air services by LCCs in CEE cities suggests how LCCs expanded following EU enlargement and the subsequent mobility of individuals. The nature of labour mobility has also evolved and become more repeated or circular, whereby domestic as well as cross-border commuting have become more common. As a post-migration consequence, traveling to visit friends and relatives is also increasing and lower airfares by LCCs appeal to these customer segments.

Business travel remains an essential activity for business contacts and partnerships, despite technological advances in communication technology. Evidence highlights the contribution of air connectivity to the positive loop in economic prosperity through increased business relationships, investment links and flows of knowledge. More business links are being developed in line with the increasing presence of LCCs, as seen in

⁵⁹ Recent evidence shows that this trend is changing though, whereby LCCs expand to major airports as well (Dobruszkes, Givoni, & Vowles, 2017).

the case of large Western European companies opening up plants or branches in the CEE region. Employees of SMEs are more prone to travel with LCCs and by providing cheaper mobility to such groups, LCCs can contribute to the smooth functioning of the Single Market.

International student mobility is considered as an important element of European identity and cultural integration and has been subsidised under the Erasmus Programme for more than three decades. Given that students are more sensitive to price differences, LCCs appear to influence their travel decisions.

The entry of LCCs also opened up possibilities for a wider population to partake in leisure tourism, such as vacation, second-home ownership or short-term city breaks. The significant increase in international tourist arrivals coincides with the expansion of LCCs in Europe. Similarly, international retirement migration appears to have been fostered by the expansion of LCCs to niche routes in addition to popular destinations. Overall, the cheaper and large route network offered by LCCs, connecting not only major cities, but also remote areas, can trigger multicultural interactions through leisure tourism. Finally, LCCs can contribute to regional economic development through the use of secondary airports by generating employment directly in the airport or indirectly in the region.

Chapter 5 Case studies of LCC commuters

The report as a whole is generally based on quantitative data. This chapter complements the quantitative approach by providing a more qualitative perspective. In particular, this chapter provides a case study based on a survey of a number of air transport passengers, who used Ryanair frequently or occasionally. As seen in an earlier section when describing the appearance of LCCs in Europe, Ryanair was founded in 1984 in Ireland and initially operated as a regional carrier, but it changed its business model in the mid-1990s to become the first European LCC. Since then the company has increased its route network, initially focusing on secondary airports and later on also expanding to major hub airports. Currently, the company operates over 1,800 routes from over 200 airports (including 87 aircraft bases) in 37 countries and is the largest airline in Europe, carrying 130.3m passengers in the 12 months to end March 2018.⁶⁰

5.1 Methodology for data collection

In collaboration with Ryanair, we have been able to interview a sample of “LCC commuters” – individuals across Europe who have used Ryanair to repeatedly travel between the same destinations, but also to a lesser degree, more ‘ad hoc’ travellers. The objective of the current chapter is two-fold:

1. To use the interviews to dig deep into the quantitative data and build a richer dataset and set of findings for the report; in other words, to feed into the overall conclusions of our work. Interviews allow us to investigate customer needs and motivations for those commuting and also those engaging in ad hoc travel within Europe.
2. To provide the reader with stories of individuals that can bring to life the experience of those commuting across Europe with LCCs more vividly and show how low cost travel has impacted the lives of those working and living in different countries, different regions within the same country, or those who can travel more frequently for leisure purposes.

Fifteen interviews were conducted during February 2018. Participants were identified via a screener survey of Ryanair customers conducted by the airline. The objective of this survey was to ensure the right mix of respondents in terms of regions and motivations for travel, with a few text questions included to demonstrate likelihood to give in-depth answers. The interviews were conducted via ‘tele-depth interviews’, using WebEx. All interviews were video or audio recorded for use during analysis. Interviews lasted approximately 30 minutes and participants were incentivised to take part with a EUR 40 voucher to be used against a future Ryanair booking. Since the research team was able to determine the appropriate methodology for this qualitative section and a detailed topic guide for the interviews, the potential for bias through corporate collaboration was removed. The data used in this chapter do not concern commercial issues or comparison with other LCCs.

The interviews followed a predetermined script designed by CEPS and focused on:

- Demographics of those travelling
- Main impact of LCCs on their lives in terms of benefits
- Reasons for commuting/travelling
- Description of travel
- Alternative to not commuting
- Dependence on current carrier as well as alternative modes of travel such as other airlines, car, ferry, bus or train
- Innovations over time which have impacted the traveller/commuter

⁶⁰ Based on the 2017 Annual Report (<https://investor.ryanair.com/wp-content/uploads/2017/07/Ryanair-FY2017-Annual-Report.pdf>). For the latest traffic figures, see <https://investor.ryanair.com/traffic/>

- Perception of second country and cultures over time? + Perception of EU? Over time?
- Knowledge of possible impact of EU on low cost travel

The Table 7 lists all the interviewees, the selection of which was primarily based on two criteria – geographical region and motivation to travel.

Table 7. Passenger sample characteristics

Name	From	To	Principal reason for travel
Anna	Poland	Portugal	Study
Ruben	Portugal	Spain, Germany	Work + leisure
Brenda	Ireland	Spain	Split residence
Eloy	Spain	Germany	Family + work
Istvan	Hungary	Germany	Work + leisure
Wojciech	Norway	Poland	Family
Ruggiero	Italy (Lombardy)	Italy (Puglia)	Family
Matthew	N. Ireland	Spain	Study
Silvia	Italy	Portugal	Study
Ilaria	Italy	Spain	Study
Adam	Germany	Poland	Family
Ken	UK	Spain	Split residence
Kevin	UK	Spain	Split residence
Aimee	Spain	UK	Business commuter
Joseph	UK	Poland	Business commuter

5.2 Motivations for travel and commuting strategies

The immediate analysis of the qualitative data collection suggests that even the relatively small sample of interviews demonstrates the variety of commuting strategies enabled by LCCs. There is the straightforward commuting for work. For example, Aimee is a 35-year-old financial controller from England, currently based in Madrid. She works for a technology company and travels to London every week to work. She flies on Sunday or Monday night to London and comes back two days after. This enables her to live in her preferred location, but also retain her previously obtained job.

A similar approach is to split residences: working from home as well as at a leisure destination. Brenda is a 53-year-old married female with no children based in Kildare, Ireland. She is self-employed and sells toys to different stores, working in Ireland and mostly for Irish customers and occasionally in the UK. She has a house in Spain near Murcia and flies between Ireland and Spain 25 to 30 times per year and stays usually around a week, working from there as well. She has been commuting like this since 2001 when she bought the house.

Similarly, Joseph is a 28-year-old environmental consultant from the UK, works in the UK and lives in Poland with his partner. They used to live in London until 2016, but when his fiancée became pregnant, she moved to Poland to be close to and have the support of her family after she gave birth. As a consequence, Joseph decided to commute between the two countries to be with his family in Poland, while earning more money with his job in the UK. Using mainly LCCs, he is able to split his time in the UK and Poland between work and family. For example, he stays in London to work for 3-4 days and then returns to Poland while working remotely. He makes this trip to London every two weeks.

LCCs allow some people to not only to separate their residences, but also their employers. Istvan is a 36-year-old Hungarian air ambulance doctor. He is married with two children and lives in Budapest, but he uses

Ryanair for repeated travel between Budapest and Nuremberg in Germany. He works in Germany 7 days a month, then works in Hungary for additional 6-7 days a month and takes the rest of the time off. This mix of higher earnings in Germany and more time off affords him the opportunity to spend more time with his family.

Another alternative is to combine commuting for family and work into a single entity – as Eloy does. He is a 56-year-old Spanish male, who works as an interpreter and translator and also owns a small translation company. Eloy is divorced and lives in Barcelona, but he uses Ryanair and other LCCs to frequently visit his children aged 18 and 15, who live with their mother in Bonn, Germany. He also travels twice a month on business trips between Spain and England or Germany or (recently) Denmark, where he works as a translator at fairs and conferences.

Even if a person moves for better employment, low-cost travel can enable them to retain close links with home including romantic relationships. This is true internationally as well as domestically (in large countries). An international example is of Wojciech, a 34-year-old logistics technician from Warsaw in Poland who currently lives in Oslo, Norway. He is married with no children and uses Ryanair mainly to see his wife and other family in Poland – about every two weeks.

A similar, but domestic story is that of Ruggiero, a 26-year-old investment analyst in Milan with no children. His parents and girlfriend live in the south of Italy in Bari and he flies down to see them with the same frequency as Wojciech – fortnightly. He has been doing this for one and a half years and adopted this behaviour shortly after starting the relationship.

In addition to commuting for work and family, regular travel for study purposes also plays a significant role, especially with growth of both international students and short-term programmes such as Erasmus. Silvia is a 22-year-old Italian single medical student. She lives in Bologna and took part in an Erasmus programme in Coimbra, Portugal, last year. She returned home monthly for the duration of the programme. Similar experiences were reported by other Erasmus students in our sample – Matthew from Northern Ireland and Anna from Poland who went to Spain and Portugal.

Last but not least, one can commute purely for a better quality of life. Ken is a 68-year-old British retiree in a long-term relationship and with 3 adult children. He uses Ryanair to travel to Spain where the weather gives him a much better quality of life with his disability. For the last 7 years, he has been spending 3 weeks in the UK and 3 weeks in Spain. Ken stays at a lady's house who provides the care he needs.

5.3 Benefits of commuting and alternatives

During the interviews, respondents outlined several types of benefits they saw in their ability to commute long distances via LCCs. The foremost was the ability to combine work and family life in ways that would otherwise be impossible, difficult or just reduced in frequency. As Adam, who travels from Germany to Poland to visit his family stated: "Travelling time is reduced substantially compared to car or train. A 1-hour flight is very convenient, I can go for a weekend, for example. If I wasn't travelling with Ryanair, I wouldn't travel at all most likely since it is almost 1000 km. If there were no LCCs, I would use a mix of more expensive airlines or bus/train, but the frequency of travel would definitely be reduced. There would be little impact in terms of price, if using the bus, but the impact on my time would be the problem; it would take a lot more hours. The other option is using more expensive airlines, which would have a much higher cost but similar journey times."

This trade-off was also emphasised by Ruggiero, who is returning to Bari from Milan fortnightly to see his girlfriend and parents: "If I couldn't commute back home... it would have a huge emotional impact on me. But I wouldn't consider living in the South. The most important thing for me is to have a good job that is related to my education. I could work in London, Dublin or Paris but definitely not in Apulia.... If LCCs were

not available, I would travel with Alitalia, but less frequently because of the higher cost. If there were no flights, I would travel even less frequently by train.”

Several respondents stressed that the unavailability of LCCs would not affect their decision to undertake the study or work they were planning, but it made it easier to stay in touch with friends. This is particularly true for Erasmus students. As Ilaria, an Italian student in Madrid said: “Because the flights are cheap, I can still take part in occasions back home even though I am living in a different country. I went back for winter holidays, for a friend’s graduation, and the day after this interview I am flying to Italy for my cousin’s birthday party... I would be OK if I wasn’t commuting like this, I am only away from home for 10 months so it wouldn’t be such a problem, but it is nice to be able to see friends and attend a birthday party. If LCC were not available on this route... I would have only gone home for Christmas.” For some of the interviewees, however, this question was even nonsensical. Matthew, a Northern Irish law student doing his Erasmus in Madrid said: “I just took it for granted that there would be LCCs, as everywhere in Europe is accessible by LCCs now.”

For Ken, his ability to maintain a “double” life in the UK and Spain is a crucial element in his quality of life: “It gives me two lives as I spend almost 6 months per year in Spain. I behave differently there, go out constantly and I can’t do that in UK. If I could not do it, I would be devastated. Without LCCs, the impact in price would be massive, and I would have to think twice about the number of times I would fly. If there were no flights I do not think I could do it. I have a car, but I do not think I could drive this distance.”

A similar ability for greater work-life balance motivated Aimee, who wanted to move from London to a Spanish city. Given that her language skills would not allow her to take a job in Spain, she researched where in Spain is best to commute into London: “I also considered Barcelona and Valencia as a destination to commute to, but Madrid was more convenient in the end.” For her, an absence of LCCs would mean that such a strategy would be impossible and she would have stayed in London.

Again, for others, this is not such a stark choice. As Kevin, who commutes between the UK and Spain for the quality of life offered by Andalusia, emphasised: “Right now my wife cares for two family members so we cannot go away to Spain for longer. Therefore, if LCCs weren’t available, we would have to rethink our plans. An alternative method of transport would be driving. We have driven down once which is about a 1,500 mile trip and it took us three days to get there so we would only be able to travel this way if we were to stay there a while.”

For small businesses or the self-employed, Ruben emphasised the benefits of low cost travel in terms of affordable client acquisition costs: “Small businesses can take advantage of these cheap flights for travelling to see new clients, which is something I would not be able to do if the flights were not cheap because I have a lot of initial costs. If I could not travel with Ryanair, it would be harder to meet prospects and to do business. Also sometimes I need to meet with those that provide me the job (freelancer).”

Istvan emphasised the benefits for his personal autonomy and flexibility: “The main benefit of my commute is that I earn more money by working in Germany and with Ryanair it is a short direct flight. I work for a kind of company that does not exist in Hungary [mobile airborne medical crew] so being able to travel means greater career opportunities.”

5.4 The European angle

In a series of questions, participants were also asked about their views on the EU as well as EU policies affecting LCCs. The objective was to see if and how they relate their personal experience to their views of the European Union and its policies, particularly with regard to LCCs.

The interviewees were mainly positive in their assessment of the European Union, although with some reservations. The British participants all mentioned they were opposed to Brexit. The reservations were voiced by two Polish participants, who referred to the EU “straying” from its original purpose.

Unsurprisingly, in the context of the interview, they emphasised, as principal benefits, the ability to travel, freedom of movement in terms of work and travel-related benefits (e.g. roaming regulations that decrease the cost of mobile calls and data abroad). In two cases, this was positively contrasted with South America, where both flight costs and the ease of crossing borders was said to be much worse. However, there were also broader, more ideological views: for example, several interviewees stressed that they identify themselves as European citizens.

Since the positive assessment was universal, it is reasonable to assume that this was related to their frequent use of LCCs as this was the only factor uniting the sample. However, it is impossible to tell in which direction the causality runs – whether travel has made them more pro-European or whether people who are more “internationalist” and pro-European are more likely to travel frequently. From the interviews themselves, there appeared to be a double loop – people more interested in other parts of Europe or more open to travel are not only more likely to travel, but the travel also makes them even more open and positive. This positive feedback loop of travel on their views of specific countries as well as Europe was mentioned by several participants. In their own words, several respondents saw LCCs as promoting a unified Europe.

The interviewees had virtually no knowledge of the fact that EU legislation was instrumental in spreading the LCC model around Europe. The only exception was Matthew, the law student from Northern Ireland who simply, but succinctly, stated: “The EU has liberalised air travel, so competition has increased, regardless of national borders. This has helped to reduce costs.”

The absence of such knowledge did not prevent the participants from holding a wide variety of views on the EU role regarding LCCs – both positive and negative. They mostly saw the EU role as being in terms of cost. As Ruben stated: “If the EU wants to have the Europe unified, it is important that people have a way to travel, an affordable way to be able to travel. Otherwise, only rich people would be able to travel... the EU should promote the view on seeing each other as one, not different. It would be nice for them to promote visits to other countries and foster a message of unity.”

5.5 Conclusions from the qualitative approach

This chapter complements the quantitative approach used in the rest of this research by allowing us to dig deeper. In collaboration with Ryanair, we have been able to interview a sample of “LCC commuters” as well as ad hoc travellers. This enabled us to build a richer and thicker set of findings for the report and to provide the reader with stories of individuals that can more vividly bring to life the experience of commuting with LCCs throughout Europe. The overall findings from quantitative and qualitative approaches appear to go hand in hand. In particular, various travellers’ experiences from the interviews confirms the increasing variety of mobility – for example, more temporary, circular or repeated nature of movement – in Europe and how it is closely linked to the availability of low fares.

The interviews in the qualitative research demonstrate the variety of commuting strategies enabled by LCCs. Firstly there is straightforward commuting for work, but also splitting residence – working from home as well as at a leisure destination. LCCs allow some people to split not just their residence, but also employers by working for two employers in two destinations.

The second rationale for commuting is to be with family. Even if a person moves for better employment or other reasons, low-cost travel can enable him or her to retain close links with home. Examples include divorced parents for whom regular visits to see their children or even romantic partners are more feasible.

In addition to work and family commuting, commuting for study also plays a significant role, especially with the growth of both international students and short-term programmes such as Erasmus. Finally, one can commute purely for a better quality of life.

During the interviews, respondents outlined several types of benefits they experienced in their ability to commute long distances via LCCs. The foremost was the ability to combine work and family life in ways that would otherwise be impossible, difficult or just reduced in frequency. That being said, several respondents stressed that the unavailability of LCCs would not affect their decision to undertake study or work they were planning, but would make it more difficult and inconvenient to stay in touch with friends. For small businesses or those who are self-employed, the main benefit of low-cost travel is more affordable client acquisition costs, which is in line with earlier evidence found in the quantitative analysis of the report. Meanwhile, several individuals emphasised quality of life, career progression, personal autonomy and flexibility of life as being the main benefits of low-cost travel for them.

Chapter 6 Conclusions

This report addresses the research question of whether and how LCCs can contribute to the integration and connectivity of Europe. To answer this question, we adopted a mixed methodological approach based on research surveying academic and policy literature as well as quantitative and qualitative data analysis. The overall analysis and findings from the report suggest that LCCs play a vital role in bringing Europe closer together by fostering mobility and making air travel affordable to a wider public.

Initially overviewing the regulatory and policy framework, the report describes and discusses the levers and barriers in the airline industry, with a special focus on LCCs, ranging from air services and passenger rights to airports (such as airport charges, slot allocations, and ground-handling management). Without going into much detail, the report also points to the issue of Brexit, as the UK becoming a third country vis-à-vis the EU may have major implications for the EU air transport market. In particular, the rules on ownership and control – as they are at the moment – would exclude from the intra-EU market those carriers no longer meeting the 50% ownership threshold (due to UK shareholders no longer counting as EU nationals). However, it is out of scope to delve into these issues in this report and we leave them for further research.

A review of the economic principles underpinning the LCCs suggests that there is no unique low-cost model as such in the air transport sector and the industry is in a process of dynamic development, whereby the LCCs adopt certain economic principles to compete in price, but business models are maturing over time and hybrid models are emerging as a combination of different business approaches of principal market players including LCCs. In any case, the significant price advantage, which can reach 50% (or beyond), offered by LCCs' lower fares makes these carriers an attractive option for air travel for a broader set of people.

The report then provides a mapping exercise of LCCs in Europe illustrating their evolution over time and across regions. The analysis shows a rapid and widespread expansion of new entrants (mostly LCCs) to the air transport market following the liberalisation process of the 1990s as well as sharp changes in market share distribution in seat capacity from legacy carriers towards LCCs. For example, while the legacy carriers captured nearly two-thirds of the market as opposed to less than 2% for LCCs in the early 1990s, LCC market share grew tremendously, reaching more than 40% by 2010 and exceeding that of incumbent (legacy carriers, by then) as of 2011. The upward trend in the market share of LCCs is still continuing as the latter have become essential players in the air transport market.

In terms of the route network, by focusing on point-to-point flights and secondary airports (in addition to major ones), LCCs contribute to territorial cohesion in Europe by linking remote areas to the core. While the densest and busiest routes lie on the north-south axis, new east-west routes have been developed in the CEE region. According to one of the indicators of the air connectivity index, developed by the European Commission and Eurocontrol, air services offered by LCCs reached nearly 60% of the EU's population in 2017.

Alternative modes of transport to low-cost air transport, such as train, HSR or coach, are also considered. Overall, our analysis of the various travel modes suggests that coupled with reduced travel time, the affordability of LCCs compared to trains makes the former an attractive option for passengers. As regards coach transport, while prices are more comparable to LCCs, the travel time is much longer than air travel, especially for long distances. Evidence from the qualitative data analysis based on LCC passenger perspectives also supports this finding. For example, some passengers assert that the absence of LCCs would sharply decrease the frequency of their travel or make it impossible to split residence and work, despite the availability of other transport modes.

After the mapping analysis establishing the contribution of LCCs to connectivity and integration of LCCs, the report then turns to the channels through which LCCs contribute to bringing the EU closer together by considering a number of aspects such as labour and student mobility, business travel, and leisure tourism.

Based on secondary as well as primary data sources and academic contributions in existing literature, the analysis highlights how increased mobility in Europe has coincided with the increased availability of cheaper air travel. The patterns of mobility are also changing, whereby they become more temporary and circular or repeated in nature, which appears to be facilitated by cheaper air transport. These trends are also confirmed by evidence from the qualitative analysis based on the experience of LCC commuters. For example, more people report that they are able to commute domestically or cross-border using LCCs, and interview findings suggest that such splits of work and residence would likely not occur in the absence of LCCs or only at the cost of not visiting family and relatives as often.

From the labour mobility perspective, LCCs decrease migration costs and thereby facilitate the mobility of people. However, the integration of migrants into destination labour markets is not straightforward and takes time. For example, some high-skilled migrants are over-qualified for the occupations they take up in destination countries. Nevertheless, the possible challenges faced in destination labour markets does not change the fact that LCCs contribute to mobility and there are also success stories in which individuals achieve better career opportunities through migration.

Furthermore, the analysis points to diverse business linkages that are emerging as remote areas are becoming more connected and investment is spurred to areas previously less frequented, but now reachable with LCCs. Evidence also highlights the contribution of air connectivity to the positive loop in economic prosperity through increased business relationships, investment links and flows of knowledge. Moreover, SME employees are using LCCs to decrease their customer acquisition costs, which is important for the mobility of diverse business actors to generate more business transactions as well as the smooth functioning of the Single Market.

Student mobility under European initiatives such as the Erasmus programme is further boosted thanks to the availability of lower fares and in general contributes to integration in Europe by allowing young Europeans to come into contact with each other in universities and through cultural exchanges. Evidence from passenger interviews also points to the importance of LCCs as a factor in international study decisions under the Erasmus programme.

The expansion of LCCs appears to coincide with considerable increases in international tourist arrivals in Europe. Leisure tourism is also developing and taking diverse forms such as second-home ownership in southern Europe or city breaks even in off-season periods to various tourist destinations in Europe. For example, international retirement migration is expanding to niche destinations and the expansion of LCCs appears to follow these patterns. Passenger interviews also highlight that the possibility of cheaper airfares with LCCs has led retirees from northern Europe to decide to spend part of their time in a second home in southern Europe with its warmer climate.

On the local economy aspects, increased passenger flows has a number of positive impacts, such as job opportunities at airports and increased tourism benefits for the local economy. At the same time, regional airports that depend largely on LCC operations need to attract LCCs to benefit from increased passenger flows and subsequent economic benefits in employment and tourism.

The qualitative analysis based on interviews with travellers with the largest LCCs in Europe complements the quantitative analysis and sheds light on the role played by LCCs in influencing individuals' professional and personal travel decisions.

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Appendix

List of LCCs used in Figures 4 and 5 in the main text

List of LCCs from Figures 4 and 5

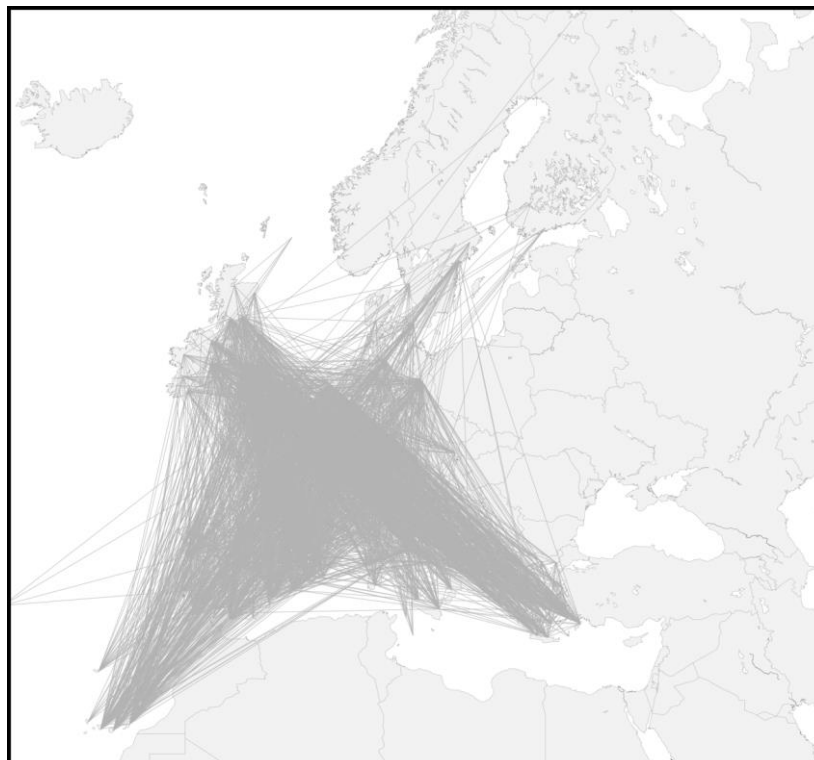
easyJet	Pegasus
Easyjet Switzerland	Transavia
Eurowings	Transavia France
Flybe	Volotea
Germanwings	Vueling
Go	Wizz Air
Jet2	Wizz Air Ukraine
Norwegian Air International	WOW Air

Additional maps for the network of routes operated by LCCs in Europe

The following set of maps displays the network of routes operated by LCCs in Europe in the autumn of 2017, based on raw data collected via web scraping methods. Because a map with all routes is not easy to distinguish regional connectivity patterns, we inspect the routes based on EU membership: Region 1 is the 'old' member states; Region 2 the 'new' member states, also including Malta and Cyprus. The routes are categorised into 'Intra-Region 1', 'Region 1-Region 2', and 'Intra-Region 2'. We note that these route networks are not weighted by volume of passengers per route and are only illustrative of the density of the connections.

Figure 10 shows the dense network of routes of LCCs in Region 1. As observed, the majority of the routes lie on the north-south axis. Connectivity is very well developed and suggests that even very remote areas are connected to larger cities by LCCs. For example, as seen from the intensity of lines, there are a number of LCC flights connecting continental Europe to Greek islands and the Canary Islands, reflecting tourist destinations.

Figure 10. Network of routes served by LCCs (Intra-Region 1)



Source: Own elaboration based on routes information retrieved from <http://www.low-cost-airline-guide.com/> (2017).

Figure 11 displays the network of routes served by LCC flights between Regions 1 and 2. The routes are much less dense compared to those within Region 1, but there seems to have been large expansions compared to a decade earlier.⁶¹

Figure 11. Network of routes served by LCCs (Region 1- Region 2)



Source: Own elaboration based on routes information retrieved from <http://www.low-cost-airline-guide.com/> (2017).

⁶¹ See various LCC route network figures from Dobruszkes (2009).

Finally, Figure 12 displays the network of LCC routes within Region 2. The map constitutes the least dense network (again without weighting it by volume) compared to the previous two maps. It mainly consists of north-south connections within the CEE region as well as other 'new' member states such as Malta and Cyprus. The relatively lower density of the network of routes could be related to the fact that these countries are smaller, and therefore alternative transport modes (train or coach) could be preferred over air travel. Moreover, air transport is still a growing sector in this region, so the route network could develop further as demand increases.

Figure 12. Network of routes served by LCCs (Intra-Region 2)



Source: Own elaboration based on routes information retrieved from <http://www.low-cost-airline-guide.com/> (2017).



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