KTH Architecture and
the Built Environment

A Study on the Effects of Low-Cost Airlines in Planning Issues

Case studies of Glasgow, Stockholm and Düsseldorf

Adriaan Cornelis Uittenbogaard

Degree Project SoM EX 2009-30

Stockholm 2009
KTH, Department of Urban Planning and Environment
Division of Urban and Regional Studies
Kungliga Tekniska högskolan

www.infra.kth.se/sb/sp

A Study on the Effects of Low-Cost Airlines in Planning Issues

Case studies of Glasgow, Stockholm and Düsseldorf

Final Version

A.C. Uittenbogaard
Supervised by Associated Professor M. Johansson
Master of Science in Spatial Planning
Division of Urban and Regional Studies School of Architecture and Built Environment
Royal Institute of Technology (KTH), Stockholm, Sweden
2009, September 17

Acknowledgments

This thesis is part of the master's program 'Spatial Planning' at the Royal Institute of Technology in Stockholm. The thesis work is the last course in the program and will finish off the studies. The topic chosen is inspired by the attended course in the program: 'City Networks in Regional Context' given at the department of Urban and Regional Studies in 2008. During the course regional planning and city networking was explored. Besides, when the students had to do a project, three students chose the topic of Ryanair and its impacts on city networks focussing on a study between Riga (Latvia) and Glasgow (UK). This paper, written by Akiko Sasaki, Gunta Amola and Ryo Taniguchi, seemed to be one of the reasons I chose to explorer this topic more in my thesis. This course paper provided an interesting perspective on the low-cost airline development and triggered my thoughts for more deeper investigation of this phenomenon. Furthermore, I myself often use Ryanair to travel and found it interesting to see people being attracted by the low-cost flights on those smaller airports. Moreover, it got me interested that Ryanair always uses those distant airports but still attracts such a lot of passengers.

I would like to take this opportunity to thank all who helped me out for this thesis' research. Those that helped me to get hold of data and those that helped me to get hold of contact persons. I would like to speak out special thanks to all at Nyköping Kommun who helped me with data, information and were willing to answer all my questions, in particularly Henrik Haugness, Magnus Eriksson, Ann-Margreth Karlsson and Josefina Högelund. Furthermore, I would like thank Skavsta's airport manager Dot Gade Kulovuori for helping me finding specific data. This is also goes for Mark Rodwell, chief executive at Glasgow-Prestwick Airport: many thanks for your help and making it possible to meet. Also, thanks to Kenneth Campbell at South-Ayrshire region for helping me out and Anne Murray and Jan Freeke, from Glasgow City Council, for meeting me in Glasgow City. Moreover, I would like to thank Graeme Purves for meeting me in Edinburgh and giving insight in the Scottish Government's view on the low-cost developments. And therewith, also thanks to Iain Docherty at the University of Glasgow for providing me with contacts.
And of course thanks to Mats Johansson my supervisor at KTH for guiding me through the process of thesis writing.
In addition, I would like to thank my class mates of 'Spatial Planning' for the fruitful seminars we organised and for keeping good company during the thesis work.

Abstract

This thesis is carried out with the aim of identifying if, and how, low-cost airline services have their effects on planning issues. Low-cost airlines have set new trends in the travel market and induced air travel demands without competition with established airlines: creating new travel networks with new entry points in countries in Europe. The development of this network is apparently grounded in the expansion of the European Union and its policies. This was also obviously present in the development of the case studies. These case studies illustrated that low-cost airlines have created a complementary system in the region which enhances theoretical network ideas. Furthermore, it becomes more than clear that low-cost services attract passengers from larger distances and therewith have a more spread out effect to the greater region instead of what is often expected to be to the benefit for the locality. That is also why the perceptions between the adjacent town and the region differ, as respectively opportunity and support. The conclusion of the thesis is in the end that low-cost airlines do have an effect on planning issues, though it is indirectly with more reaction from the locality but rather more meaning to the region. The implications for planning are presented and a few directions are discussed on how to handle the phenomenon and what the future might hold for this concept.

List of Figures

List of Tables

List of abbreviations

CAA	Civil Aviation Authority
ELFAA	European Low Fares Airlines Association
EU	European Union
GPIA	Glasgow-Prestwick International Airport
GRO Scotland	General Register Office Scotland
LCA(s)	Low-cost Airline(s)
MPPA	Million Passengers Per Annual
MSEK	Million Swedish Kronor
SVB	Stockholm Visitors Board
RPB	Netherlands Institute for Spatial Research

Contents

1. Introduction

When in 1978 the deregulation of the aviation market was introduced in the United States the way was opened for a new era of airline services. Airline companies were able to rethink and reorganise their management structure in order to compete and profit the most. It was the company South-West Airlines that was the first to start with a new form of services; providing less services but offering cheaper prices to its costumers. Becoming a successful competitor on the air transportation market in the US, South-West Airlines settled the basics for what nowadays is called the low-cost airline. This so called South-West model has been an example for low-cost operations and is often referred to as "The low-cost model".
Also in Europe after deregulation in 1993, new airline services were set up by ways of a copy of the South-West Airlines model. EasyJet and Ryanair were among the first to organise such a low-cost service structure and the two have been rather successful. These two companies have been Europe's leading low-cost airlines, but the low-cost services have been increasing rapidly around the Union.

Low-cost airlines have been in business for some years now and it was only recently that low-cost airlines have got more and more attention and are growing even more rapidly. The management system of these low-cost airline companies makes use of especially secondary/local and regional airports located in more peripheral areas, instead of the main national airports in order to cut costs. There are several differences from the original airline models that make it an interesting concept to discover. The new way of providing air routes with cheap tickets, no extras and an efficiently operating network has its impacts on its environments as well. One can imaging the effects of cheap and easy air transport services on tourism and the growth of these airlines and specific airports on local economies.

Yet, this is a rather new concept and there is still a lot to be explored. Much documentation on low-cost airlines can be found, however, these mostly focus on the management model behind the concept and the economic benefits and effects. Less well-know and certainly not well covered in research and documentation is the impacts on networks between cities and changes in travel behaviour of the passengers. One may assume that low-cost airlines affect the transportation choice of people and influence migration patterns. The presence of these easily accessible and cheap services can also be of a large advantage for a city and a region. The choice of smaller airports that are located at a distance from the core-urban area may not only affect the airline company by provision of cheaper taxes and fares, but also affect the local community. In addition, these airports are often still named after the nearby capital or larger city. This relation between the airport and its nearby town and the larger city makes an interesting area for research. What are really the effects of low-cost services, comparing the local scale and the larger region? How are different cities and authorities reacting on this in their planning? Did the development of low-cost services impact the planning in a different way or if not, did planning influence the low-cost services? This study pursues to investigate if and then how planning changed on the different levels; can we see changes in travel behaviour and tourism and what about changes in networks between cities, and as planning also comprehends the city as a brand, if there is any different way of city marketing observed? As will be shown in this thesis, this last question is heavily entwined in the low-cost concept but has been rarely studied.

1.1 Impacts of low-cost services

With such a lot of airlines, destinations and flights crossing the European continent, there are new phenomena to be seen as a result of the low-cost services. Previous studies have already concluded that these low-cost airline services provide new employment and made changes in

tourism industries as well as influenced the labour market within the European Union (EU). As the European Low Fares Airline Association (ELFAA) et al. (2007) points out, in their report on the 'Social benefits of low-cost airlines in Europe', low-cost airlines have significantly contributed to the European economy along with more employment opportunities, more steady tourism markets and creation of new tourism centres. Furthermore they conclude that low-cost airlines have improved cohesion within the EU (in particularly the connectivity of inaccessible areas and new member states in Europe) and have enhanced the quality of life for European citizens; better and cheaper opportunities on employment, tourism and transportation have been created. In a paper written by Button and Vega (2008) the same conclusions are drawn but also the effect of low-cost airlines on migrations patterns is highlighted. They argue that low-cost services have increased more temporary and sequential migration as well as long-distance commuting. This because more frequent and in particularly cheaper revisits can be made to the home country. The example given is the enormously increased migration and 'friends and relatives visits' between Poland and the UK since the introduction of Ryanair's connections in Poland (Button & Vega, 2008). A change in commuting patterns is also identified by Pantazis and Liefner (2006) in their case study on Hannover Airport (Germany). They show that low-cost airlines attract more passengers from longer distances and bigger cities than regular airliners do. Moreover, they argue that low-cost airlines are increasingly attracting business people too.

In BBC News, Hannah Chance of Abbey National says: "As a mortgage lender in Europe, we have seen that cheap flights and low-cost airlines are dictating where people are now buying" (BBC News, 2001). Here we see that while low-cost airlines open up new routes there are also new possibilities for the real estate markets as the new destinations are often off the popular destination lists, offering non-touristic and cheaper estates. Correspondingly, 'The Independent' presented an article on the impacts of real estates around secondary airports that are served by low-cost airlines. In the article it states that low-cost airlines "also fuel property demand significantly when they open new routes" (The Independent, 2007). Recent research quoted in the article support that property prices within 16 kilometers of an airport served by a low-cost airline are nearly 40 per cent higher than those of properties a similar distance from airports with scheduled services only (The Independent, 2007).

All the above referring to different effects and spin-offs of an airport receiving low-cost services which create a new concept and new impact on the region that indirectly are related with planning issues. For example, increase in tourism flows can affect the need for more transportation and tourists destinations. Also, when talking about the increase in real estate prices this may affect planning perspectives. Furthermore, the increase in low-cost connections can be of valuable asset to the community; it can give new opportunities for international connections and create new marketing incentives for tourism and city developments. These impacts are at the base of this thesis' aim and will be studied thoroughly under the case studies in Chapter 5. Three examples have been selected for the purpose of this thesis exploration; it concerns the airports of Glasgow-Prestwick, Stockholm-Skavsta and Düsseldorf-Weeze. All the three airports have a large percentage of their operations confined to low-cost flights; in fact all three are merely depended on the low-cost airlines for survival. Therefore, the relation between influence of low-cost airlines and impacts on the region could be more promising. Furthermore and in the same perspective at every one of the airports Ryanair, Europe's largest and most eminent low-cost airline, has based several of its aircraft fleet. This offers more development in the route network of the airport and makes more interesting analyses. In addition, these three examples are typically located further away from the urban core and their 'named cities', respectively: 45 km to Glasgow City, 90 to the capital Stockholm and 60 km to the centre of Düsseldorf). Glasgow-Prestwick has become a focus for this thesis since it is one of the major low-cost served airports in the UK, in particularly in Scotland. Furthermore, during a course project from three students[1] at KTH (Royal Institute

[1] Amola Gunta, Sasaki Akiko and Taniguchi Ryo wrote a project paper on '*Impacts of low-cost airlines on city networking in Europe – Influence of Ryanair in Glasgow (UK) / Riga (Latvia)*'

of Technology, Stockholm) Glasgow proved to be an interesting case and triggered my interests for further investigation on this subject and this case. The example of Stockholm-Skavsta is adopted in this study because I myself have used the airport often for Ryanair flights and became interested in the effects of its location compared to Stockholm, but ultimately the Skavsta case is well-known in Sweden for its deals between Ryanair and the municipality. The airport seems to be of particular curiosity in terms of marketing methods applied by the Nyköping municipality and the relations with the airport and Ryanair. The Düsseldorf-Weeze case was added to this thesis because of its interesting development in catchment area. Because of certain circumstances and its proximity to the Dutch border Weeze Airport has seen its Dutch passenger share increase steadily. This gave reasons to include this example and investigate its development with close relevance to this study of low-cost served airport and their influence for a region.

1.2 Aim of the thesis

As explored in the previous chapter there are a lot of topics to be discussed in relation to low-cost airlines. However, as introduced earlier, this thesis will focus on the concept of low-cost airlines and its relation to planning issues. The overall aim of the thesis should be considered as follows:

"To identify if, and how, low-cost airline services have affected planning issues."

Hypothesis is that low-cost airlines do have an influence on planning issues, which is more or less already revealed in previous studies. Yet, the question remains how much of these effects is really visible in the urban planning field of profession and in what way.

1.2.1 Research questions

The aim of this thesis comprehends several aspects of low-cost airlines and urban and regional planning. First of all, part of the aim is to acquire insight on what the low-cost concept really is and how it functions.

- What is the low-cost model and how do low-cost airlines function, c.q. operate?

Secondly, the aim states to investigate the influence of these services on city planning.
In order to explain the 'low-cost effect' at local levels, as the case studies intend, at first consideration of the development at the regional scale and identification of what happened at the larger scale is needed. Therefore, the development of low-cost serves in Europe will be looked upon and will go along the following four questions:

- How did the low-cost airline networks evolve in Europe?
- How do low-cost services link cities and regions together?
- What is the impact of these airlines on connectivity/city networks in Europe?
- What can be said to be the change in travel networks due to the low-cost concept?

Thirdly, in order to support the aim in seeing possible effects of low-cost services on issues in planning the next questions will be analysed as part of the case studies.
First by looking upon how low-cost served airports affected the region and planning perceptions:

- What does the airport bring in for the region and the cities?
- How do cities/ regions react to an airport served by low-cost airlines?
- Did the low-cost services change planning perspectives?
- Are there any urban projects catalysed by low-cost services?

As low-cost airlines, as any other airline, obviously operate according to a network linking places together, the aspect of how connections and city networks have been more influenced by low-cost services is part of finding out how they have affected regional planning.

- How did the airport develop?
- How is the connectivity with the rest of Europe?
- What is the difference in networks of the two airport cities in the region?
- Which (new) connections has the airport provided to the city?

And as the new low-cost routes provide new and better access to places the question arises if there are changes to be identified in migration demographics as a result of the upcoming low-cost services?

The two components of travel behaviour and tourism are closely linked to transportation and regional planning. The enhanced accessibility and mobility also relates to the thought of how low-cost served airports have affected tourism and travel behaviour.

- How have low-cost services affected local and regional tourism markets?
- Is there a change in the way people travel by using low-cost airlines?
- Where do the passengers come from and were do they go?

As I consider city marketing a major part of planning and low-cost services are all about their business model and marketing strategies, the thesis aim also includes the exploration of the impact of low-cost airlines on city marketing, as being a part of city planning.

- How is the airport included in the city's marketing strategy?
- How different is the airport promoted in the town and the region?

1.3 Reading guide

The thesis will show three analyses of the low-cost serves – urban planning relationship and present them as a lead to the conclusion and discussion of the aim in Chapter 7.
Before analysing the low-cost development Chapter 2 will provide a theoretical framework and the introduction of basic concepts used in the analyses.
Chapter 3, then shows how this study was carried out and what kind of methods had been used.
The basis of this research is formed in Chapter 4, which provides a background in city networks and the low-cost transportation networks in the EU. This, because at first the aim includes finding out how low-cost airlines have developed in Europe and how their networks have developed.

By having analysed if and how low-cost airlines have been affecting links and networks in Europe, Chapter 5 further focuses on three selected cases which will show if the concept and growth of low-cost services have influenced and maybe changed urban and regional planning. Hereby, looking deeply into the city networks, city marketing and demographics, including migration, as well as tourism and travel behaviour. Not included in the main focus but certainly not excluded are transportation, policies and sustainability effects. The case studies will compare the different impacts and perceptions of the small nearby 'airport town' and the larger regional/capital city, aiming at showing the real effects of these low-cost airports on the local and regional scale. Emphasize will be on the airports and not on the airlines themselves.

From this, Chapter 6 makes up an overall analysis on how low-cost served airports have been, if, affecting planning. This all, will be concluded in a review of the findings and discussion in Chapter 7 on how to consider this phenomenon in urban planning issues.

2 Background concepts related to the study

This thesis is exploring the dynamics that exist between airports served by low-cost airlines and the nearby city and region. When the aim is to look upon the relationship of these in the field of urban planning the following theories provide good support for the data analysis. First, in order to work with low-cost airlines it is needed to clarify this term and have a clear idea on what they are and how they work. Second, when checking how low-cost services have influenced relations between cities, understanding of city networks and its dynamics is essential. Moreover, insight in airline networks makes good background for the network analysis. To be able to recognize how low-costs airlines affect planning issues the motivation can be found in regional planning dynamics and transportation concepts. Furthermore, ideas behind city marketing are useful to value the effects of low-cost airlines on planning perspectives and city branding, with the view of marketing, management and image-creation of a city. With the last point one can link planning results with the new low-cost model.

2.1 Low-cost Airline Model

As part of the aim of this thesis is to explore the low-cost concept this chapter will provide the basics and understanding of it. The low-cost model is seen as the business model driving the organization of low-cost airlines (LCAs). The model, originated from the US-based South-West Airlines company, focuses on reducing several costs that are fairly basic for airlines in general.
As Francis et al. (2006) point out the core features of the low-cost model are: high aircraft utilization, use of secondary airports, minimum cabin crew, one class of seating, short 'on the ground' turnaround times, e-ticketing, no seat allocation, passengers having to pay for food and drinks, flexible working terms and conditions for employees, and point to point services.
The ELFAA et al. (2007) has set out how these factors benefit for low costs in the low-cost model. As can be extracted from table 2.1 the focus comes down to simplicity, higher efficiency, lower charges, and less extra investments besides the basic requirements.

Feature	**Benefits**
Single type, modern aircraft fleet	Lower maintenance and training costs; fuel efficiency; better crew utilization
Single class cabin	Reduced cabin crew costs; higher seat density
Point to point services	Simplification of network organization, no transfers
Few or no frills onboard	Reduce onboard service costs
Extras are charged for	Enabling standard low fares; price transparency; additional revenue
Direct ticket sales (through internet)	Reduced cost sales, no intermediate selling agent
Use of secondary airports	Lower airport charges; less congestion, less waiting time
Simple ground facilities	No costs for premium terminal facilities (e.g. no airbridges)
Short turnaround times	Higher aircraft utilization; higher costumer capacity; more flights possible
High capacity seating	Able to accommodate more passengers; less flights needed
No freight	No extra handling and personal costs
Highly incentive workforce	High productivity, minimum crew

Table 2.1: Characteristics of the low-cost model derived from ELFAA et al. (2007) and Graham & Shaw (2007)

In order gain more profit low-cost airlines often collaborate with external services, such as intervening in provision of hotel bookings, rental cars contracts, etc. Plus, what has become of peculiarity to the Ryanair business strategy is the want to find a way of reducing prices at any cost and any time. Recently, Ryanair introduced the full online check in service which makes costumers to have to check in via the internet before moving to the airport. This reduces the number of people Ryanair has to contract at the check-in desks; reducing costs and eventually ticket fares. Also, extra costs are taken in from the online services, such as fees for checked in baggage, credit card payments, priority boarding, online check in, among others. In expression, Ryanair has opted several outstanding options to cash more money from its passengers. For instance, it was thought of having passengers pay for using toilets on board the aircrafts, having heavy weighted people pay for their (physical) overweight, let passengers carry their check-in luggage to the aircrafts themselves or the new idea is to provide standing places in the aircrafts on short routes where people can just stand instead of take a seat but for a low price. The ways of reducing business costs and reducing fares seem endless.

The low-cost model is not only about low fares actually, but also about choice of routes and choice of airports. First of all, why low-cost airlines choose to operate out of secondary airports is as referred to earlier a matter of low operation costs but also the denied access to international airports where flag carriers remain to have their 'grand-father rights' that give them priority on slots and gates: out ruling new comers as low-cost airlines (Barret, 2004). On the other hand, as Dobruszkes (2006) argued in his paper on European low-cost airlines and their networks, low-cost airlines are looking for niches in the European airline network to serve and compete against the established full-service airlines routes. Therefore, low-cost airlines tend to focus on serving provincial towns that are bypassed by the full-service networks so they do not get any competition, in addition they also try to avoid towns connected by high speed trains. This has resulted in that low-cost airlines often serve their routes with exclusivity, in the case of Ryanair 93 per cent of all its routes are only served by Ryanair and not by any other airline (Dobruszkes, 2006).
This also makes that the low-cost airline model is really strong in bargaining for low fees at an airport. As Dobruszkes (2006) presented, Europe has a lot of secondary airports that are under-served and willing to take in any airline in order to survive, which makes that low-cost airlines have a lot of choice and can easily shift to other airports when their proposal for service is denied at one airport that does not want to give large advantages to the airline. As Gillen and Lall (2004) also concluded in their paper, these airports are dominated by one low-cost airline which makes them seriously depended on that one and gives the airline major bargaining power and involves more risks for the airport to deny any deals as the airline can easily choose to operate from other remaining airports.
For airports the new low-cost developments implicate that they have to make concessions to acquire the services of low-cost airlines; they have to look for other ways to make revenue. Often low-cost served airports, therefore, also have other a small domestic airline operating from the airport, or charter airlines. And the profit for low-cost served airport has to come from retail facilities at the airport and parking fees. These last two are the main income sources for low-cost served airports (Mark Rodwell, 2009) as they often do not get much profit or even make lose on the low-cost airline services.

2.1.1 How to define a low-cost airline?

There are several names in use for low-cost airlines. One calls it low-fares airlines or budget airlines and discount airlines, while others call it low-cost carriers or no-frills airlines. I would like to agree on two major distinctions: 'low-fares' referrers directly to the low tickets' prices available for flights of these airlines. Additionally, 'low-cost' referrers to the management; the airline

operates at a low-cost structure. Where the first one worries about the price the latter focuses on the operation model behind the low prices. Difference is that for the 'low-fares' also 'regular airlines' could be considered when they operate short haul flights without frills onboard and selling tickets at a cheaper price, Air Berlin for instance.
In his thesis, Van der Zwan (2006) identifies low-cost carriers as airlines operating by the low-cost business model that consists of the savings of complex costs. Besides, in their study Button and Vega (2008) go even further and divide low-cost airlines in four different types, based on their original situation in the past. Their first type is the low-cost original type, which they also name 'Southwest copy-cats' as these airlines are closest to the 'Southwest model'. This type has been set up from scratch or has been remodeled by independent entrepreneurs into a totally new airline, e.g.: Ryanair.
The second, low-cost charter type, are low-cost subsidiaries developed by charter airlines in order to operate low-cost scheduled services. They adopt a single fleet type, high aircraft utilization, often charge for food, providing one way fares and internet booking. Many of the routes link to existing European holiday destination airports that were already served by their main charter section, but now operating on a scheduled seat only basis, e.g.: Volare.
The low-cost regional type, are set up from airlines operating at a regional scale and have as the low-cost charter type adopted the low-cost business model, e.g.: FlyBe
The fourth is the low-cost full-service type, that are often additions of the major flag carriers in order to compete in the low-cost market, e.g.: BMI Baby. Francis et al. (2006) specify this type even more precisely according to their pricing system and split the low-cost full-service type into three subtypes:
1. Subsidiaries; have been set up as subsidiaries of long established major airlines to compete and gain a share of the low-cost sector.
2. Cost cutters; long established legacy airlines that are now attempting to cut their operating costs. In many cases by simply not offering all the frills they once did. Continue on hub and spoke pattern and major airports.
3. State subsidized competing on price; are financially supported by Government ownership or subsidy allowing them to offer low fares without the need to cover their long run average costs.

These divisions can be found trough out the entire range of low-cost airlines and they have all been expanding the last years. For this thesis, low-cost airlines are referred to as those airlines operating by the low-cost model and are in any of the above stated categories. I will not make a clear distinction between the different kinds of low-cost airlines, but will refer to them as low-cost airlines in general. Because the focus will be on the airports served by these low-cost airlines there is no need to specify them for this research on city networks and the relations with planning.

2.2 City Networking

Within the scope of this paper, the notion of networks is obviously present. Airlines provide new connections and synergies between places. Cities are being linked together more than ever and new activity arises at those connections, in this case: travel. The new services low-cost airlines have offered make that transportation and therewith links and connections between places have changed; the airlines themselves have developed a whole new network in Europe and influenced networks in between cities.
Often networks are referred to as a set of points that are linked to each other by a line. As Ritsema & van Eck (in van der Zwan, 2006) defined, a network is "a set of connections between locations, which enables transportation of persons, goods, energy, or information". Yet, as put forward by Taylor (2004) in his theory on city networks, they represent the inter-relation between cities but as a more complex system. As Taylor argues: it is not countries that make world-wide

connections but networks of cities themselves. Cities have always been connected with each other, were it not by church or education than it was by trade or military. Networks in between cities are important, if not on the base of the existence of cities. Cities do not exist as single entities but rather depend on inter-relations and linkages they have with other cities across the world: they are not developed in isolation; every city has relations with other cities (Taylor, 2004). In the theory of city networks, networks are often described according to different functions, for example: religious, political, education, business, transport nodes, and natural resource based. (Johansson, 2008). These relations between cities create a group of links that represent a network wherein the city is functioning and developing. These links can reach throughout a city's region but also extend into the continent and further on into the world; therewith connecting the city and its region to other places that not necessarily need to be proximate. Within these city networks it is often three actors, merchants, carriers and agents, playing at different levels who establish the networks with their actions and movements (Johansson, 2008). According to Taylor (2004), city network formations consist of three parts supporting the network. The cities provide nodal points that accommodate agents whose relations comprise the network; the network itself defines the scope of these relations. The service firms at the sub-nodal level are the prime agencies that create the network. According to the city network theory, it is not the cities that are making the patterns of inter-city relations it are these agents within a city network formation that link cities together in a multitude of partnerships that create a network. Cities are often linked through multi-location firms and courier services that provides a network infrastructure (Taylor, 2004)

According to Friedmann (in Taylor, 2004) world cities are organized by three main aspects: functional, hierarchical, and global-local connections. Cities are centres through which flow money, workers, information, commodities and thereby they express the economic relations of their surrounding or region into the global economy. Friedmann sees that changes in a city depend on its integration in the world economy and therefore on the functions it has that link the national/regional economy with the global. A complex spatial hierarchy formed by city characteristics reflects the importance of its functions as financial centre, corporate headquarters, international institutions, business services, manufacturing, or transportation and population size. The cities global role is therefore directly reflected in the structure and change of its local economy.

While looking at low-cost airlines and airlines in general there is a clear relation between the airline that provides links and the network created by this firm. The characteristics of a city change as its transportation possibilities are affected by the airline. Here, the airline is acting as a firm providing services that link the city and its region to other places. The city is the node, accommodating the agency of an airport supporting the new relations and activities.

As previously explained city networks are not merely a collection of links and nodes but rather a dynamic network of relations and actions of agents and services. Castells (in Taylor, 2004) also presents the network society as a space of flows, spaces or places are not important but it is the position of places within flows that define them and the network. The space of flows is a combination of firstly, infrastructural support for social practices. He stresses the importance of flows that make nearby simultaneity possible; creating a network preconditioned on communication and information devices ranging from global internet to global airlines networks. Secondly, the use of this basic infrastructural network by agents that link places together in order to make them function (economical, cultural, and political) creates a space of social practices that defines society. In between these two there are the spatial organization and economic elites that support the interests and practises of the network.

Once more, theory on city networks stresses the importance of good infrastructure in order to support the city relations. Airlines are one mode of transportation that is responsible for connecting places. Moreover, airlines and airports are seen as major transportation hubs in a region as they play an important role in national/ international connections.

Low-cost airlines demonstrate an even more overall integrated network than the regular flagship airlines as they locate at different places, creating several nodes in their network with a vast variety of links to other places. Actually, low-cost services can create new relations and extend a city's network as these airlines are mostly looking for smaller airports and not main settled airports. This will provide a totally new network or add links to an existing network. Furthermore, low-cost airlines have been looking for new destinations and new places to serve, hereby inventing new connections and inter-city relations.

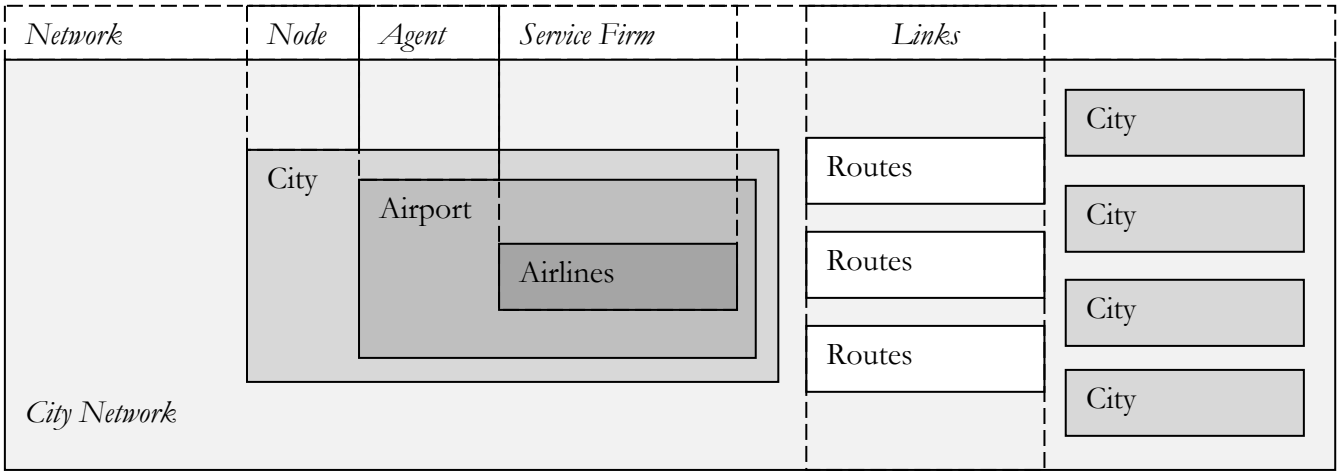


Fig. 2.1: Free interpretation of how the low-cost model fits into the city network model

2.2.1 Nodes and links

Within a network cities do not need be close to each other and need not only be linked physically, but they are always regarded as nodes within city networks (Taylor, 2004). The places of operation are nodes and hubs in the networks where strategically important functions take place and they link localities within the whole network (Castells, in Taylor, 2004). There are always different nodes within the core of a network to where the whole network connects. Obviously, present in the network of airliners and airports: linking strategic places together not just to one point but creating a complex web of links to different nodes. Castells (in Taylor, 2004) names them communication hubs that are set up in order to co-ordinate the communication between places in the network, for airline companies usually referred to as international airports.

For transport nodes and ports the location is the most important (Johansson, 2008). Localisation at first defines if and how a node is accessible and suitable for co-ordination of transport. Transport nodes therefore, rely on good infrastructure and accessibility of them to link to the core-periphery of the city network. Airports hereby play a very important role in national and global accessibility. Transport nodes are always integrated in global and national city networks (Johansson, 2008) as these play such an important role for the city's accessibility.
When nodes become highly connected centres (without any major headquarters) they start operating as a gateway for national and regional markets. They are the classical gateway cities of contemporary globalization (Taylor, 2004). These gateways represent new access points in a region operating as a node through where people travel. Hirth (in Button & Vega, 2008) argues that these gateways benefit of those flows and are able to control them as they give the region new competitive advantages to develop which in its turn allows to control travel behaviour.

2.2.2 Connectivity

Within the city network theory cities are connected through links and services provided by firms. The city is depended on the amount of links and firms for its integration in the network. This integration can be measured by looking at the connectivity of one city's network. The connectivity shows how well a node is linked to other nodes within its own network. Connectivity can be represented by the number of firms (airlines), number of connections of each node in the network (total routes), and a weight for the importance of the connection (number of passengers). A connection means a link from one point to another in some way, if each pair of points has a direct connection the network is called strongly connected, otherwise if there only indirect connections between each pair of points there is a weak connectivity.
Connectivity should not be confused with accessibility, which is the measure for how easily a destination can be reached; if a point is highly connected to other points there are more options to reach the point so there exists a high accessibility. Accessibility can be represented by the number of connections from the specific node (routes) and a weight for the importance of the connection (costs or time).

2.2.3 City ranking and dominance

In the light of aviation networks and city ranking, Sassen (2002) provides a study on the dominance of world cities by Smith and Timberlake who use an analysis of airline passengers from and to world city airports. Having examined the dominance of world cities and their rank throughout the years 1980 to 1997, the result shows a rather hierarchical pattern evolving through the years. The top cities (1st is London followed by Tokyo and Frankfurt) have always been at a high dominance extending far above the rest of world cities. This indicates a sharp definition of hierarchical dominance among all world cities. The middle tier of world cities (like Amsterdam, Hong Kong, Singapore, Madrid, Milan) have shown to be at a same dominance level over time; representing less hierarchy among each other, seeing as these secondary cities seem to operate as specialized centers. The most hierarchical order can be found in the bottom ranks, like Sydney, Mexico City, Montreal.
Already Friedmann (in Taylor, 2004) argued for a hierarchical world city network formed by the characteristics of a city, he adds that the importance of a city's functions reflect its characteristics. Three main functions are defined by Friedmann: the city as a headquarters of international companies, or the city as an influential financial centre, or the city operating as an articulator for its region and country. Friedmann mostly used the economic powers of a city to represent its world ranking as they distribute regional and national economies into global economies: reflecting the city's global role by means of the structure and changes in local economy.
Nevertheless, Smith and Timberlake (in Sassen, 2002) argue that the characteristics of a city are shaped by all the exchanges which link it to other nodes in the network. One way of representing the flows or exchanges that link cities is the air traffic between cities. Air traffic links are, according to Keeling (in Sassen 2002), the best opportunity to present the role of transportation in the world city network. First of all, he argues that air linkages are one of the few modes which can connect urban cores by transportation, in particular over larger distances and trans-Atlantic and –continental routes. Secondly, he states that airline routes, airports and its related infrastructure are the most obvious example of a city being connected in an international network. Moreover, despite the rapid development of technology and interaction methods there is still a need for face-to-face contact creating high travel demands. Furthermore, air travel is increasingly highly preferred as the mode of transport for high class people, tourists, business man, and migrants as well as for transporting valuable and small amounts of goods. Lastly, he adds that that the acquisition and availability of air links are of important value for a city's integration in the world economy network of globalization, as also presented by Friedmann and Taylor (2004).

According to the analysis Dobruszkes (2006) performed, the importance of the low-cost supply in Europe can seriously change hierarchies of the European airport systems. In support of this paper, the question then arises if the rapid emerging low-cost networks have had any impact on city connectivity and if they, as Dobruszkes puts forward, may have changed cities' dominance?

2.3 Airline network configuration

Previous studies have observed patterns in airline networks that relate to the way they operate. In general, two network types can be found within transportation and airlines: 'hub-and-spoke' and 'point-to-point' networks. The 'hub-and-spoke' structure lets an airline concentrate on one base airport where it receives other feeder airlines giving it the possibility to stretch out over a larger area to offer high connectivity. The 'point-to-point' network makes the airline serve linear routes between two places, not having a real hub in the network but providing a web of just one route links resulting in a low connectivity network. 'Hub-and-spoke' networks show a spatially concentrated, radial scheme, whereas 'point-to-point' networks demonstrate a more linear/ criss-cross, chaotic picture (Burghouwt et al., 2003).

A study carried out by Burghouwt et al. (2003) provided an insight in the network construction of airlines in Europe. The national carrier networks can be characterized as large radial, concentrated networks. It reflects the national carriers' orientation towards their national hubs. Moreover, these large networks are complex networks and have many dimensions to absorb new developments. Most of the regional airlines concentrated their network in some extent around one or two central hub airports. But also increasingly have been restructuring their networks from linear into radial networks in order to serve as feeder airlines for national carriers.
According to Burghouwt et al. (2003) the low-cost carrier networks seem to be as concentrated as the networks of national carriers: all the low-cost carriers operated out of central airports.
Yet, there has been a shift to linear networks as low-cost airlines began to operate from mainland bases, additional to UK bases, and use secondary airports as a base. The point-to-point configuration has become obvious for low-cost airlines these days, but they show a more spread out network, operating from several bases and providing interweaved links across Europe (van der Zwan, 2006).

2.4 Transportation and Regional Planning

Transportation has always been one, if not the one, area of development of a city. It is a basic need for developments, growth, and sustainability. Providing transportation means providing accessibility, providing connections, reasons for development, reasons for moving, etc. As Banister (1995) shows, transportation investments are seen as major tools for structuring a city and encouraging developments and economic investment. Clearly, transport hubs provide incentives for new developments and high density compact changes enhancing land-use patterns and accessibility. Railway stations provide good examples as there transportation is usually highly concentrated and they obtain high volumes of people passing through. Multiple projects have been carried out around railway stations making good use of this concentration of people, transport, consumers, etc. The combination of different transportation modes at one place is one of the most attractive places for investment. Airports are particularly attractive for investment and have proved to be preferable locations for science parks, distribution centres, international conference, hotel facilities, and of course aviation related businesses.

According to regional development theories there exist three different kinds of spin-off effects of developments for the region. First, direct effects can be seen as the positive impacts of activities which are directly related to the air transportation sector (like handling, maintenance, shopping,

and parking); these have direct effect on the on-site employment. Besides these infrastructure having a direct input in the economy and job creation, they also carry a multiplier effect; generating indirect expenditures and jobs (Banister, 1995). The indirect effects can be noticed in the region and positively influence regional employment and economy as transportation attracts new business opportunities and increases tourism flows. As Banister (1995) too points out they create incentives for businesses to move and makes more efficient distribution possible. Transport infrastructure as a positive change in accessibility is seen as an advantage for the place that makes the area more competitive and therewith more efficient and productive.
Thirdly, the newly created opportunities stimulate new investment in the region's tourism industry and make the region more competitive as it attracts more leisure and business travelers. These catalytic effects are on the base of the region's sustainable growth in income and employment. (European Parliament, 2007).

As stated in a study performed for the European parliament (2007) the development of regional economic and social issues are directly related to the transportation system and mobility opportunities. Moreover, Banister (1995) says that at regional scale large transport infrastructure projects are catalysts for the local economy, traffic, development and employment. As York Aviation (in ELFAA et al., 2004) also presented: every 1 million passengers passing through the airport equals to a number of 1000 new jobs created.

Access to high quality transportation systems is seen to be related to economic growth in a way that it stimulates the enabling effect and creates better access to markets, places, people and capital. According to an American study done by Tam and Hansman (2002) the regional development relation to economic growth showed a strong correlation with air travelling: while the economy grew, air travel also increased. The higher utilization of air traffic resulted in a growing region: both economy and population (see option 1 in table 2.2) as more visitors were able to spend their money in the region, also showing the increased input of the airport in the economy and possible job opportunities. And people felt attracted to move closer to an airport or may have seen opportunities to migrate to the area by air travel.
Also side effects of improved infrastructure are visible: some regions having a large increase in air traffic showed only a small increase in economy, which could be related to the growth of tourism industry that does not generate that much highly paid jobs (Tam & Hansman, 2002) (see option 2 in table 2.2) as tourism markets are operated at service levels the input in economy comes only from those expenditures and not stimulating major investments. And often tourists do not spent all their expenses in one area but move around and spread their expenses to more than one region.
The other way around is also noticed: due to over-used airports in certain regions there may be the need to divert routes to nearby regions that can accommodate them but still passengers go to the original destination. Resulting in the nearby region receiving the increase in air travel at its airport but not in economy as that goes to the original region (see option 3 in table 2.2).

	1		**2**		**3**	
	Region A	Region B	Region A	Region B	Region A	Region B
air traffic	+++	0	+++	0	0	+++
economy	+++	0	+	+++	+++	0

Table 2.2: Correlation air traffic and economy: 3 options

Also world-wide the correlation between travel demand and economy is clearly explained by figure 2.2: when the economy is booming, citizens get a higher income and the demand for travelling increases. On the other hand when there is less money available the demand decreases rapidly as is clearly visibly during the crises.

In conclusion, as Banister (1995) says: new infrastructure also increases the number of journeys and their length as well as attractiveness of the location for development. So at the end, development can work in both ways: stimulating travel demands by offering new services that increase economy as well as economy increases that stimulate travel demands. In addition, low-cost services carry a large share for leisure purposes that make large benefit for the tourism industry. In particular for low-cost airlines these spin-off effects are clearer as they often serve underdeveloped, deprived economic region (European Parliament, 2007). And from low-cost services the region enjoys more spin-off effects, for the airport functions as a gateway to the whole region.

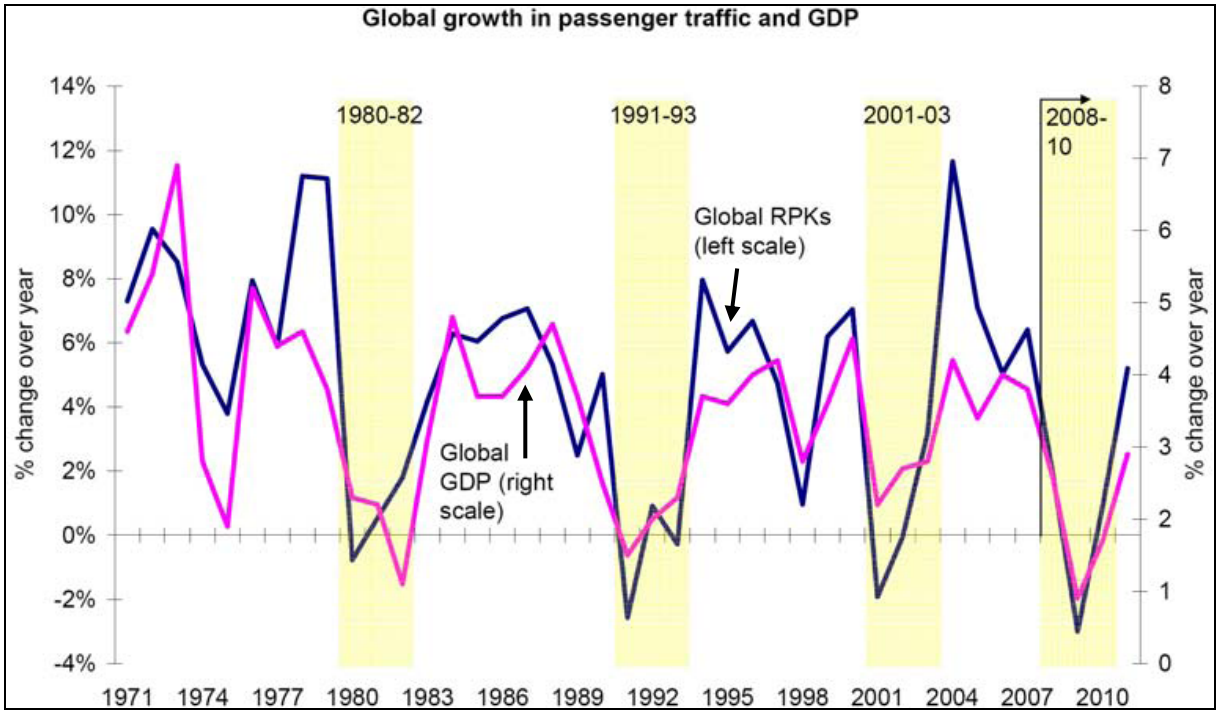


Fig. 2.2: Source: EuroControl (2009)

2.5 Migration and travel behaviour

Since long, aviation has had an influence on how people travel and which way they travel.
Air transportation is one of the transport modes that have a larger impact on mobility at the national and regional level. Like roads and public transport merely serve in between cities and their region (in a way also the national level), air transport relates to larger distances and serves in between regions and nations. This higher level of travel services provides specific incentives and aims for travel, like accessibility, price, availability, connectivity, etc.

In their study Button and Vega (2008) describe the relation of transportation and migration. They argue that given the fact that migration always involves a lot of costs (both monetary and social) and that it is not easily done, air transport is an important factor in migration decisions, important too because of the usual long distances of flights. In the past migration was subject to longer stays, if not permanent, in the new country as flights where expensive and not regularly available. Nowadays, this has changed with the rise of cheap air transport.

Button and Vega (2008) consider costs as the most important factor in labour mobility; costs of transportation and living as well as social costs of being separated from friends and family. According to them migrants seem to take advantage of the low fares to revisit their homelands. Low-cost airlines have played an increasing role in the growth of air transportation and they have effectively decreased distances and costs. Long-term social costs are reduced as a cause of cheaper return tickets on offer.
Furthermore, Button and Vega point out that the growth of gateways, as a cause of the new low-cost model, had an impact on the growth of migration; providing easier access to labour markets and vice versa to family and friends. So air transportation does not only reduce the total migration costs but also induces the demand for migration. A clear trend is the increased participating of workers in labour markets far from home for which Button and Vega (2008) also argue that labour has taken the advantage of, in particular, the low-cost services to relocate within the EU. Moreover, high-skilled, 'knowledge' workers have used air transportation more and more for their movements. Concludingly, air transport plays a significant role in temporary and short-term sequential migration and has increased long-distance commuting (Button & Vega, 2008), in which low-cost air transportation has been a facilitator for increased distributed dynamic labour market. They are however not the only one and not the most influential. But as SQW Consulting (2008) also state in their report on Glasgow-Prestwick's economic impacts, it are the point-to-point routes of low-cost airlines that provide direct access to business markets, spread tourism benefits, distribute labour markets and are more convenient and cheaper for local residents.

As air transportation only operates from selected places (airports) there are only a few concentrated points to/from where a lot of people travel. This means that most is concentrated on a few places where after every single traveller goes its own way. By that, the travel behaviour of airline passengers is more than predictable up to the point where passengers leave the airport. Until the arrival of low-cost services transportation development could be focused on the accessibility of those major airports in use. However, with low-cost airlines searching for new markets and using secondary airports in underdeveloped regions the predictability of travel behaviour of air passengers has become rather lose and accessibility development has been spread out. This is as presented by the ELFAA et al. (2004) that low-cost services have a large impact on the ways of travel of its passengers: they seem to attract people from distances further away from the airport and increase the airport's catchment area, which could extend until over 250km (see figure 2.3).

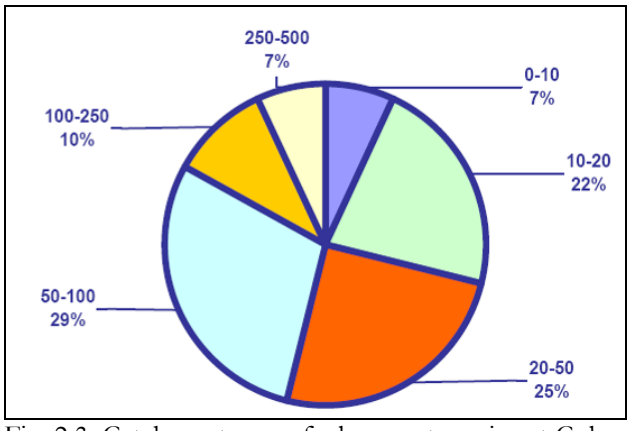


Fig. 2.3: Catchment area of a low-cost service at Cologne-Bonn airport (ELFAA et al., 2004)

Parallel to the conclusion of the ELFAA et al., a study on Hanover Airport in Germany by Pantazis and Liefner (2006) showed that low-cost services increased the catchment area of the airport. Although Hanover Airport is a long established international airport, the operations of low-cost flights seemed to have had significant impact on passenger growth (attracting new

demand) and growth of the airport's catchment area (attracting people from further away). In fact, the majority of the passengers using low-cost airlines come from more distant regions than regular airline passengers. The Hanover Airport study also concluded that low-cost airline attract more passengers from the larger cities. This was also noticed by the ELFAA et al. (2004) as they say that low-cost served airports' catchment areas have extended significantly while including more and more larger cities in its surroundings. Examples given are: Bergamo, Stansted, Hahn and Girona attracting passengers from major cities as respectively Milan, London, Frankfurt and Barcelona which are all at a 50 to 100 kilometre distance from the airport.

It seems that low-cost airlines have created more overlap in air traffic passenger catchment areas and provided more competition among airports. By attracting travelers from further away because of their point-to-point services and aggressive marketing especially in bigger cities (Pantazis & Liefner, 2006).

2.6 City marketing

Briefly introduced in the first chapter of this thesis, low-cost services provide new opportunities for (inter)national connections and create new incentives for city marketing. Airlines in general have been heavily involved in city marketing; by presenting their destination cities on websites, in the magazines, presenting travel journals, advertising the name in their campaigns, etc. Ever since, airline companies have created a new dimension for a city to market itself. These are new opportunities for the city to be integrated in the world-wide network that gives opportunities for more competition between cities.
Low-cost services can play a major role in a city's marketing strategy, as it is an excellent asset for a city to be able to offer these services. Moreover, the low-cost airlines themselves have become part of the marketing procedure by advertising and asking for certain advantages being a low-cost airline and wanting to reduces fares. The growth of low-cost services has been a contributing factor to city marketing. Especially when cutting expenses is the main aim, low-cost airlines make good use of cities' advertisements to ask for lower charges and reduce costs by marketing deals. Simultaneously, the cities are offered a new way of advertisement to a broad public and the possibility to receive new costumers. This becomes a larger matter when the city is newly served by low-cost airlines and rather peripheral, hereby being connected with new cities and thus new potential costumers.
In fact, many local authorities are focused on better positive development and perceive air transportation as a major player to reach their goals. For that, local authorities are often willing to provide low-cost airlines with better advantages, profitable deals, or other conditions that enhance the incentives for low-cost airlines to serve their airport (European Parliament, 2007).

As also argued by the report for the European Parliament (2007) the regions served by low-cost airlines are typically not the popular tourist destinations and rather unknown to the travelling public. By new low-cost services and advertising done by these airlines, the regions receive enhanced recognition. Herewith, the aspect of low-cost services becomes more related to city marketing and that direction of urban planning. And as Berglund (2008) argued: city marketing is not only about planning conducive to city attractiveness, but a way of thinking of planning that equally can be applied to transportation. Therefore, this thesis will also focus on the contents of city marketing with relation to low-cost airlines.

City marketing can be divided in three aspects: place promotion, place selling, and urban marketing (Bochert, from Berglund, 2008). These three types represent different ways of city marketing. Place promotion is when a city is advertising actively and creating a new image of itself in order to be more attractive to outsiders. This can be done through for example, festivals, studies on the image, cultural heritage preservation, etc. Place selling on the other hand focuses

more on what the city already has to offer; marketing the existing advantages, for instance focussing on tourism or industry. Urban marketing has to do with marketing a city by urban projects. Urban projects can reflect an image of a city and make new attraction and new events possible.
Berglund (2008) elucidates that city marketing is often carried out with the focus on communication with the external markets and through urban revitalization and signature projects. Moreover, city marketing is a comprehensive application of these marketing approaches concentrated on urban planning and management (Berglund, 2008).

Also, as presented by Jenssen (2007) is the increasing globalization which leads to increased urban development to attract attention, capital, residents and tourists. Jensen argues that experience and culture gain importance in the city's image. Cities are subsequently branding themselves and re-imagining for difference and identity.

City marketing is often understand as the activities that a city plans and performs in cooperation between different public and private stakeholders. It is outward looking: politics and planning focused on attracting business, new inhabitants and visitors and is contributing to local economic development, city attractiveness and competitiveness. Revealing a demand-oriented planning/management process in which the urban environment is defined by, and adjusted according to the needs and wants of various consumer groups (Berglund 2008). On the contrary,

2.7 Supporting policies

The growth of low-cost services has not merely been achieved due to new travel demands; indeed it has induced demand too, but the growth of low-cost airline networks has been supported by several policy instruments.
First of all, the creation of a European single space, without national borders has EU citizens given the benefits of free movement within the union; free movement of people, goods, services and capital (politics.co.uk, 2008). Because of the internationalisation of laws and regulations citizens are free to move, live, work and study within the union. The continued development of the European single space has given both economic and social benefits for its citizens. Additionally, citizens have seen an increase in income and longer holidays (European Parliament, 2007). Furthermore, the single space includes an EU-wide competition policy that make transport, trading and business more easy and balanced (politics.co.uk, 2008).
Additionally, the enlargement of the EU has given new member states the same advantages and created new freely accessible regions within the EU.

Secondly being part of the implementation of the EU single space, it was the aviation deregulation packages in Europe as introduced in chapter 1. The three packages were introduced in respectively 1987, 1989 and 1992. The main point of the liberalisation of the market allows an airline to carry international traffic to and from its home country and any other country and have the full right to set its own fares for tickets (ELFAA et al., 2004). Several 'rights of freedom' in the deregulation packages of the aviation market guarantee airlines to traffic routes free of any obligations or policy rules. For instance, an airline is allowed to carry out traffic between two countries that are not its home country (e.g: Alitalia flying between Paris and London) and also to carry passengers on national flights in other countries than its home country as part of the flight service to/from its home country (e.g: Austrian carrying people from Barcelona to Madrid flying from originally Vienna to Madrid) (European Parliament, 2007). So this 'Single European Aviation Act' gave airlines the unlimited freedom to set fares, choose routes, schedules and passengers without the interference of governmental organisations (ELFAAet al., 2004). This has

been of major importance for the operation of low-cost flights, in particularly the freedom to choose routes and fares.

Likewise, the implementation of a 'Single European Sky' gets rid of borders in the sky. Since 1990 the European Commission has been working on the restructuring of European airspace and air control and implemented the first step in 2004. The 'Single European Sky' is to be organized to the air traffic flows rather than the countries' borders in order to improve flight flexibility and effective use of the airspace and to be able to accommodate the future air traffic growth (EuroControl, 2009). The program includes the standardization of rules applied in aviation issues in order to create balanced and efficient air traffic.

Lastly, also the so called 'Open Skies' agreements provide a more accessible and free airspace outside Europe. These agreements with neighboring non-EU countries (like Morocco) give the same rights for European airlines to operate in that country as they would in the EU Single Sky. Accordingly, 'Open Skies' agreements also eliminate interference of governmental authorities in the choice of routes, fares and capacity of the airline companies. They allow carriers to operate beyond national markets and access a worldwide passenger market, promoting travel and trade as well as efficiency and economies (U.S. Department of State, 2009).

2.8 Planning background

The UK planning system is majorly focused on the regional administrations which are called Local Authorities; in the case study it concerns Glasgow City Council and South-Ayrshire Region. The National Government (in this case the Scottish Government) sets planning policies, guidelines, statutory instruments, white papers, policy statements, etc. The region then sets up the National planning Frameworks and Planning Advice Notes. The Local Authorities in Scotland work with structure plans and area plans. This results in a none nationwide spatial policy with central guidance but implementation and policy making is delegated to Local Authorities. However, the central government retains the powers to reserve and decide (Ellis, 2008).
Transportation planning is done by the Local Authorities but in compliance with Regional and Central policies. Airport planning is basically done through the Air Transport White Paper published by the Department for Transport of the central government. The White Paper gives a strategic framework, policy directions and statements for Local Authorities and airport operators to follow while planning developments on and around airports. The paper advices on operational needs for the airport, transportation access, related airport developments, and indirect airport developments (Scottish Executive, 2005).

The Swedish Government structure is organized according to a three level system where the highest level is the central/national government followed by the regional organs (län) and the local municipality (kommun). Most planning is done by the municipal administration; the county only controls health care and transportation and can set up none binding programs. The national government gives general guidelines for local planning. Under the Swedish Transport Agency (Transportstyrelsen), of the National Government, the Department on Airports works as the Swedish Civil Aviation Authority (Luftfartsstyrelsen) and controls and monitors civil aviation in Sweden. This authority is responsible for airport guidelines, approval of airports, supervision of airports, and gives support or background for physical planning (Swedish Transport Agency, 2009). As regional planning concerns transportation also airport development is thus in hands of regional authorities. These can consist of special region collaborations or the länstyrelser (regional organs). Further concerned with airport development are often the National Road development (Vägverket) and Rail development offices (Banverket). (Luftfartsstyrelsen, 2007) However, it are the local municipalities designing the zoning plans and judging plans for the airport.

3. Methods

This chapter discusses how the research was performed and which methods where used. During the investigation of the low-cost concept and its influence on networks around Europe and planning, three main working methods can be identified: review of existing literature, acquisition of new data, and the analysis of case studies. All the data acquired was then analysed in the form of analysis and discussion.

3.1 Literature review

As the introduction chapter showed there is a fair amount of previously carried out studies and analyses on the low-cost concept, most of them focussing however on the business model and economy benefits and impacts from the low-cost airlines. As a starting point studies reviewed from Button & Vega (2008), Francis et al. (2006), Graham & Shaw (2007), van der Zwan (2006) and ELFAA et al. (2004) brought arguments to formulate a definition of low-cost airlines and classify them into several types, which gave more insight in the low-cost operation methods. Francis et al. also provided background for understanding the low-cost model and the development of its operations. Also Barret's article (2004) provided a useful study about the low-cost model and the use of secondary airports; moreover he shined a light on the subject of the extraordinary interaction between the low-cost airlines and the airports. This is what Dobruszkes (2006) also presented in his paper which gave more insight in the dimensions between the low-cost model and the selection of airports. Both also touched upon the subject of competition between full-service airlines and low-cost airlines. On this topic Gillen and Lall (2004) explained more in detail the dependence of secondary airports and the airlines and the airlines' great bargaining power.

With an understanding of the low-cost model and its behaviour, the thesis from van der Zwan (2006) showed how the low-cost concept developed its networks in Europe which made a good starting point for this thesis' question on how low-cost airlines have been affecting networks around Europe. Burghouwt et al. (2003) also provided an overview of how the low-cost networks have evolved and how the network configurations look like. In this perspective, in his book Taylor (2004) provides a grounded theory on the city network concept and offers understanding on the functioning of networks. Sassen (2002) presented a more detailed study in her book about networking and dominance with respect to airlines and the aviation market.

From the nature of this thesis aim the literature review also included several papers that describe the synergy between regional planning and transportation infrastructure. Banister (2005) wrote a book about the transportation and the relation to urban planning, giving a theoretical framework for analysing the low-cost development. Pantazis and Liefner (2006) showed an example of the influence of low-cost services on an airport's catchment area, which is of effect to the airport's impacts on the region. Also Button and Vega (2008) took up the change in travel behaviour and increase of catchment area in their study. Moreover, they concluded on the influence of low-cost airlines for migration patterns and showed that these kinds of airlines have started new trends in travelling. The report published by the ELFAA et al. (2004) formed a starting background on the impact on social and economic effects of low-cost airlines and emphasised the creation of new demand by low-cost airlines instead of taking over passengers from traditional airlines.

At last Berglund (2008) and Johansson (2008) showed the dynamics of city marketing in a course given at the Royal Institute of Technology and Jenssen (2007) also provides good background for city marketing analyses.

These empirical studies have brought a theoretical ground for this research from which further analysis was performed in the name of case studies (see chapter 3.3).

3.2 Data mining

The data that was needed for this research had mostly to do with the air traffic in the countries, at the airports and the passengers at the case study airports. For the passenger data and route data to compile the network developments, the data is often acquired from the respective institutes that report on air traffic and its development in the countries of study and Europe.

For Glasgow-Prestwick the Civil Aviation Authority (CAA) website provides data and reports on all UK's air traffic developments, including Prestwick's. The CAA has a public ground and serves as an independent authority for aviation regulation and air traffic service provision. In its responsibilities are included economic regulation, airspace policy, safety regulation, and costumer protection. In addition, the CAA advises the Government on aviation issues, presenting figures and statistical data (Civil Aviation Authority, 2009).

For the Skavsta Airport example, in Sweden the Swedish CAA provides data and air traffic analyses on their website. The Swedish Civil Aviation Authority (Luftfartsstyrelsen) works at the Department on Airports under the Swedish Transport Agency (Transportstyrelsen), of the National Government, and controls and monitors civil aviation in Sweden. This authority is responsible for airport guidelines, approval of airports, supervision of airports, and gives support or background for physical planning (Transportstyrelsen, 2009).

In all case studies, of course the airport authorities themselves have been approached for data and information, both via personal correspondences and the airports' websites.
But also for both the Glasgow-Prestwick and Stockholm-Skavsta cases research report could be acquired which analyzed the impact of the airports on the economy. Both reports were prepared by consultancy companies and where based on interviews and questionnaires with local businesses and passengers. The Glasgow-Prestwick report was based on two periods of passenger surveys: 2002/2003 and 2005/2006 which resulted in respectively 831 and 511 passengers, so a total of 1311 passengers. Furthermore, 174 responses were accumulated from businesses throughout the region (SQW Consulting, 2008). In the Stockholm-Skavsta case the economic impact report of Skavsta Airport was based on 42 interviews of local businesses (CMA Research AB, 2007).

For the European development of low-cost airlines previously stated report were reviewed, like the ELFAA et al. (2004), van der Zwan (2006), Burghouwt et al. (2203), among others, but also EuroControl provides with a lot of data of European air traffic. EuroControl is the agency for European Organisation for the Safety of Air Navigation, grounded in a civil and military intergovernmental organization which now counts 38 member states from across Europe. The aim of the organization is to provide a functional uniform pan-European air traffic management system making European aviation safer, more secure and more environmentally-friendly. Part of their services is also to provide studies, reports, and data on European aviation related issues (EuroControl, 2009).

3.3 Case study

For this thesis three case studies had been selected to be investigated for further analyses. As presented in the introduction chapter, besides these cases being selected because of their relative large share of their operations confined to low-cost flights and the status of Ryanair base, the

airports are also representative for different European regions and should make a comprehensive comparison. Other cases were selected from the beginning and it was thought of including those as well, it was however difficult to get in contact with those airports and related organisations and to acquire particular data needed also time seemed short for investigation of all of them. Therefore instead of six case studies thought to be included it was reduced to three. Nearly, also the Düsseldorf-Weeze case was excluded from investigation as at first it was hard to get in contact with authorities. Nevertheless, in a later stadium of the thesis research Weeze Airport replied and shortly was decided to gather the acquired and available data and included Weeze Airport as a small case study but with a focus on its interesting aspects of catchment area. That the three cases represent just Central and Western Europe is not really accidentally, but rather done consciously. If cases were selected, as thought before this thesis research started, in Eastern Europe it would be relatively difficult to get the necessary data and information, slightly because of language problems but mostly because less data is available for examining the impacts as the low-cost phenomenon has just reached East-Europe making that there are not that much records available yet.

What the case studies provided was the development of a low-cost served airport with regards to its route network and its passengers. The cases have been analysed with a focus on the travel behaviour of the passengers to see the effects on the cities and regions and with regard to the network development to analyse how the airport has developed its services in retrospect to influences and developments in Europe. The cases have been compared to see how the selected airports have reacted on the low-cost development and how they have developed. Furthermore, analysis is focused on finding similarities and differences between the effects of the airports on the regions.

The passenger data had been get hold off as to analyse the airports, often impressive, developments and more to show where passengers come from and where they head to; investigation of travel behaviour: what is the place of origin and what is the final destination? The airport developments provided backgrounds for the case studies and the route network developments gave a thorough analysis of the low-cost developments and made it possible to relate to European developments and migration patterns. The migration and population data also gave a background and context for the cases. Also the data acquired on national statistics showed the airports' importance and contexts. The effects of low-cost services was analysed by looking at the airports' employment data, migration data, effect on tourism markets and city marketing and perspectives or views on planning issues. The comparison with the regions tourism market, economy and international airports made it possible to show how the low-cost served airports operate and function in their region.

3.4 Carrying out personal correspondences

For the case studies several interviews or meetings were organised to acquire personal views on the situation of the low-cost airport and receive first hand data. The interviews had been conducted on a rather informal basis and had been set up more like meeting and discussions. This had of advantage that the communication was friendly and there was place to improvise during the talks. Furthermore, the questions in mind could be asked in the order of the spontaneous flow which came up during the talk and made a more fluent chat. Disadvantage however, was that some points that could have been of importance may have slipped away during the chats. Furthermore, it is a reminder of that interviews can be improved when a list of questions is sent on before hand to the interviewee. This makes the person in question more prepared for answers and makes sure he or she knows what you would like to achieve with the interview. This is also an important part and somehow a bit neglected in my study; make sure to

have the right person in front of you for interviewing. This avoids the possibility of the person not knowing any answers to your questions or not having that much knowledge about the topic. When having the wrong person to talk to, one gets of redirected to others or receives vague answers. Nevertheless, it is nice to meet others as well that might provide you with interesting perspectives but you may end up with not getting your questions answered.

Interestingly enough, during the time the interviews were carried out in Glasgow Ryanair decided to change flights on Prestwick, cutting down 20% and shifting flights to Edinburgh from where they started flying recently. This gave a lot of new things to discuss and made the conversations in Glasgow more lively and up-to-date. This made the topic on the bargaining power of low-cost airlines also more discussable.

Besides interviews and meetings also a lot of correspondence was done by email. This gave the benefit of not having to arrange any meeting but instead receive direct response, although it is not sure if the person will and can inform you by email. First of all, often one does not get in touch with the right person right away but is redirected a couple of times before getting to know someone who can answer your questions. Secondly, it is unsure if the person asked will reply immediately and what his/her reply will be. This is however also an advantage of email correspondence as one can easily send a reply on the answers given and may ask for more explanation or further questions. This is not possible after an interviews is conducted, the face-to-face contact is only limited to a short time and follow-up questions are send afterwards by email if not directly added into the interview, the latter is a rather difficult task. The last advantage of email correspondence is that you can ask anyone something at anytime. There is no need to wait until a meeting is organized. And emails can be send just when thoughts come up and there is a sudden need for explanation or answer.

4. Low-cost Airlines in Europe

Part of the thesis aim is to find out how low-cost airlines work and operate. Therefore this chapter will show how this concept has been operating in the European Union. So before looking into any specific cases, the background of European low-cost development will be presented as a base for the analysis. This chapter will pursue to present the impact of the development of low-cost services in the European Union; capturing the evolvement of low-cost services over time and enlargement of the European Union as well as the share low-cost services take in the European aviation market followed by the changes in accessibility and travel behaviour.

4.1 Development of the low-cost network in Europe

In Europe the origin of the low-cost airline can be found in Ireland and the United Kingdom. Ryanair's first flight in 1990 from London to Dublin marked the beginning of a new low-cost revolution within the European aviation market. This was not very successful however, and the start shot for actual development and expansion of the low-cost network was given in 1993 when the European Union had introduced the third and last deregulation package in the European Union. Three packages had slowly deregulated the European aviation market from 1987 to 1993 which allowed airlines to get more power on their organisations and become privatized without specific commitments to the governments. The deregulation has given airlines and airports the opportunity to play an important role in the European aviation scene; economic growth and lower prices generated enough demand for new services, not only from primary but also from smaller airports (Burghouwt et al., 2003). According to Barret (2004) it is the large amount of underused secondary airports in Europe that have made it easy for low-cost airlines to expand quickly.

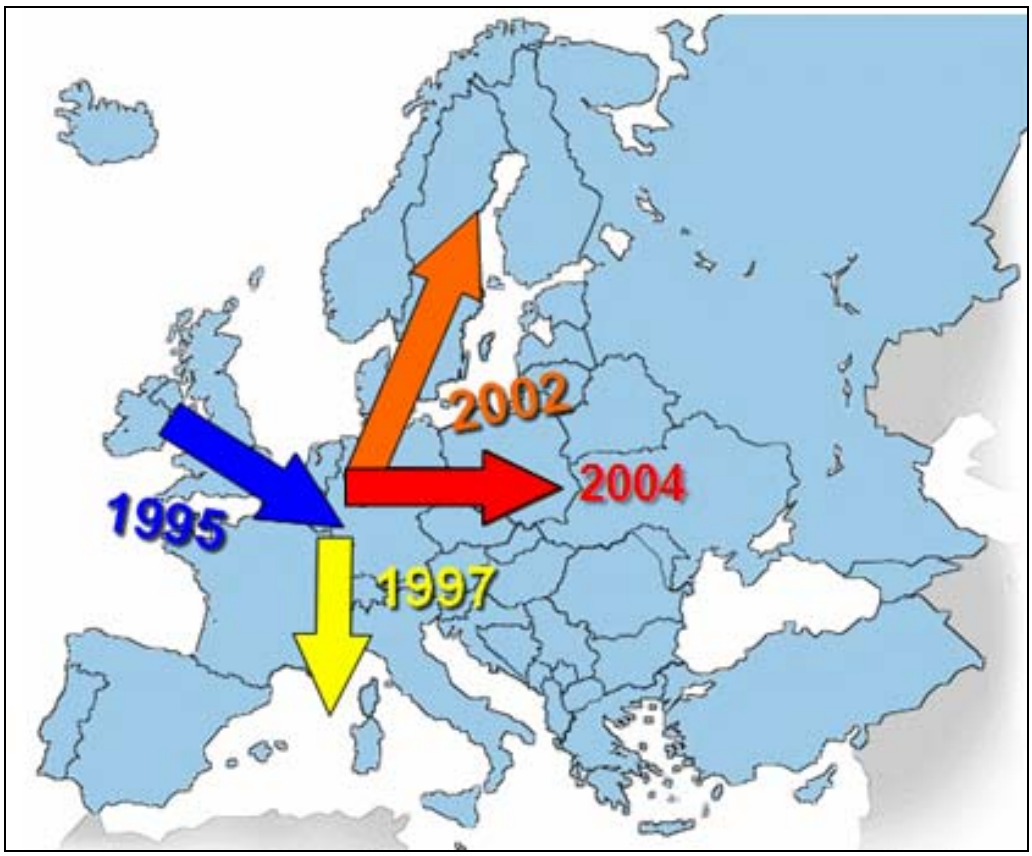


Fig. 4.1: Development of low-cost services in Europe, derived from Francis et al. (2006)

It was in the United Kingdom that only since two more years after implementation of the deregulations in 1995 Ryanair and EasyJet started to take advantage of the new opportunities and operate full low-cost services accordingly to the US 'South-West' model (Francis et al., 2006). In the United Kingdom it was a good base to build up low-cost airlines as the governments of the United Kingdom and Ireland encouraged competition within the aviation market. Moreover, a lot of underused, privatized airports could be found all around the countries, making good opportunities for low-cost operations in terms of reduced fares and revitalization of the these smaller airports (Francis et al., 2006). The shift from the United Kingdom and Ireland to mainland Europe came a few years later when the third package was totally implemented. From 1995 UK-based companies operated services to the mainland, but from 1997 the extension was made more obvious (see figure 4.1), with Ryanair and EasyJet allocating their bases to the mainland as well. From that year on also the established major airline companies formed their counter-parts to the new low-cost airlines by setting up their own low-cost subsidiary services. So far the low-cost services had been expanding mostly from the United Kingdom to the mainland and from central to southern Europe, following the tourist markets. From the year 2002 Scandinavian countries became an attractive outreach for low-cost airlines. And when East European countries and new member states liberalized their bilateral agreements and joined the single European aviation market (Francis et al., 2006), new markets opened up in the East that have been attracted by low-cost airlines since in particular 2004. The low-cost network has not only been expanding at a rather fast pace in terms of destinations but also in terms of passengers, flights and companies. The difference between destinations offered by low-cost services in the early 90s compared to today's destinations is enormous (see fig. 4.2). These days there are around 46 companies offering low-cost services around Europe accounting for a total of nearly 4600 routes (cheapo.com, 2009). The two biggest and most well-know airliners are EasyJet and Ryanair. Both offer low-cost services with several bases around Europe, providing direct flights. Other companies are for instance: WizzAir, Transavia, Norwegian Air Shuttle, Air Baltic, Malmö Aviation, and Air Berlin.

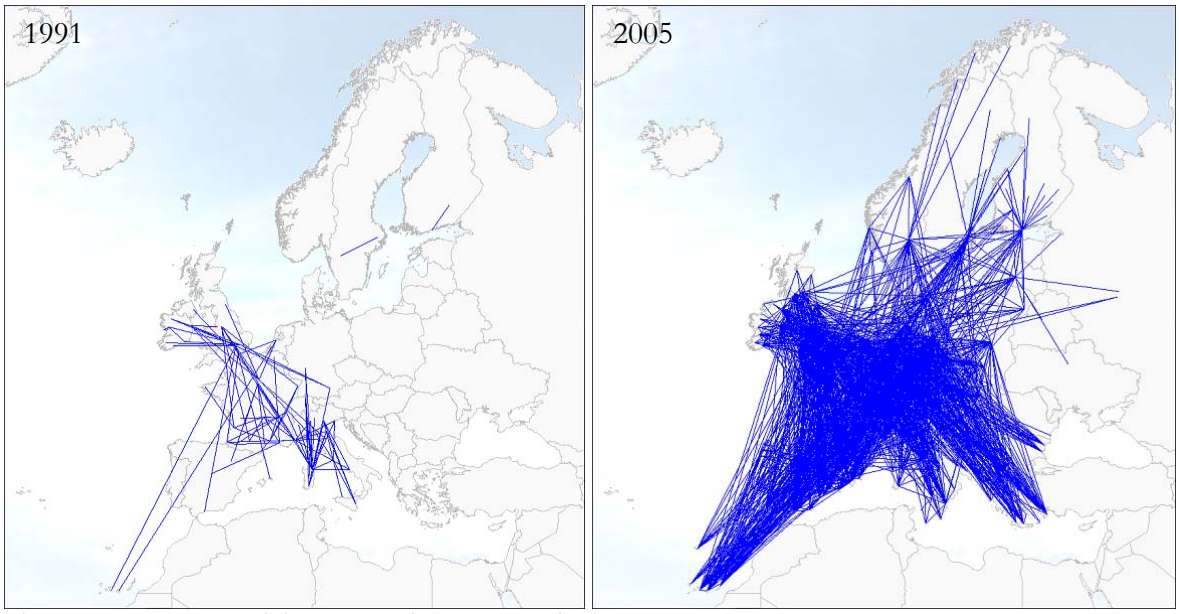


Fig. 4.2: LCAs' network in 1991 and 2005. (van der Zwan, 2009)

Ryanair (9.1%) leads the list of seat capacity of all airlines followed by Lufthansa (8.8%), Air France (6.7%) and EasyJet (5.7%) (RDC Aviation, 2009). Ryanair, EasyJet and Air Berlin have been the three major players in the low-cost field for several years already and remain among the top 10 of largest airlines in Europe (RDC Aviation, 2008). According to consultancy company RDC Aviation it is obvious in their monitors of the last years that the main, established airlines

are keeping the major share in low-cost capacity and new entrants do not have significant impact on that, as shown in figure 4.3 (RDC Aviation, 2007). Although, the low-cost network has been growing largely it seems to be the contribution of the major established airline companies which have created a sort of monopoly and reputation not easily broken by new entrants in the market. This relates to the business model of low-cost airlines that always try to seek the lowest fares; for that competition is a shatter and mutual services are hastily tried to be avoided. Despite, the deregulation and other EU policies that stimulate competition; low-cost airlines often have a solo route development being the only airline operating on a route and serving the airport. Ryanair for instance, operates on nearly 60% of all its routes alone (European Parliament, 2007). In fact low-cost airlines often try to make a different business to avoid competition: Ryanair is said to concentrate more on smaller markets and regional airports, while EasyJet focuses on bigger markets and primary airports (European Parliament, 2007).

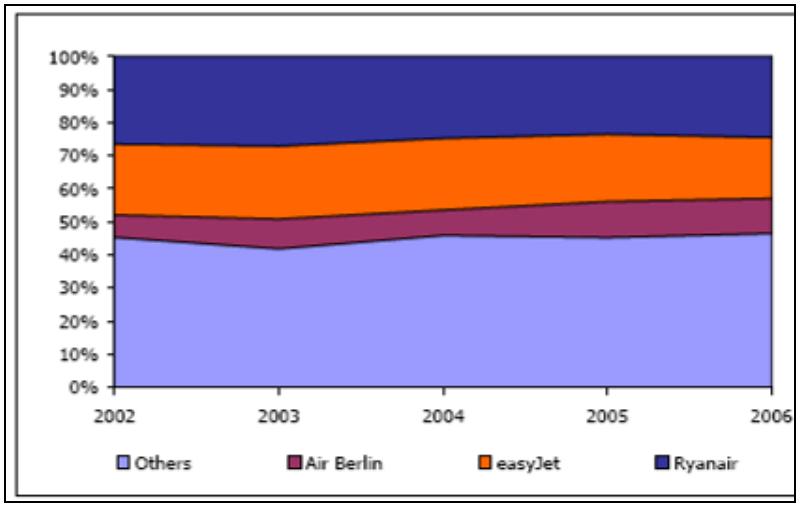


Fig. 4.3: Airlines' share within low-cost market (RDC Aviation, 2007)

Even if low-cost networks have been developing and expanding trough out Europe, the United Kingdom has remained at the top of all 'countries most served by low-cost airlines'. Though the United Kingdom is the country with the largest amount of passengers it saw a slight fall in increase percentages in the last two years (RDC Aviation, 2008). London-Stansted and London-Gatwick, however, remain first and third (respectively) as the most served airports by low-cost carriers. Dublin, Barcelona and Palma Mallorca complete this top 5 (RDC Aviation, 2007). The latter two being settled tourist destinations that have attracted tourists ever since and especially the low-cost services have not slowed down this market. On the contrary, established holiday destinations remain in the top and are still growing steadily every year, e.g.: Greece (46%), Portugal (43%) (see also appendix F). As will be explained later on in chapter 4.2 the low-cost services have created new demand and new markets by having set up a new trend of short city-break trips, also to these major tourist cities.

On the other hand, among the lower ranked countries changes and shifts are more clear. Especially East European countries have been growing the fastest in the latest years. In 2006 for instance compared to the previous year, Poland achieved a 90% growth rate, Slovakia 81% and Romania remained at an impressive 156% growth in 2007 compared to 2006, likewise did Bulgaria at 123% (RDC Aviation, 2007). Supporting this is the fact that most of the fastest growing airports in terms of low-cost services are located in the eastern parts of Europe (see also appendix F).

The emergence of low-cost destinations in East Europe is more than obvious when looking at the shifts in year-on-year passenger growth. Although, the increase in passenger numbers may not exceed those of UK's for instance, but the relative growth each year shows the changing focus of the low-cost network in Europe. As can be seen in figure 4.5 in 2002 it where the Scandinavian countries with high growth peaks and from 2004 until today it are mainly East European or new EU-members than have high growth rates of low-cost services. This is apparently grounded in the expansion of the European Union and therewith the enlargement of the Single Market space and open policies within European Union countries.

Looking on a few examples (see appendix F), Sweden for instance joined the EU in 1995 (figure 4.4) but was only integrated in the low-cost network when that reached Northern Europe in 2002. Before 2003 the year-on-year growth rates of low-cost air traffic passengers in Sweden was trivial. From 2002 to 2003 however there was a huge increase of 213%, followed by 67% from 2003 to 2004 and even 62% in 2004-2005. The entry of Poland in the European Union in 2004 raised low-cost passenger growth to 137% from 2004 to 2005, being continued with 91% the next year. Malta entered the European Union in 2004 too and found its low-cost passenger numbers growing by 44% from 2004 to 2005, 88% in 2005-2006 and while becoming a more favorable tourist destination even 480% from to 2006 to 2007! Also when Romania joined the European Union in 2007 (see figure 4.4), the year before saw a massive year-on-year increase of low-cost passenger growth of 330% followed by another 156% until the year after.

Fig. 4.4: Entrance of new member states into the European Union

Where non-EU members had not the rights to join the deregulated aviation market they got new opportunities when they newly joined the European Union. The growth of low-cost services has intriguingly followed the expansion of the Europe Union (compare figures 4.3 and 4.4). One other factor has been the introduction of the Single European Sky which also contributes to the growth of more low-cost services as it becomes easier to access and fly on airports everywhere in Europe, especially in (at this subject) less developed Eastern Europe.

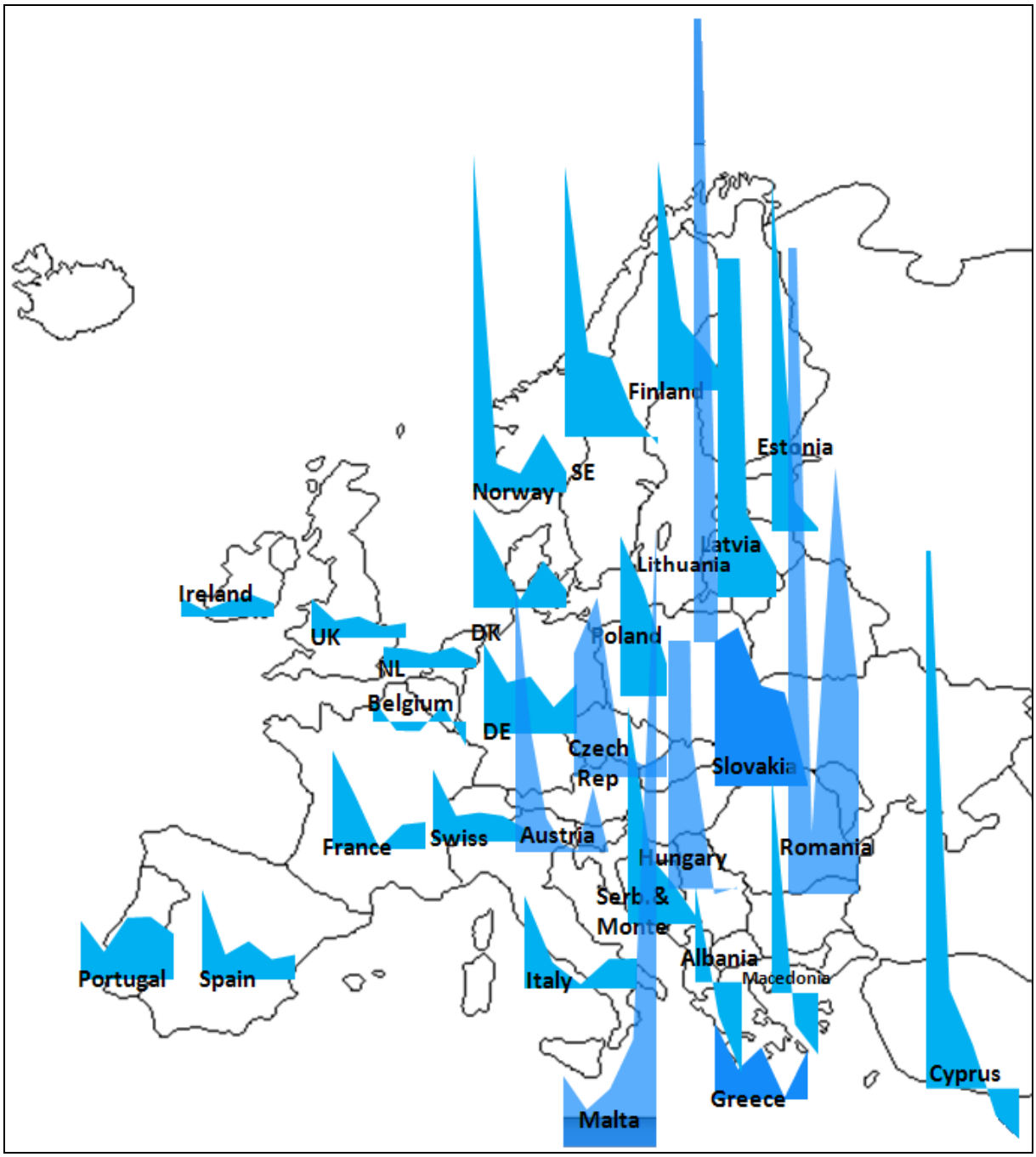


Fig. 4.5: Year-on-year growth of low-cost passengers 2002-2007 (derived from RDC Aviation, Low-cost Monitors)

4.2 Changes in Europe?

According to research of EuroControl (2007) airport traffic is mostly concentrated on places where economic wealth is concentrated which would imply that the use of air transport is related to income, like the theoretical background described: higher income, more air travel (see chapter 2.4). Additionally, EuroControl (2007) states that the benefits for the economy are more widely spread than just the local community where the airport is situated complying the theoretical reasoning of high spill-over effects to the region. However, low-cost airlines have been serving specific places different from the larger major airlines. Originating from their low-cost business

model they are focused on secondary, smaller private airports. These are often situated further away from bigger cities and are less accessible, but where smaller underused airports are available for operations. These underused airport, naturally, accept new airlines easily as it is often their main chance to survive or revive their businesses. Rather often these underused airports are located in deprived areas that are not seeing any prosperity, which also assures that the fares at the airport are not that high as it is not located in a strategic region that is popular for airlines to fly on. This results in that low-cost airlines are, contrary to flag carriers, not focused on high income regions but instead more spread out to remote areas, where they can receive lower operation costs.
Whereas the theoretical airline network configuration (chapter 2.3) shows concentrated networks the low-cost airlines have transformed aviation networks from being concentrated to more spread out. They are not concentrating on the few airport hubs in Europe since with the focus on 'point-to-point' routes there is no need to operate from hubs as interchanges are not provided. While traditional airlines operate mainly from international airports as their hubs, the low-cost concept is not concentrated on a few cities but sprawls over the continent. This also implies that with the spread and orientation towards non-hub airports new places are served and a new network is created. Dobruszkes (2006), in fact, showed that 62% of all European routes is flown by low-cost airlines. Which means that only 1/3 of all routes is operated by traditional full-services airlines flying to established international hub airports and the major part are new routes operated by low-cost airlines serving new destinations.
The choice of different airports than full service airlines has also developed more connection points and new gateways; places are at once connected by air traffic representing new highly connected centers through which people access the region (see chapter 2.2.1).
Europe has a more connected network and integrated smaller previously 'unknown' cities into the tourist destinations (ELFAA et al., 2004) as an example of city network theory to how low-cost routes are changing a city's character when they are being integrated into the network. Examples of 'new destinations' are said to be: Charleroi (BE), Tampere (FIN), Carcassonne and Strasbourg (FR), Karlsruhe-Baden and Hahn (DE), Derry (IRE), Bari, Pisa and Alghero (IT), Haugesund (NO), Gdansk and Poznan (PL), Girona and Murcia (SP), Malmö and Nyköping (SE), Bournemouth and Newquay (UK). As concepts of transportation planning also explains, these areas that previously were not integrated in the aviation market are now experiencing impacts on their local direct employment from the airport's growing gateway function. These can see indirect effects on the tourism market and inputs from passengers passing through the area. Areas that have been deprived and were difficult to access, now see improved connectivity and increased marketing opportunities (European Parliament, 2007). The opportunity of new gateways, better access in remote regions created by low-cost airlines has improved the overall integration and cohesion within the European Union; smoothing out differences in inequality and between European regions and promoting a further balanced union (European Parliament, 2007). In particular the low-cost networks are more integrated and show a stretched network configuration (Burghouwt, 2003 and van der Zwan, 2009).

As in line with Button and Vega's findings (2008), especially the lower costs make it easier for anyone to travel and the new destinations make it easier for everyone to travel from anywhere. This is supported by the fact that low-cost airlines do not merely take over passengers from other airlines but mainly create a new market in the aviation industry (ELFAA et al., 2004). As similar to Castells positioning of city networks (see chapter 2.2) infrastructure is on the base of possible creation of new societies, which low-cost airlines are making possible by providing transport services to and for a broader market.
It has not only been the networks of low-cost services that expanded over the years but also the share of low-cost services in Europe increased rapidly. Was it only 8% of market share for low-cost airlines in 1996, in 2007 it reached a 35% share (RDC Aviation, 2002 and 2008). This is

clearly evidence to the increased demand for air travel induced by the low-cost services. The creation of a new demand in air travel becomes obvious when the business model is reviewed: operating new destinations, taking advantages of underserved (new) areas, private airports, internet booking and providing very low fares. In fact, more than half of the passengers carried by low-cost airlines in Europe would either not have travelled at all or chosen another kind of transportation (ELFAAet al., 2004) see figure 4.6. Supported by Keelings (in Sassen, 2002) argument that air travel is still highly preferred as the mode of transport: of the newly created demand 71% would not even have chosen any other sort of transport and not travelled at all. As the European Parliament (2007) outlined in their report the connection to internet facilities has been of one of the major factors contributing to the rapid development of the low-cost network. By using internet the low-cost airline company can easily reach a really large part of the population and its possible market, moreover internet booking is an easy task for passengers and avoids the talks with the travel agency. Furthermore, the access to internet among households has spread the last decade and it has become integrated in the commutation society.

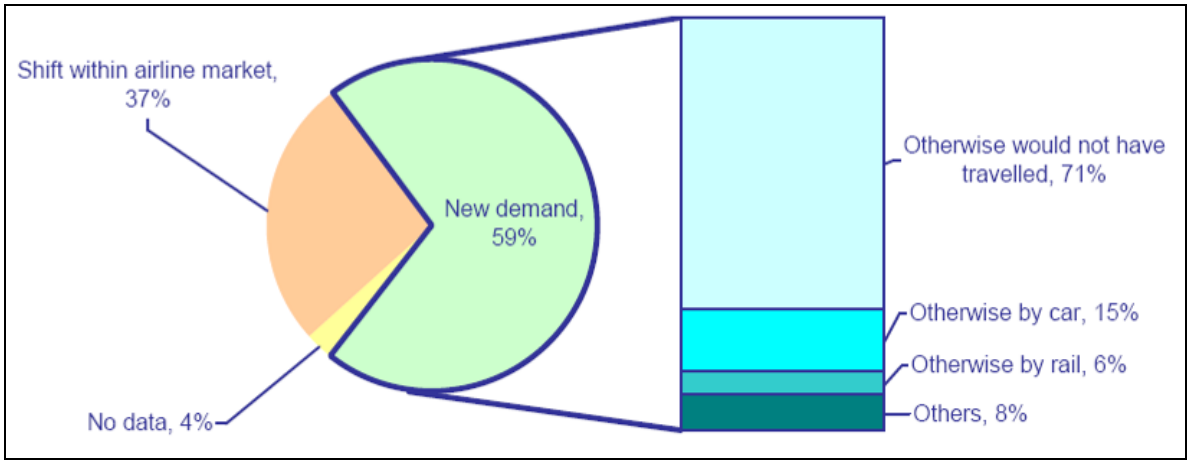


Fig. 4.6: New demand created by low-cost airlines (European Parliament, 2007)

The increased demand is supported by the fact that, while the low-cost services have been growing steadily, the regular airlines have stabilized their share and for the first time saw a slight decrease in carrying capacity in 2006 (RDC Aviation, 2007). So it seems like low-cost airlines have had a strong hand in the increased demand for air travel, in particular for creating new markets. Indeed, the service of low-cost travel has created such an incentive for travelers that they are willing to choose flights from smaller airports further away rather than close by national airports. As in line with the Hannover Airport study (Button & Vega, 2008) low-cost served airports have a much larger catchment area than (inter)national airports do. These new low-cost served airports attract people from over 250km away and their catchment areas often include neighboring larger cities (ELFAA et al., 2004). This also contributes to a more integrated accessible network, profound to the low-cost network configurations (chapter 2.3).

The introduction of low-cost flights brought two evident trends with it. First, as in line with the results of Button & Vega (2008) more shorter trips are made. People take advantage of the cheaper tickets and travel for short periods to one destination; weekend breaks or city breaks have become more popular among all population (European Parliament, 2007). Secondly, the cheap links have seen to be an incentive for the buy of a secondary home abroad. As written in BBC News (2001) and 'The Independent' (2007) the real estate business benefits obviously from secondary housing nearby low-cost served airports. It are especially medium and high-income households that buy secondary housing in particularly Southern Europe. Notably residents in the

United Kingdom have been attracted by secondary housing in the south of Europe. Also people from Northern Europe travel to South Europe regularly, to spend a weekend in their secondary homes (European Parliament, 2007).
The second trend complies with the found ideas that low-cost services create new markets and better access along with cheap cost of travel, making it easier for people to move around. Furthermore, as explained before the low-cost sectors often serve relatively peripheral areas where the economy has not yet increased real estate prices.

4.3 A new opportunity for Europe!

As already concluded in the SQW Consultancy report of Glasgow-Prestwick's economic impacts (2008): "the emergence of low fares airlines and specifically the huge increase in point-to-point routes represents a major benefit for the economies and residents of the countries and regions where low fares airlines operate. Connectivity is central to the objectives of the European Union and its economic development, the development of new air routes and airports directly supports this. (p. 7)"

The change of policies in Europe had been the main factor behind low-cost growth, also the higher degree of privatization made low-cost services possible. Obviously the implementation of the de-regulation packages made the spread of low-cost services possible; the spread of low-cost services is in fact enhanced by the expansion of the European Union. With the addition of new regions to the Union low-cost services see new destinations and markets popping up.
As low-cost airlines have been focused on developing their network towards secondary airports and peripheral areas these services are of major assets to the European balanced expansion: integrating previously under-connected regions in the European transportation network by serving these new gateways. Also, explaining the enrichment of free-movement of goods and businesses in the European Union by means of new entry and connection points within the union. Moreover, since the low-cost services represent a new demand the advantages of new lower fares for inhabitants of new member states, which often are governed at a lower standard, provides opportunities for travel that were not there before. This enhances the possibilities for transportation and creates the opportunity for all European citizens to travel.
The two travel trends induced by low-cost airline services are a perfect fit with the European Union. The larger distances passengers are willing to make before reaching their airport applies also to distances that cross country borders, amplifying the free-movement of people within the EU. The increased secondary housing purchases in the surroundings of low-cost served airports strengthen the EU rules of free-movement and free choice of settlement as well. What's more is that the secondary housing trend also positively add development to the region where the low-cost airlines fly to, which as stated earlier are often less developed, peripheral areas providing a more spread out development.

Although, the low-cost served airports have lately seen increased connectivity and growth they have not necessarily changed the hierarchical airport network structure of European cities. As Smith and Timberlake (in Sassen, 2002) showed it had been a few cities always on the top of the hierarchy dominating the networks and the most hierarchical order could be found in the lower tier of cities. As Dobruszkes (2006) argued: the importance of low-cost airlines can seriously change European airports' hierarchy. The low-cost served airports, being secondary airports and smaller cities, can also be categorized in the lower tier of cities, representing, those underused and rather smaller airports. If then, a low-cost airline suddenly starts to operate out of one of the smaller airports the increase in passengers is clearly observed as it bypasses several others.
Often, in the case of the low-cost airlines, just a certain amount of cities in the lower tier have received an immense increase in routes and passengers compared to before; that is where the hierarchical order may be altered as the rest is left behind. It shows that, as Dobruszkes said, the

low-cost phenomenon has made the hierarchy of airports more sensitive to changes. Even more so, because low-cost airports only serve point-to-point routes and providing only a few airport with based aircraft and an extensive route network.
It are still the major international airports that count the highest passenger numbers and keep up in the top rankings, but the low-cost services make a small airport appear out of nothing into a relatively high rank and could compete in ranking with the middle tier airports instead of the lower tier's. In the case of London, Heathrow obviously reigns the city with 46 million passengers, but low-cost London-Stansted reaches same numbers as the national airport London-Gatwick (resp. 12 and 13 million) (Dobruszkes, 2006). Consequently, the change in dominant cities in the European city networks is not noticeable in the top of the hierarchy but the hierarchical order of lower ranked cities can see an obvious alteration: smaller cities become more important in the city network.

In the end, the low-cost servics have additionally spread the before concentrated aviation and travel market to all regions in Europe and act to a more integrated and balanced developed Europe.

5. Three cases of low-cost served airports

From the previous chapter it is shown that the new low-cost networks have significantly influenced connections between regions and accessibility to these regions. But how then has the change been for these regions themselves? The following chapter will investigate the third part of the thesis aim, namely to identify if low-cost services had any effect on planning issues. The selected examples represent different European regions; UK, Central and Scandinavia. Moreover, these cases represent airports in two main growth directions of the total low-cost network in Europe. The airports are in addition selected because of their large share of low-cost services (as illustrated by van der Zwan, 2009). Besides, the selected airports also represent Ryanair-base airports, with this it are relatively large airports with a more developed route system and have a relatively longer history of low-cost services. This will provide more information which is needed for this research. Besides two case studies of Glasgow-Prestwick and Stockholm-Skavsta, this chapter will include one more example showing the growth of a small regional airport at the proximity of a national border: Düsseldorf-Weeze Airport, representing a Central Europe low-cost airport. The location of this airport provides an exciting ground for research with regards to this paper with regards to its interesting catchment area. For a comprehensive overview of the case studies see appendix A.
As presented in the introduction Glasgow-Prestwick was chosen since it is one of the major low-cost served airports in the UK and my interests were triggered for further investigation on this subject. The example of Stockholm-Skavsta became mainly interesting because it is well-known in Sweden for its marketing deals between Ryanair and the municipality.

To be described for each case is how did the arrival and growth of low-cost airlines influence the locality and region? What sort of connections does the low-cost airport provide; does it make any difference for the region? Did low-cost services influence migration patterns or travel behaviour in the region, as empirical studies suggests? Did the city/region change strategies in planning, like if there has been a change in development focus, collaboration with parties, and city marketing? Consequently: what is the perception on the low-cost airport and how is it taken into consideration?

5.1 Glasgow-Prestwick International Airport

As an airport situated in the birth region of low-cost services in Europe, Glasgow-Prestwick may provide an interesting case study on how the low-cost airport has affected planning in the Glasgow region throughout the years.

5.1.1 Introduction

Although Glasgow-Prestwick International Airport (GPIA), as is the official name, was founded as an airfield in 1913 it was only after 20 years that in 1935 the field was really developed as an airport serving local training flights. During the Second World War the airfield was used for military operations of both the Royal Air Force and United States Air Force, nowadays the airport still serves as a strategic en-route stop for military aircraft. From 1941 Scottish Aviation established an airplane assembly factory at the site, but it ceased in 1998, nowadays a small facility is left of BAe Systems (Glasgow-Prestwick Airport, 2009). From 1994 on Ryanair opened its services from Glasgow-Prestwick and the small airport has seen a new life, in particularly after Ryanair named it to one of it bases in 2003. Glasgow-Prestwick airport is wholly privately owned by a private consortium Infratil Airports Europe Ltd. (Glasgow-Prestwick Airport, 2008), typically for low-cost airline companies as one of the main features of their business model, as described in chapter 2.1.

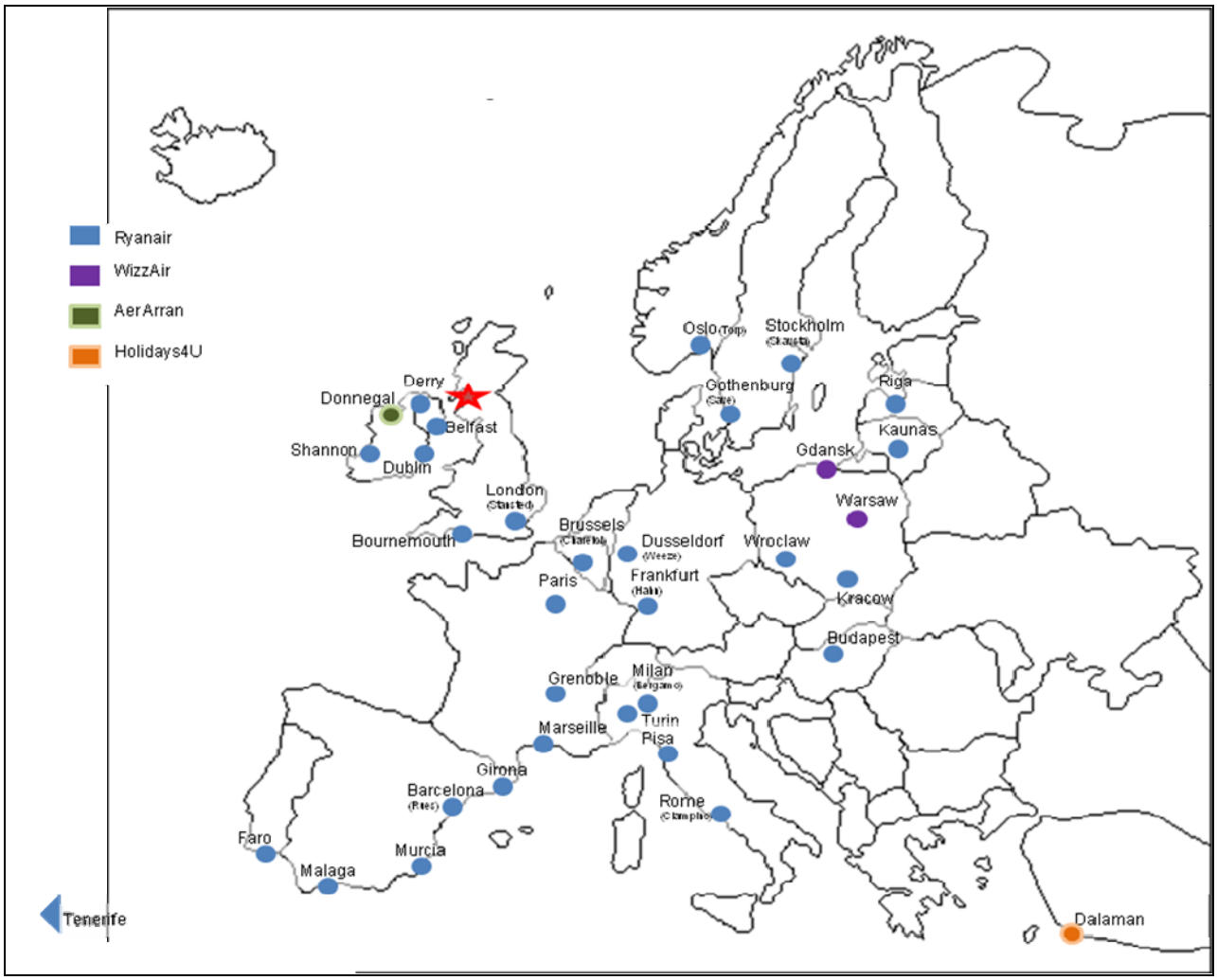


Fig. 5.1: Glasgow-Prestwick Destinations map 2009 Source: see Appendix C

As one of the major Ryanair hubs in the United Kingdom, GPIA links to 30 routes from this airline stretching over the whole of Europe. WizzAir also provides an additional two routes to Eastern Europe. Moreover, three other routes are provided by other airlines serving the airport, including Aer Arran and seasonal flights of Onur Air and Freebird Airlines, giving Prestwick 35 destinations in total (see figure 5.1). The peculiarity of low-cost served airports as described in chapter 2.1 comes back in this case as well. Glasgow-Prestwick Airport is majorly served by one airline, Ryanair, which is dominating the development without or with little competition. The discrepancy of GPIA may be the addition of a regional low-cost carrier: Aer Arran. Aer Arran has slowly been pushed aside by Ryanair as the latter captured routes, but had a strong presence at the airport before and seems to be able to continue operating on routes (see appendix C).
Prestwick has developed its route network steadily over the years (see figure 5.2 and Appendix C). The major increase in routes is clearly from 2003 on when Ryanair took Prestwick onboard as a base and an extra number of 10 routes were added. The growth directions follow the expansion of the low-cost network in Europe: starting with routes to the south, followed by central and northern Europe and expansion to the East in the latest years. Also the entrance of new member states in the EU is visible in the growth of routes; after 2004 suddenly Eastern European countries are adopted in the route network and route numbers increase from 23 in 2004 to 46 in 2006.

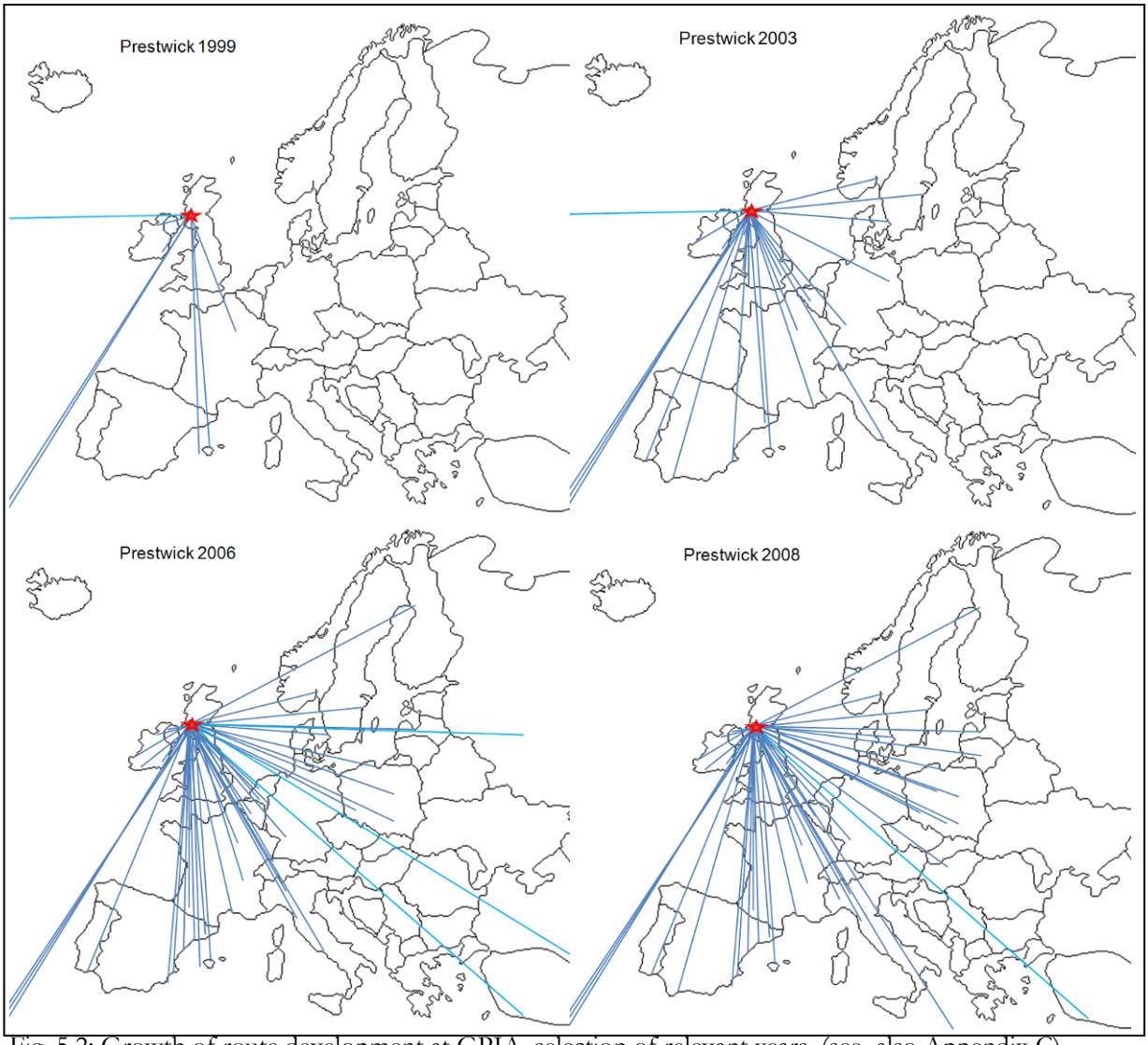


Fig. 5.2: Growth of route development at GPIA, selection of relevant years. (see also Appendix C)

Glasgow-Prestwick Airport also serves as one of the major cargo ports in Scotland. The freight activities are of particularity for GPIA given the runway length which is not available at other airports. Glasgow-Prestwick was in 2008 the biggest freight handler in Scotland and ranked 8th in the UK (Glasgow-Prestwick Airport, 2008), only because of the recent economic crisis cargo companies have bailed out and Prestwick Airport loosed a considerable amount in freight turn-over. The draft Master Plan of Glasgow Prestwick Airport was published in 2008 and points out that the aim of the airport is to remain a tourist gateway and an important hub for the aerospace industry. The Master Plan focuses on presenting the measures taken for growth until 2018 and a notion of developments for 2033. A substantial increase in land use for freight and aprons is reserved, the expansion of passenger volumes is said to be accommodated within the existing terminal building by only enhancing space and enlarging the boarding pier. As the runway access is enough to accommodate the growth of the airport the Master Plan focuses on developments of facilities, parking spaces (both for aircraft and cars), services, public transport and other transportation access. (Glasgow-Prestwick Airport, 2008). This focus is not that strange as Glasgow-Prestwick, being a low-cost served airport, has to make its income from retail and parking as explained in chapter 2.1.

5.1.2 Passengers

A look upon the passengers using Glasgow-Prestwick Airport gives an idea of the travel behaviour at this low-cost served airport. Like chapter 2.5 showed the world-wide increase for air travel demands, also Prestwick's passenger flow grew over the years. Also theoretical points on catchment area and travel behaviour can be identified in the Glasgow-Prestwick case, see below. In 2008 Prestwick airport received over 2,4 million passengers. Nowadays, almost all passengers are actually carried by the low-cost airline Ryanair. The growth is in line with the transportation theory that new development induces new demand while the economy was still positive. Additionally, the development of low-cost services during the years as described in chapter 4, delivered a growing passenger number. From the year 2005 and on, however, the growth in passenger amounts has stabilized around this number (see figure 5.3). The flattening out of growth and what seems to be a limit in passengers is explained by Chief Executive of Glasgow-Prestwick Airport Mark Rodwell (2009), in terms of yield management as the limit for the airport to accept more flights and still be profitable or break even. In other words: more flights would not make more revenue. Questioned in this perspective can be the Airport Master Plan's vision for 2033 which includes a possible development of the airport to enlarge its capacity to 11 MPPA (Glasgow-Prestwick Airport, 2008).

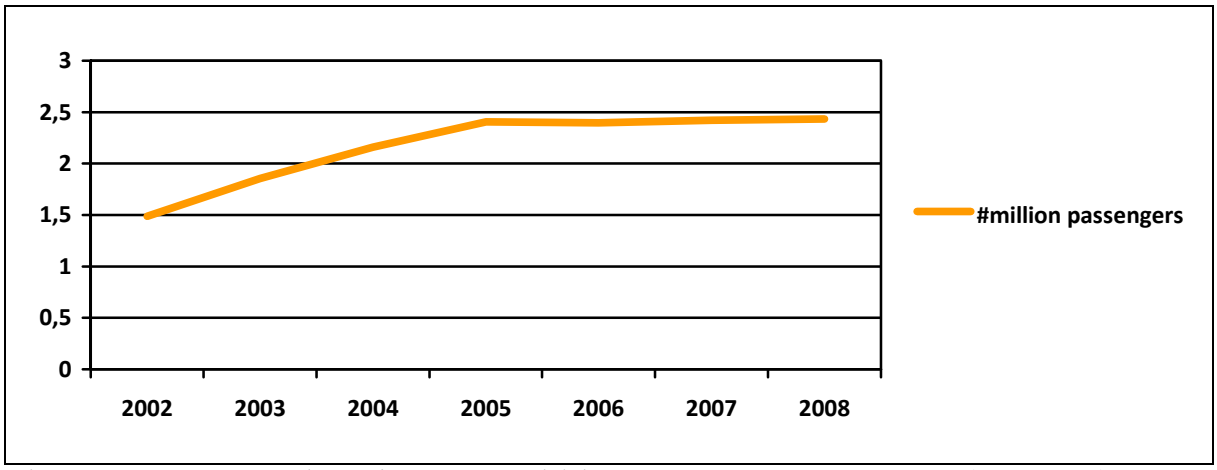


Fig. 5.3: Passengers growth at Glasgow-Prestwick in recent years Source: (CAA, 2009)

Data research of passenger surveys in 2006, showed that from all the routes operated by Ryanair from 2002 to 2006 the most established ones showed the most usage (SQW Consulting & TNS,

2007), which complies with the fact that the UK still shows the most passenger travel with low-cost airlines (as explained in chapter 4). Along the lines of previous studies (see chapter 2.5) Glasgow-Prestwick also shows an increased catchment area. From the passengers using Glasgow-Prestwick to fly out from just 20% was from the local region (Ayrshire) and more than 40% from Glasgow and its surrounding region (see table 5.1). As in line with theory also the bigger cities as Glasgow are largely taken in as final destinations: of the passengers coming to Glasgow-Prestwick half stayed in the Glasgow region, 26% is said to stay in Ayrshire region and another 25% around Edinburgh (SQW Consulting & TNS, 2007), showing that the 'travel area' of tourists too is a great deal larger than the nearby region, also including Edinburgh. The travel behavior of GPIA's passengers shows the focus of low-cost passengers towards bigger cities and the greater region. About only 10% of all Scottish passengers says to have stopped by in the Ayrshire region, the rest was just passing through on their way to the airport (SQW Consulting & TNS, 2007), enhancing the gateway function of the low-cost airport to more well-known (tourist) destinations like Glasgow and Edinburgh. The spread out catchment area of Glasgow-Prestwick Airport also shows that the origin of passengers follows the spread of population density in the region. More passengers travel from or to places within higher populated areas.

The similarities of low-cost service development in Europe can also be noticed in the inbound passengers' origin to GPIA. Of the inbound traffic to Prestwick 40% of the passengers came from UK, 11% from Scandinavia, 10% from Ireland, followed by Germany (see table 5.1), showing the relation with countries that also represent the highest number of low-cost passenger travel in Europe. The main purpose has been reported to be visiting friends and relatives (36%) and for business (19%), also short holidays (15%) was a favorite (SQW Consulting & TNS, 2007). This is in line with Button & Vega's (2008) conclusion that due to the lower costs more revisits are made with low-cost services and with the EU trend of increased short weekend-breaks. But also the rather large share of business related visits is interesting and indicates a pursue of the trend discovered in a study by professor Behnen (2004) at the University of Hannover.

Table 5.1: (source: SQW Consulting & TNS, 2007)
Glasgow-Prestwick Airport's passengers' origin

Outbound:		*Inbound:*	
Glasgow	21%	UK	40%
Strathclyde	21%	Scandinavia	11%
Ayrshire	20%	Ireland	10%
Lothian	8%	Germany	8%
Tayside	7%	Belgium	5%
Dumfries & Galloway	4%	Spain	1%
Grampian	4%	The Netherlands	1%
Highland & Islands	4%	Other EU	3%
Central	3%	USA	3%
Fife	3%	Rest of World	8%
Borders	1%		
Other	4%		

5.1.3 The impact of a nearby low-cost airport

The influences of the low-cost services at Glasgow-Prestwick Airport have not remained unnoticed for the local region. Low-cost airlines often use secondary airports located away from the urban cores, Glasgow-Prestwick International Airport is no exception. The airport is situated about 45 km south-west of Glasgow City, near the town of Prestwick. Prestwick, a town of about 15,000 inhabitants, lies within the authorial area of South-Ayrshire accommodating around

112,000 residents (South-Ayrshire Council, 2009). The region saw a population decline at a 1.5% rate (figure 5.4); since 1997 a relatively heavy drop can be noticed falling from 113,500 inhabitants to 111,500. As explained by Chief planner at the Scottish Government, Graeme Purves (2009) South-Ayrshire was successful in finding a way out of the decline, as it rather soon focussed on developing a knowledge economy after the down turn in the industry. Proving, after a drop in 1996 from 2000 onwards migration numbers have become positive again (GRO Scotland, 2009): South-Ayrshire has kept a rather positive migration number in the last 25 years (see appendix D).

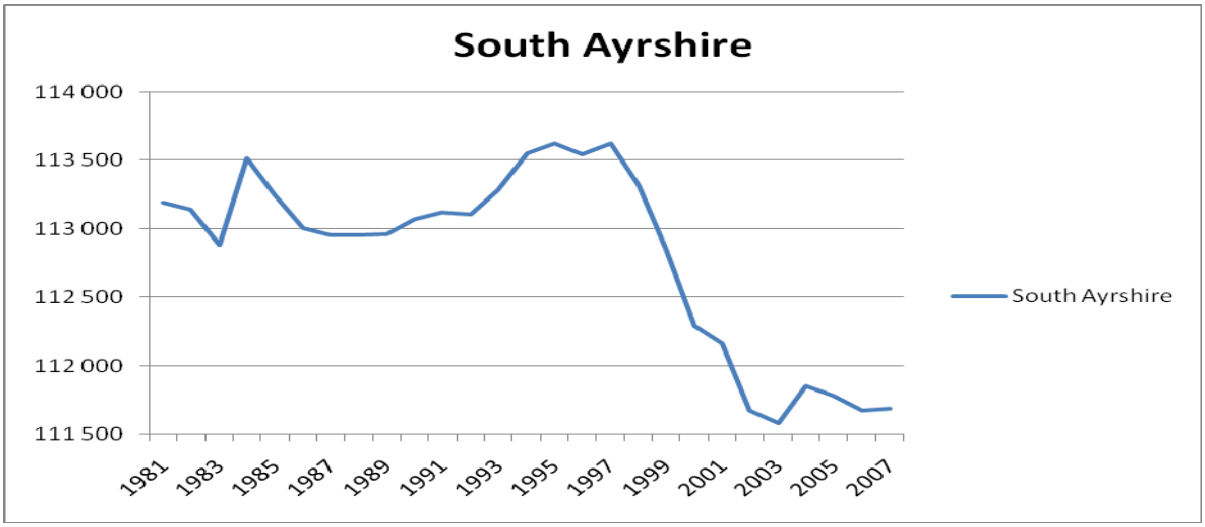


Fig. 5.4: Population growth in South-Ayrshire region, 1981-2007 (GRO Scotland, 2009)

As far as it is this research concerned, the low-cost airline services to GPIA seem to have positively affected migration patterns in the region. Figure 5.5 shows that the last year people mainly moved from within Scotland to South-Ayrshire and relatively a lot moved out to overseas. As a matter in fact, in 2007 nearly 65% of all movements in South-Ayrshire happen to go to or come from within Scotland representing a good quality of life in Scotland and attachment to the Ayrshire region. Over the years inhabitants from South-Ayrshire out-migrated to mainly East Ayrshire (18%), Glasgow City (10%), North-Ayrshire (7.2%), and the City of Edinburgh (3.5%) (see appendix D). The airport may have been a reason too for moving as jobs are created and new opportunities for travel and connections are presented. The presence of an airport also increases the quality of life in that prospect. The presence of Glasgow-Prestwick Airport may also have influenced movement outside Scotland and abroad (35%), showing that the shared majority moved further away. As shown in appendix D the outmigration to outside Scotland has clearly increased the last years. For migration as argued by Button & Vega (2008) air transport is of major influence. In that perspective the air connections in South-Ayrshire have obviously increased the last years and noticeable is also an increase in longer-distance migration to the rest of the UK and abroad. As the theoretical background tells, the improved gateway function of the airport also enhanced possibilities for migration with better access and more connections.

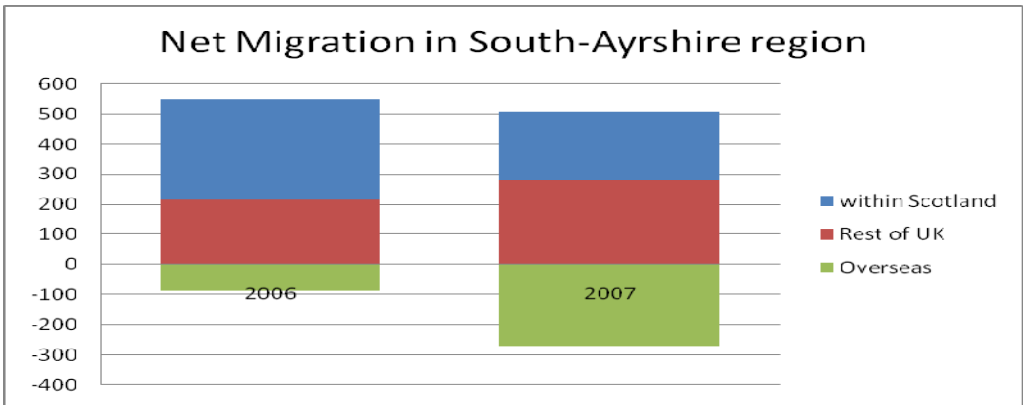


Fig. 5.5: Migration development in South-Ayrshire region, 2006-2007 (GRO Scotland, 2009)

The positive impacts and presence of the growth of the airport due to low-cost services has also not been unknown for the South-Ayrshire region. South-Ayrshire Region has jointed the other (North and East) Ayrshire regions in a joint regional plan: the Ayrshire Joint Structure Plan (2007). It stresses the previously exposed gateway function, for GPIA is appointed one of the five gateway locations in the Ayrshire region and is a key economy drive force for Ayrshire. It is stated that the airfield can be the region's main source of growth and therefore space should be reserved for development of direct related businesses and airport development. This Joint Structure Plan also points out the importance of the Aerospace Park at Prestwick Airport for its key strategic importance for businesses in the region. The importance of good infrastructure and accessibility for tourism is acknowledged too as is stated in transportation and regional development theories and is on the base for city network developments (see chapter 2.2).

Previous studies about Glasgow-Prestwick Airport have indeed shown that the presence of the airport has basically improved connectivity of the region to the rest of Europe. As will be shown in chapter 5.1.4 GPIA has been of great importance for Scotland as well. The airport has brought access to new destinations and business markets and has attracted new investment, tourism and made way for more competition and opportunities for businesses. It has decreased travel time and costs. Glasgow-Prestwick is for both businesses and leisure activities of positive impact (SQW Consulting, 2008).

Picked from a survey carried out by SQW Consulting in 2006 (SQW Consulting & TNS, 2007) are a few examples of respondents that show these visible improvements of connectivity and opportunities for the locality:

- Easy communication for South England, London, Ireland, Europe,
- Flexibility of affordable flights, cost beneficent compared to Glasgow Int. AP,
- Attracts overseas visitors and business relations,
- Convenient for meetings and overseas travels,
- "Easier for our agents and larger customers to get to our premises from abroad",
- Ability to expand business,
- "We know that we have more English and Scandinavian customers than before".

Connectivity

As argued in the theoretical background the service of in particular low-cost airlines has also at Glasgow-Prestwick Airport presented an addition to the air traffic market. Nearing the 60% new demand stated in chapter 4.4, in this case 45% of all trips made is new demand and can be directed to this airport, meaning that when the airport wouldn't have been there those trips were not made by these passengers. As a matter of fact, annually around 120,000 return trips were made exclusively by Ayrshire region residents, representing a 10% share of all trips made. (SQW

Consulting, 2008) This surely shows the improved connectivity for the region and links these results with theoretical arguments that improved infrastructure contribute to the region's amenities.

Following the results of previous findings of the effect air traffic has on increased economic development as described in chapter 2.4 new markets have opened up for the local businesses in South-Ayrshire. Around 10% of the region's businesses make more frequent use of aviation now as their transportation for trips. Of the local businesses over 60% says to use GPIA for business trips (average of 6 trips a year) of which around 20% reports that if Glasgow-Prestwick wouldn't have been there they would have planed fewer trips and from other airports. For only a third of the businesses the airport provides opportunities that enhances the business's performance and is of positive influence to its works. However, 65% says to have been influenced significantly in their business if Glasgow-Prestwick airport was not available for such trips (SQW Consulting, 2008). This may imply that for businesses the presence of low-cost airlines is not of very important value as they are easily willing to fly from other airports with other airlines and higher fares. Thus although professor Behnen (2004) presented that low-cost airlines have attracted a significant amount of passengers whom travel for business reasons, business trips seem in this case in the end less affected by low-cost services and may only provide the new incentive for links to new location that previously were not directly linked.

Economy

Following regional planning concepts, Glasgow-Prestwick Airport is as stated in the Ayrshire Joint Structure Plan of high importance for the regions economic growth. As in line with the concept that an airport creates a certain amount of jobs GPIA directly creates 759 jobs and adds a generous 470 jobs indirectly (SQW Consulting, 2008). The dependence on the one major airline serving the airport is that of all direct jobs more than half of the employment is provided by Ryanair and the rest is related to aviation and air transport business. Giving large pressure for negotiations with the low-cost airline as it supports such a lot of the airport's operations. The impact on the South-Ayrshire economy shows that GPIA stands for around 3,7% off all jobs in the area[2]: according to the study of SQW Consulting Glasgow-Prestwick Airport is in total supporting over 1,733 jobs in the Ayrshire region (SQW Consulting, 2008). This is in not line with the idea that "1M passengers = 1000 jobs" as the passenger number reached 2.4 M, but this will though be justified by the effects for the Scottish economy (see chapter 5.1.4).

That transportation is a vital asset in a region's economic development is once more proven with the reply of half of the businesses that the jobs supported by GPIA would not exist in Ayrshire nor in Scotland without Prestwick airport, this stands for 207 jobs. In addition Ryanair would also not have been in Ayrshire or maybe even Scotland which gives that a total of 455 or 60% of all the employment created by the airport would have been lost if Prestwick airport would not have existed (SQW Consulting, 2008).

Around a quarter of the 80 companies established at and around the airport serve within the transportation, storage and communication sector. The major part of the businesses has been residing at GPIA for more than 10 years. But the prosperity of the airport has also attracted new businesses. The main reason for new businesses moving to the Ayrshire region in the last decade has been that of quality of life and location advantages. For around 25% of all the businesses in the region the airport plays an important role and for 15% the access to the rest of the UK has been regarded as essential for choosing this location (SQW Consulting, 2008). Here the importance of the position of a place in a network as prompted in Castells' theory comes back;

[2] South-Ayrshire has 45,866 working people of which GPIA supports 1700 (GRO Scotland, 2003)

was it not the increased connections of low-cost services then 25% would have rethought to move and 15% would certainly not chose to establish business here.

To clear up the catalytic effect on the region's economic growth, the extra inbound traffic accessing through Prestwick supports £40.5 million of added gross value in Scotland of which £13.2 million in Ayrshire region. On its own the airport is estimated to have been adding a further £48 M gross value into the Ayrshire economy as part of the further £80M it's supporting to Scotland's (SQW Consulting, 2008). The found theoretical conclusion that low-cost served airports have high spin-off effects into the region is obvious in the Glasgow-Prestwick case as geographically, around 80% of the airport's expenditure is made within Ayrshire. But 10% is assumed to be contributed to Glasgow and the further 10% outside Scotland (SQW Consulting, 2008); this of course is subject to the enlarged catchment and 'travel' areas. As presented before low-cost airlines mainly attract tourists who spread out over a rather larger area making that their expenditure also spreads out, like in this case to Glasgow (21% of the visitors) and the Strathclyde region (21%).

The impact of Prestwick Airport is in particularly high for tourism numbers as low-cost airlines are said to be focused on leisure and tourism markets. Around 75% of all visitors to Ayrshire is assumed to be additionally created by GPIA. For the Ayrshire region Glasgow-Prestwick is therefore of major influence, as most visitors would not have passed by in the region on other routes. For the Ayrshire region these numbers spent around £40M that equals 20% of the region's tourism expenditures. Nevertheless, in the end just less than 30% of the local businesses believe that they do benefit from the tourists that the airport brings to Ayrshire (SQW Consulting, 2008). The theoretical background proves the justification of the higher tourism profit from low-cost airlines and complies with results found that the airport is more beneficial for the region than the local community.

5.1.4 National Influence: Scotland

With the increase of passenger numbers and the growing number of flights Glasgow-Prestwick has become of fair interest for the United Kingdom where civil aviation carried 234 million passengers to, from and within the UK in 2008 (CAA UK Airport Statistics, 2008) of which Glasgow-Prestwick shared 2.4 million ranking it 18th place in the UK. However for Scotland, GPIA has been of major importance and ranks 4th in this perspective. In Scotland a total of 53 civilian airports existed in 2003 (UK Department for Transportation, 2003). Airports are owned either by Government or a Local Authority as well as privately or a combination of these, most airports in the UK though are privately owned, like Glasgow-Prestwick Airport which makes it a good base for low-cost operations.

Total passengers (t)	***2007***	***2008***	***Int.08***	***Dom.08***	***Freight.08***
UK	238,800,000	234,200,000	189,000,000	45,200,000	2,511,000
Heathrow	68,066,028	67,054,745	61,344,348	5,562,516	1,397,045
London-Gatwick	35,216,113	34,205,887	30,431,051	3,730,963	107,702
London-Stansted	23,779,697	22,360,364	19,996,947	2,343,428	197,738
Manchester	22,112,625	21,219,195	18,119,230	2,943,719	141,781
Edinburgh	9,047,558	9,006,702	3,711,140	5,281,038	12,418
Glasgow Int.	8,795,727	8,178,891	3,943,139	4,192,121	3,546
Aberdeen	3,412,257	3,290,920	1,470,099	1,820,137	4,006
Glasgow-Prestwick	2,422,332	2,415,755	1,728,020	685,999	22,966

Table 5.2: National airports situation in the UK (source: CAA UK Airport Statistics 2007, 2008)

The growth of low-cost services in Scotland has more or less solely been focused on GPIA (expect the inclusion of Edinburgh lately). Besides being the main supplier of jobs at Glasgow-Prestwick Airport Ryanair offers flights to destinations that cannot directly be reached from other airports in Scotland. This implies that Glasgow-Prestwick holds a specific part of the total passenger traffic in Scotland that could not easily be replaced by other airports and therefore creates a substantial amount of new passenger traffic (SQW Consulting, 2008). Yet, according to the study of SQW Consulting (2008) around 70% of the passengers replied that they would have flown to Scotland anyways if GPIA would not have existed, so still around 30% of the passengers could be accredited to Glasgow-Prestwick. It is especially the central and Northern European routes that have attracted the major additional part of visitors to Scotland. Visitors from for instance Stockholm, Gothenburg and Gerona were less likely to have visited Scotland on another route, representing a new market that opened up due to low-cost services.

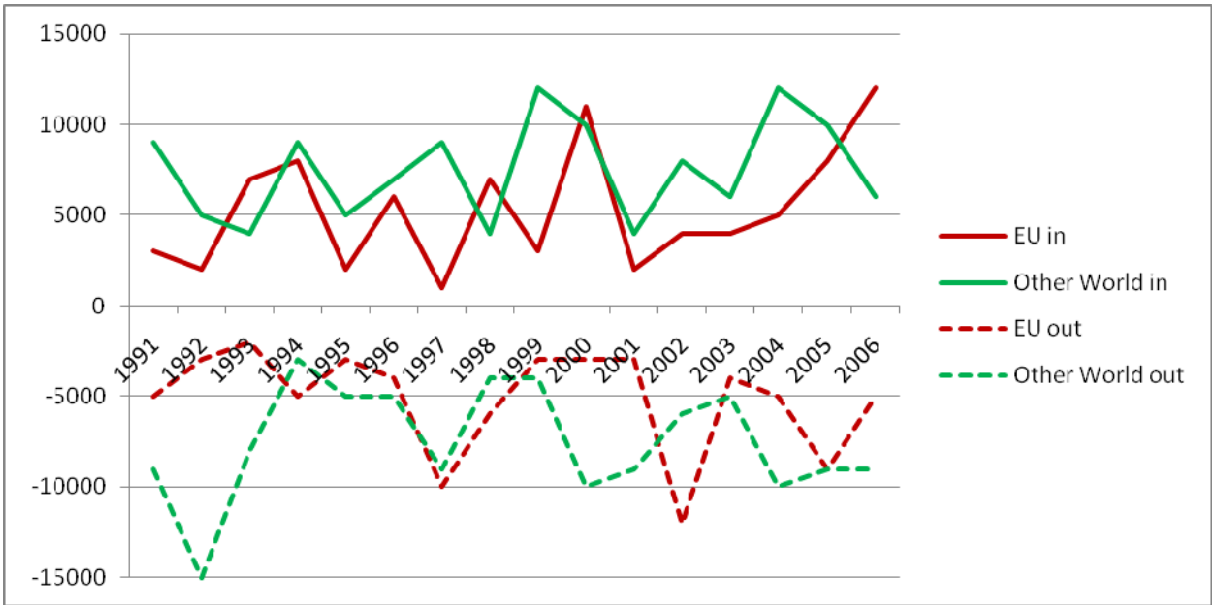


Fig. 5.6: Migration abroad in Scotland, 1991-2006 (GRO Scotland, 2009)

As presented in chapter 4 low-cost airlines have developed their networks fast in the recently years. This increase can also be seen in GPIA's destination development where the expansion of destinations is clearly happening after 2003 and 2005 (see appendix C). As similar to the notion that increased opportunities for travel stimulate migration also Scottish migration patterns have seen increased EU immigration (figure 5.6).

Figure 5.6 shows considerably inconsistent migration patterns in Scotland over the last two decades. The main interesting point, besides that both immigration from the EU and the rest of the world seem to peak in 1999-2000, is the changing pattern of European immigration flows: it is obvious to notice the steady increase of inflow from Europe from 2002 on. It is an interesting development when linked to the evolvement of low-cost services in Europe which, as presented in chapter 4, saw a substantial growth from 2000-2003 on. The explosive increase in routes in 2003 is also seen in induced travel and migration demands. Also, Chief Planner Graeme Purves (2009) confirms the fact that low-cost services have been of particular impact for Scotland. Previously Scotland was not directly linked to the European mainland at all but with the arrival of direct flights there are more and easier opportunities for travelling. Immigration to Scotland has in particular also been subject to the induced demand and connections of low-cost services as specified by Graeme Purves (2009). But undeniable is the role of EU policies. The free-movement policies stimulate migration demands at the same time as low-cost services do. The

two go rather hand-in-hand as presented in the theoretical background; EU policies make way for low-cost airlines' development and low-cost airlines in its turn stimulate migration too.

The importance of Glasgow-Prestwick Airport, as a gateway into Scotland is then also expressed in the Air Transport White Paper of the Department for Transport which provides a strategic framework, policy directions and statements for planning developments on and around airports. The White Paper has a special section on Scotland where it expresses the importance of GPIA and affirms its significant growth in the last years. The White Paper sees the need for development of the airport's terminal and supporting facilities as well as improved train connections to Central Glasgow. It states that GPIA will play an important role in freight handling and passenger travel and will contribute notably to the development of West Scotland. Moreover, GPIA is appointed to be the "centre of excellence" for aerospace maintenance and overhaul operations (UK Department for Transportation, 2003). This shows also the affirmation that low-cost airports are often trying to focus on several businesses besides the major serving low-cost airline. The Scottish Government had seen some pressure from local business groups around in South-Ayrshire to increase the status of Glasgow-Prestwick Airport (Graeme Purves, 2009), showing the improved interest of local elites in the development of the transportation node as described in networking theories. Glasgow-Prestwick Airport also contributes to the Scottish Government's view of equal and more spread development in Scotland (Graeme Purves, 2009). Though, their main focus is on the important cities policies point out the importance of spreading economical benefits for which Prestwick Airport is clearly an example of a peripheral town seeing increased development of the much better use of the infrastructure provided by the low-cost airport, as in line with the concepts presented in chapter 2.5.

Economy

Like the theoretical background explains (chapter 2), GPIA shows an example of how large infrastructure can support jobs over a wide region. Including 1,700 jobs in the Ayrshire region, Glasgow-Prestwick is in total supporting over 2,900 jobs in Scotland (SQW Consulting, 2008). Which is in line with the idea that "1M passengers = 1000 jobs" as passenger numbers reach 2.4 million. So with that the spin-off effect is even larger, this may be a cause of Prestwick Airport being one of the few airports and in particular being more or less the only large low-cost airport in Scotland. For the Scottish job market it means that 0.13 per cent is supported by the low-cost airport[3].

The indirect effect of Prestwick Airport comes from the around 600,000 visitors travelling yearly to Scotland via Prestwick: they spent around £173 million that is 4% of the total Scottish tourism branch (SQW Consulting, 2008). Here the increased influence of the airport for the greater region is obvious. What is more is, that besides the effects on tourism and outwards influence, the offer of cheaper flights and new destinations is assumed to have had an effect on the locals and Scottish passengers that have increasing numbers of usage of the Prestwick airport. Compared to 2003, in 2004 double the amount of trips by Scottish residents were made from GPIA. More often Scots have taken the opportunity to make a trip and it seems that the more southern destinations are favoured by the Scots (SQW Consulting, 2008). As not is noted clearly in theories is that this effect of large transportation systems may increasingly have extracted expenditure from Scotland as the expenditure on those trips has been put in somewhere else but Scotland and may have reduced local income and employment (SQW Consulting, 2008). Chief Executive of GPIA, Mark Rodwell (2009) explained on the other hand that the outbound traffic provides the most profit for the airport as they are the ones that use the parking spaces and retail

[3] Scotland has a working force of 2,164,026 people of which GPIA supports 2900 (GRO Scotland, 2003)

facilities at the airport. As shown in chapter 2.1 it are these local serves the airport has to extract its profits from.

Scotland itself has done a lot to attract more direct links with the European continent, it set up a fund to attract airliners to serve this part of the UK more. The so called Scotland Air Route Development Fund was set up in 2002 as a corporation between the Scottish Government, Scottish Enterprises, and the tourism office to attract more business flights and tourism (Scottish Government, 2009) This would increase direct international connectivity instead of redirection through an international UK hubs (e.g. Heathrow) and increase all year round visitors access. Two routes from Prestwick Airport have been set up with support of this funding; Ryanair's routes to Wraclow and Riga (Cameron, 2009). Though, this funding was stopped in 2007 as it was found illegal by the EU Committee (Mark Rodwell, 2009). The power of low-cost airlines is much noticeable as it is in fact the region asking for service and not the airline trying to market itself. Here the city network structure is also clear as it are the airlines establishing the links, not the cities which only provide. With their focus on profit and money-spinning business the low-cost branch is a frequent co-operator in these kinds of marketing deals, showing once more the enhanced marketing aspects by airline business. As Iain Cameron (2009), of the Scottish Government's Department for Transportation, also mentioned that the Scottish Government has no formal contacts with the airlines and private airports, but consults them regularly. The policies are stimulating the role of airlines and airports for the economic and social development of Scotland but they can choose how to operate and contribute in a way they see fit. This explains part of the power of low-cost airlines as they can basically do whatever they like to.

5.1.5 Regional differences: Prestwick vs Glasgow

As often is the case with low-cost served airport they are operating in a region which has at least one other major international airport and sometimes also other secondary airports. The City of Glasgow has got two airports named after it: its own Glasgow International Airport (former Glasgow Abbotsinch Airport) which is located about 10km west of the city centre, and low-cost served Glasgow-Prestwick Int. Airport.

Though Glasgow-Prestwick Airport is not located within the boundaries of the City of Glasgow, it still carries the name of this city and a major part of its passengers come from Glasgow or head towards the city as presented in chapter 5.1.1. Until 1996 the region west Scotland was named Strathclyde region, Glasgow was also part of that. After 1996 the region was divided into several smaller unitary regions and the City of Glasgow received its own unitary status. The Glasgow City Council acts as a local government authority and represents its own county within the former Strathclyde region in Scotland. Glasgow City is located in the Central Belt of Scotland and has good connections to other major cities in Scotland as well as the whole UK. With a population of just over 580,000 inhabitants Glasgow is Scotland's largest city. Yet, Glasgow has been declining in terms of population in the last 50 years (see figure 5.7). Population has been growing at a negative rate of 17% as a result of suburbanisation out of the city and increased authorial area. The city was left behind in a deprived and sombre state of despair. It stabilized again around the year 2000 when foreign labour was attracted and immigration became an important factor for Glasgow's population growth (Glasgow City Council, 2009). Both in South-Ayrshire region and Glasgow City population numbers dropped, but even compared to the size of these two authority regions it seems that population decline in South-Ayrshire has not been as strong as in Glasgow. Recently, Glasgow has received positive overseas migration numbers, even above Scotland's average. The overseas immigration especially increased from 2004, which most probably had to with the entrance of new EU-member states. But also at the same time the increasing low-cost services, also from new-member states, could have contributed to a higher increase.

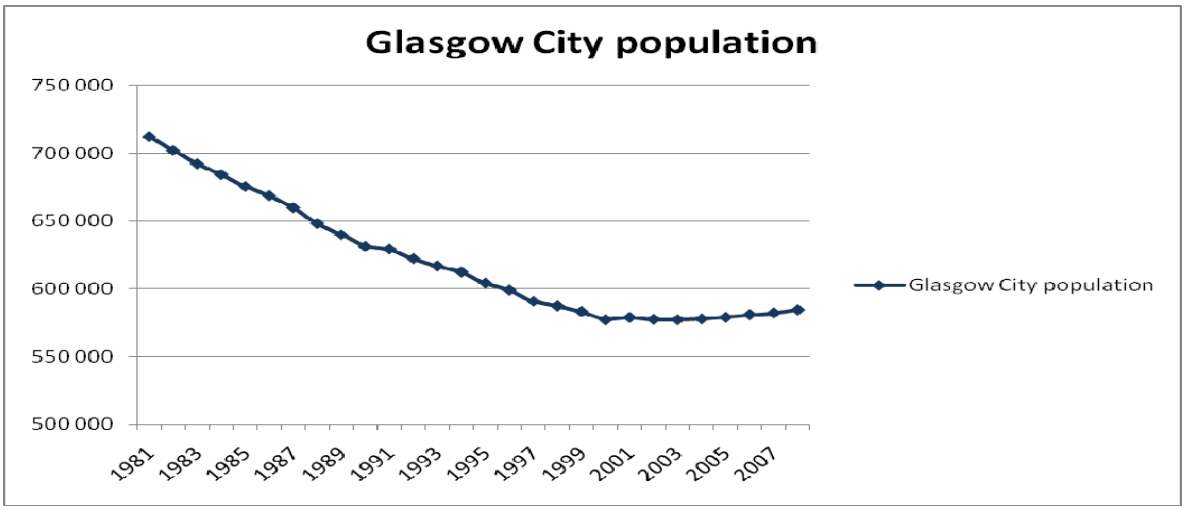


Fig. 5.7: Population growth in Glasgow City, 1981-2007 (Glasgow City statistics, 2009)

In the light of the growing importance of Glasgow and Clyde Valley Region towards its surrounding regions the City of Glasgow affirms the importance of good external connections with Ayrshire (Glasgow and the Clyde Valley Structure Plan Joint Committee, 2006). Besides, the City of Glasgow supports the existence of Glasgow-Prestwick, however the main focus has been directed to their own International airport. (Glasgow City Council, 2009). The Glasgow City Marketing Bureau is said be active in communications with Ryanair. As a large share of visitors via Prestwick do have Glasgow as a final destination GPIA is not only an advantage for the Ayrshire region but for the greater region. It seems like a good supplement for Glasgow City besides their main international airport.

Glasgow International Airport offers a wider range of destinations and is more centrally located within Scotland. Both airports also have different profiles; GPIA focuses on low-cost while Glasgow Int. keeps up with business and long haul. The share of low-cost services between the two airports on the route Dublin-Glasgow showed clearly that Glasgow-Prestwick Airport had the stronger arm with 66% (Barret, 2004). So, there is not too much competition between the two, though both are trying to attract low-cost services. But in fact, competition stays more on the level of destination and attraction of passengers rather than for low-cost airlines; Glasgow Int. took on board EasyJet while Glasgow-Prestwick has Ryanair. Nevertheless, the interesting point of difference between the two airports is also that a lot of airlines that had flown on GPIA had relocated later on to Glasgow International. It could have been the aggressive attitude of Ryanair and the strong relationship between airport and airline that have made others to move (see appendix C).

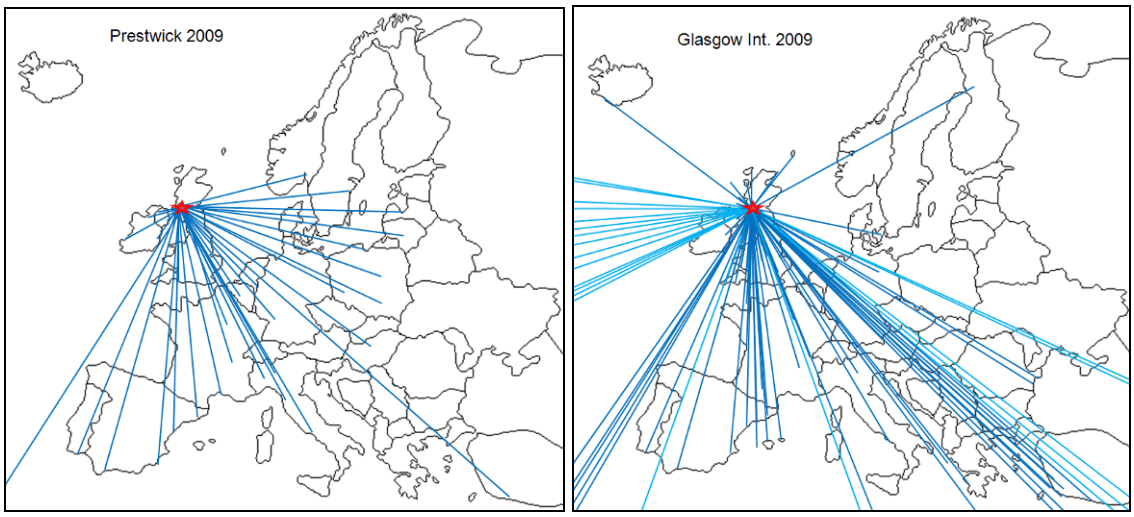


Fig. 5.8: Network connections by flights: Glasgow-Prestwick VS Glasgow Int.

According to network configurations shown in figure 5.8, Glasgow-Prestwick's services only link to nodes within the EU, but are more spread out over Europe. As on the other hand, Glasgow Int. routes seem to be more bundled to certain European regions. Nevertheless, Glasgow Int. offers long haul flights to USA, Middle East and Far East and links to non-EU members. Showing the different profiles both airports focus on.
As could already be observed in table 5.2, GPIA shows an exceptionally low number of domestic flights compared to the others. The difference shows that Glasgow Int. has a lot more connection within the UK, which is a result of the low-cost airlines' focus on tourism destinations. Glasgow-Prestwick on the other hand, offers more flights to Eastern Europe, which is mainly a fact of the recent focus of low-cost airlines (in particularly Ryanair) to Eastern Europe. It seems like a rather complementary structure in terms of destinations and shows the creation of a totally new network by low-cost airlines, as illustrated in chapter 4. There are only few cities served by either of the airports. For instance: London, Dublin, Paris and Barcelona but the difference is in airports: Glasgow Int. links to international airports versus the low-cost airports served from Glasgow-Prestwick as are low-cost airlines expect to do. Continuously, the major tourist destinations like Malaga, Tenerife, Mallorca, and Dalaman are served on the same airports.

The complementary structure and the power of the low-cost model becomes more clear in this case, with a recent decision (July 2009) of Ryanair moving a few routes from Prestwick to Edinburgh. As Chief Executive of GPIA, Mark Rodwell (2009) explains, the new focus of Ryanair towards Prestwick will include mostly outbound flights and the inbound; tourism flights may relocate to Edinburgh. Prestwick Airport had not much chance to argue against Ryanair as it is mostly depended on them, especially in these years of economic recession. This however, will make in fact a good complementary structure, in complement to Glasgow International.

Even so, in the Ayrshire Joint Structure Plan (2006) the Ayrshire regions see the two airports more as complementary in the Glasgow Region and surely sees the opportunity to make a wholly complementary air service system between Glasgow, Prestwick and Edinburgh, as also affirmed by Graeme Purves of the Scottish Government. As Mark Rodwell explained the feasibility of the complementary structure, there is only 10% overlap in catchment area of Prestwick compared to Edinburgh. This aligns with theories that show that the low-cost airlines not mainly 'steal' passengers from other airports but mostly attract new users.

5.2 Stockholm-Skavsta Airport

The airport of Stockholm-Skavsta will provide a detailed case-study for this research on how the growth of a small airport affects planning related issues in the region of Nyköping. As Northern Europe became fully integrated in the low-cost airline network from 2002 on, Stockholm-Skavsta Airport represents a basic case of one of Ryanair's bases in Northern Europe.

5.2.1 Introduction

Nowadays Sweden's third largest airport, Stockholm-Skavsta is situated 90 kilometers south of the Swedish capital, proving once more that location advantages are not a focus in low-cost airline operations. As known, low-cost airlines are oriented towards secondary privately owned airports and so is Skavsta Airport; it is owned by the Spanish ACDL group however Nyköping Municipality still has kept a 9.9% share. Here also the involvement of government authorities is demonstrated. The airport has a longer history and was established in 1940 as a military airbase for the Swedish Air Force. Since 1984 it was turned into a civilian airport from where Ryanair started the first international flights to London in 1997 (Stockholm-Skavsta Airport, 2009). After a large reconstruction in 1998 of terminal buildings and runways the main terminal has been expanded in several stages. The nowadays situation supposes the airport to be able to handle a capacity of up to 3,5M passengers a year of which Skavsta Airport has come really close already.
In fact, according to the website of architecture office Carlstedt Arkitekter AB (2009) there are already plans for a second terminal that will be an extension of the current one.

From 2003 the airport has been one of Ryanair's main operation bases in Europe and especially for Scandinavia where Stockholm-Skavsta is the only base of Ryanair. Skavsta Airport has been served by several other airlines of which include WizzAir with flights to Eastern Europe, summer and winter charter flights of Fritidsresor (TUI), Apollo and Ving/My Travel, as well as a domestic regional airline Gotlandsflyg (Stockholm-Skavsta Airport, 2009). Also here at Skavsta Airport a small regional airline service is available besides the low-cost services. Besides passengers the airport also handles cargo flights, but not at a high rate. Again a combination of different services is noticeable besides the main "Ryanair business".

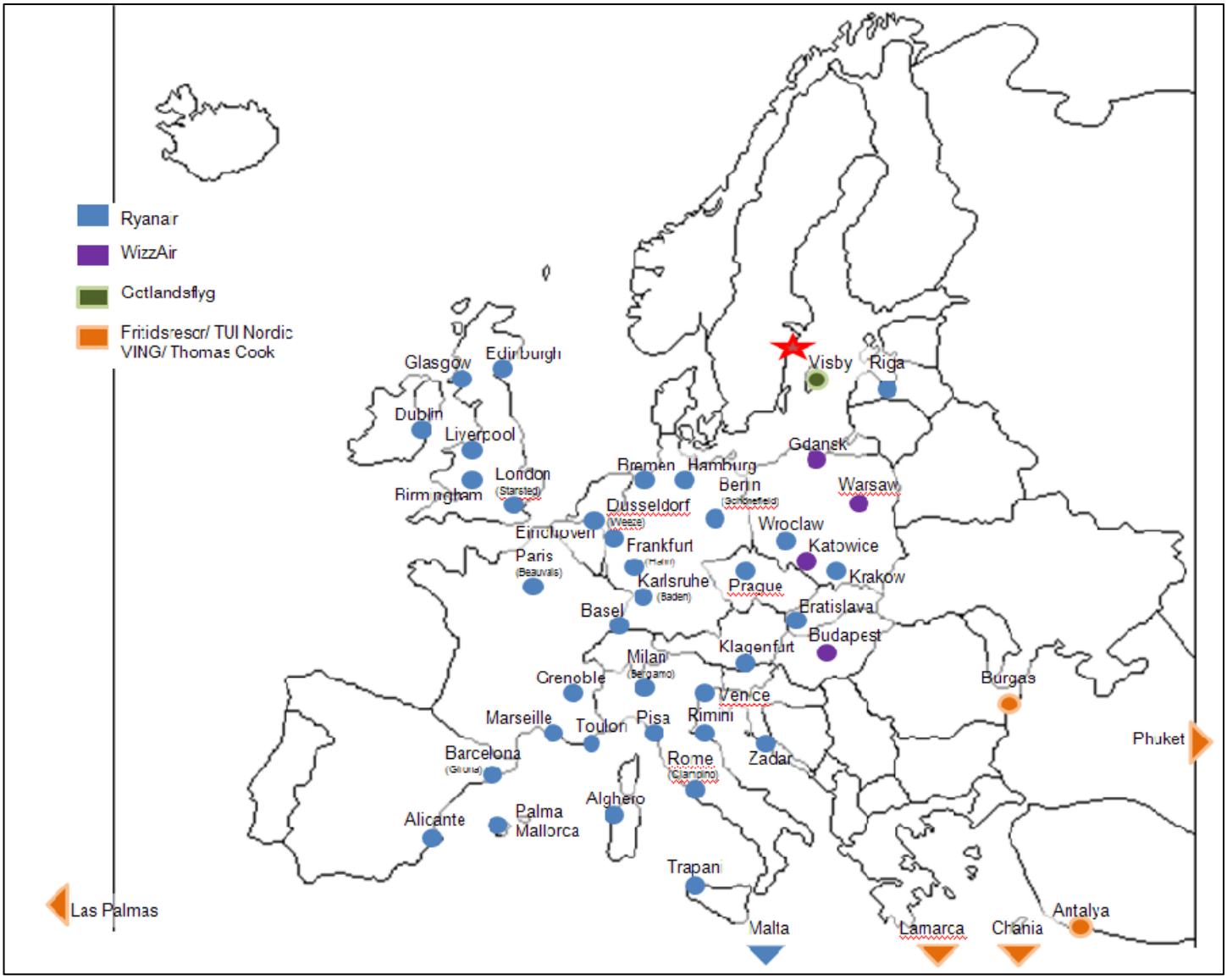


Fig. 5.9: Stockholm-Skavsta Destinations map, 2009 Source: www.skavsta.se (2009)

As one of Ryanair's hubs Skavsta Airport holds 36 Ryanair routes and has five regular connections by WizzAir and Gotlansflyg. Topped by six seasonal routes Stockholm-Skavsta links to 47 destinations worldwide, as seen in figure 5.9.

Also Skavsta Airport has developed its route network rigorously over the last decade (see appendix B). Its integration into the low-cost network from 2002 on and the appointment of Ryanair base in 2003 sees obvious increases in the number of routes; in 2003 there were 9 routes operated but 2005 already sees 20 routes (see figure 5.10). The development followed that of the low-cost networks in Europe as connections first link mostly to Central and South Europe until 2003-2005. After the entrance of new EU-members in 2004 low-cost airlines followed by orientation to East, the number of routes more than double in the following two years and tripled in three years.

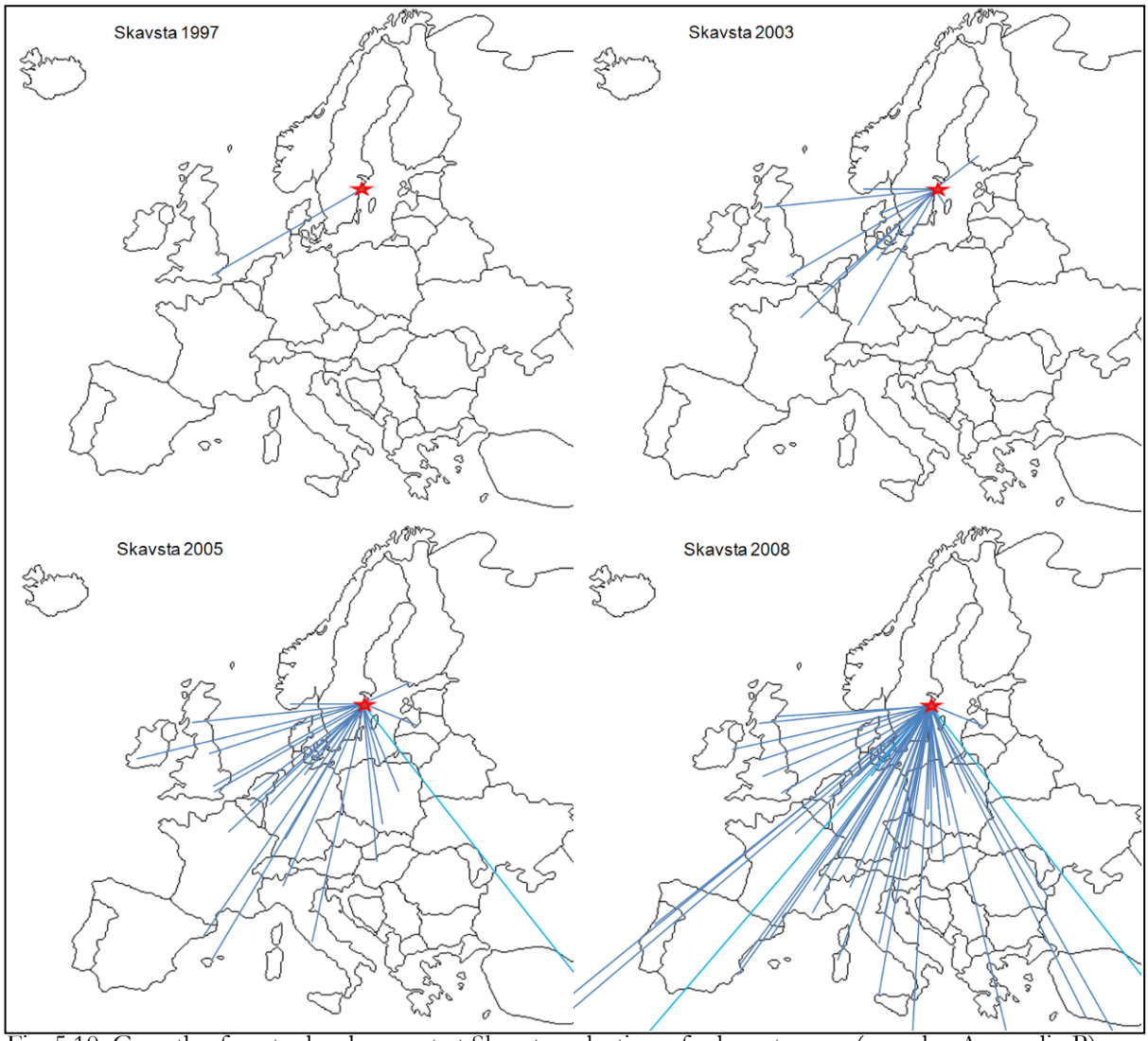


Fig. 5.10: Growth of route development at Skavsta, selection of relevant years. (see also Appendix B)

5.2.2 Passengers

A look upon the passengers using Stockholm-Skavsta Airport provides an analysis of the travel behaviour from and to this airport. Stockholm-Skavsta felt the international increase of air travel demand as the airport flourished: the airport received nearly 2.5 million passengers in the year 2008 which was a 25% increase of the previous year's number. Figure 5.11 shows the impressive passenger growth of Skavsta in the recent years. In 5 years time the airport became the low-cost airport in Sweden; thanks to Ryanair Skavsta could realize this impressive growth, in particular with relation to the acquired status of Ryanair base in 2003 that raised numbers fast Even though economy slowed down and travel demands decreased world-wide (see chapter 2.4) but Skavsta is still is gong strong: still growing.

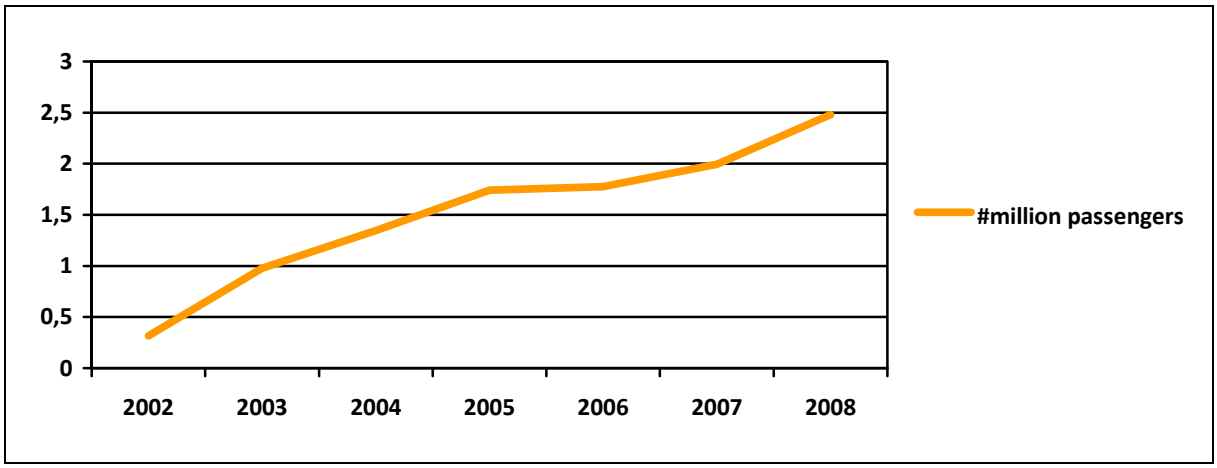


Fig. 5.11: Passengers growth at Stockholm-Skavsta in recent years Source: (SIKA Statistik, 2009)

Statistics showed that around 2/3 of all passengers using Skavsta Airport are Swedish residents. From these passengers 35% was from the Stockholm region (Stockholms län).
Three other regions also shared a 15% each in passengers' origin: the local region Södermanland, Östergötland and Central Sweden (see table 5.3). This relates to theoretical results that the catchment areas of low-cost served airports are much extended. In this case as well: a small airport receiving a large number of passengers that take the larger distances for good to reach to the airport. Also the capital city Stockholm seems to be the main retraction point for Skavsta Airport as well as the main destination for most passengers. From the foreign travelers is assumed that 50% goes to the Stockholm region (Nyköping Kommun, 2009). All in all, it means that about 43% of all passengers using Skavsta travel to or from the Stockholm region showing the comprehensive catchment and 'travel' area of Skavsta's passengers. Obvious here, is as well that the destinations of the inbound tourists is mainly further away from Skavsta and just 16% realizes that there is also a town next to the airport to be discovered. However, compared to three years ago when only 3% of Skavsta's passengers visited Nyköping, which means an impressive growth has been achieved (Nyköping Kommun, 2009). The catchment area does also show a same pattern as the spread of population density in the region. Showing that the focus of low-cost airline passengers is mainly on larger cities and more well-known (tourist) destinations. The airport's catchment area also verifies the enhancement of the gateway function of Skavsta for the region.

Catchment area of Stockholm-Skavsta

Swedish passengers:		*Inbound visitors:*	
Stockholm region	35%	Stockholms län	50%
Sörmland	18%	Sörmland (incl. Nyköping)	23%
Central Sweden	16%	Nyköping Kommun	16%
Östergötland	15%	Svealand	11
Southern Sweden	10%	Götaland	10%
Northern Sweden	4%	Norrland	3%
Uppland	2%	Other	3%

Table 5.3: source: Regionförbundet Sörmland (2008) & Nyköping Kommun (2009)

5.2.3 The impact of a nearby low-cost airport

Skavsta Airport lies within the municipal area of Nyköping (Nyköping Kommun), 7 km away from Nyköping city. The City of Nyköping is located rather strategically along the highway E4 that runs from Stockholm in the east of Sweden to Göteborg in the west. The city is connected

to the national railway system track Göteborg-Stockholm. And then there is of course the airport Stockholm-Skavsta which gives easy international access.
Nyköping Municipality consists of several towns and was originally formed in 1971 by combining a few municipalities in the area. It was split up again in three in 1992, delivering the nowadays situation. The City of Nyköping lies within in the county of Södermanland, Sweden's 12th largest in population (of the 21 regions) (SCB, 2009). The City of Nyköping has never ranked high in economic statistics; even though the establishment of some new businesses from 2003 on in the municipality it has decreased slightly in economic terms (Gäfvert, 2007). This is against the idea that Skavsta Airport would give a lot of benefits to the city. It seems that the theoretical idea of much benefit from larger infrastructure projects does not hold in this case.

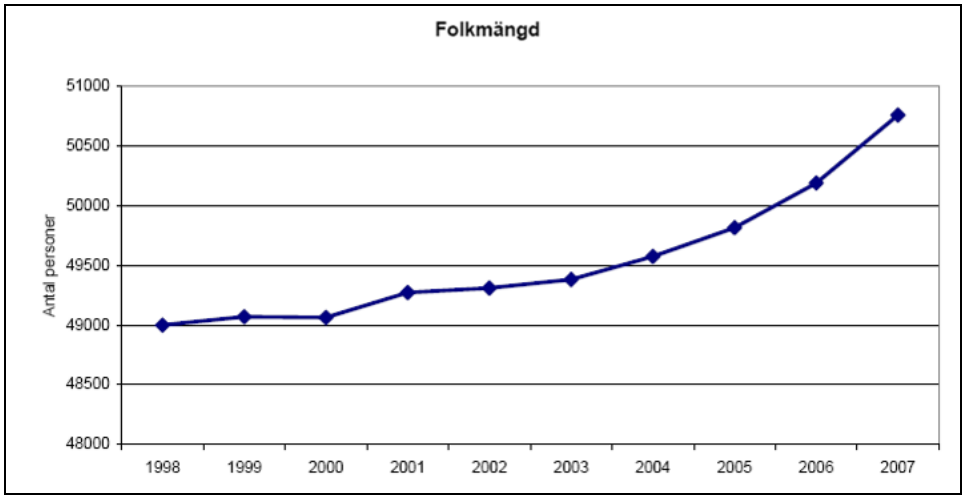


Fig. 5.12: Population growth in Nyköping 1998-2007 (from Nyköping Kommun, 2008)

The municipality accommodates nearly 51,000 inhabitants of which just over 30,000 live in Nyköping City it being a middle size community in Sweden (SCB, 2009). From 1998 to 2007 the city's population grew with 3,5% from 49,000 inhabitants to 50,760 (see figure 5.12)
Also in-migration increased steadily from 1998 to 2007: 25%. Most migrants into Nyköping come from the nearby region and Stockholm region; the two largest municipalities people moved from to Nyköping were Oxelösund and Stockholm City (Nyköping Kommun, 2008). The increased amount of in-migrants from Stockholm may be a result of the aggressive marketing campaign Nyköping runs as 'being the alternative residence besides Stockholm'. People moving out from Nyköping choose in general a likewise pattern: to the region or Stockholm. Since the last years however, the share of people moving in from abroad to Nyköping has increased significantly (Nyköping Kommun, 2008), see figure 5.13. As in line with empirical findings (chapter 2.5) that low-cost airlines have stimulated migration, the increase in migration is parallel to the years of increased routes from Skavsta Airport. 2005 and 2006 were years in which the number of routes doubled twice, (see appendix B) similar to the more positive immigration to Nyköping.

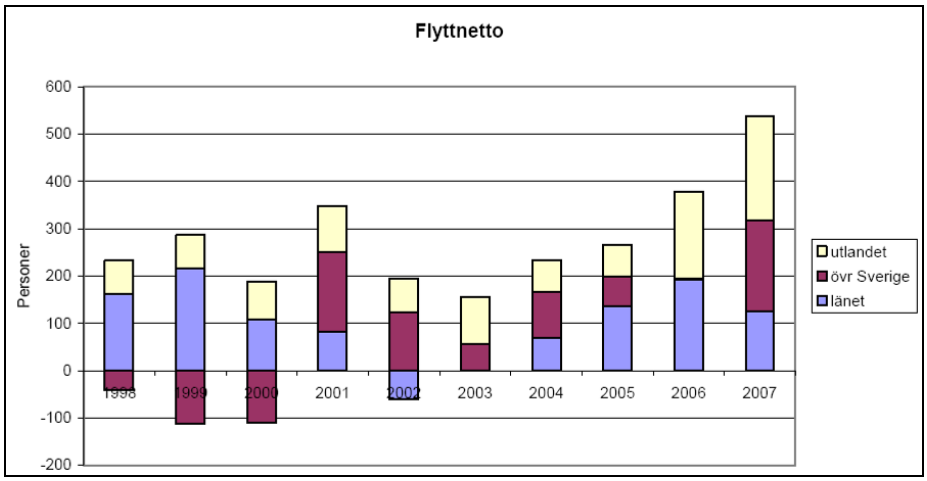


Fig. 5.13: Net migration in Nyköping Municipality, 1998-2007 (from Nyköping Kommun, 2008)

Furthermore, the enhanced opportunities for travelling abroad, as described in chapter 2.5, can be seen in figure 5.14. When looking at the development of the migration patterns in the last 10 years it seems the migration to and from other Nordic countries is rather stable and hovers around a 5 people moving out from Nyköping every year. The migration between European and other countries in the world has been overall rather positive too. Interesting detail is to be observed in particular when looking at the immigration (see figure 5.14). Although, there can be observed a few peaks in either of them in the early and late '90s, immigration from outside Scandinavia has significantly increased from 2003 on. Mostly immigration from Europe boosted again that same year since its decline in 1993. After integration of Scandinavia in the low-cost network (chapter 4) 2003 was also the year Ryanair added Skavsta as a base to its network, introducing significantly more routes at the airport. The European destinations have expanded fastly from the year 2003 on (appendix B) implying an enhanced effect of low-cost serves on immigration patterns. Which was also proven by Button & Vega (2008) who state that the lower costs increased opprtunities and demand for migrations. Nevertheless, 2004 was also the year a large number of new members were added to the EU, which caused more migration too. But as could be seen in Prestwick as well, the two go hand-in-hand: opportunities of movement and services of transportation.

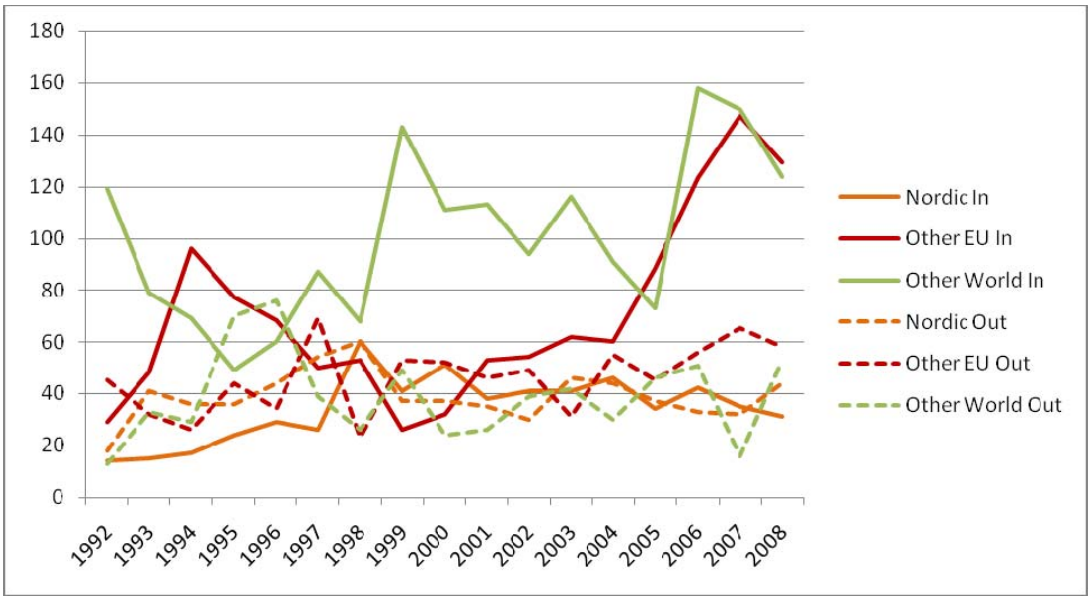


Fig. 5.14: Migration abroad in Nyköping Kommun 1992-2008 (dereived from Nyköping Kommun, 2007)

Economy

According to a study published by CMA Research AB (2007) Skavsta Airport is seen as one of the most important growth engines of its region representing the relation of economy and transportation, which supports Banister's (1995) reasoning that airports are the most attractive place for investment (see chapter 2.4). Nowadays Skavsta airport is one of the bigger employers in the municipality regardless of not even being among the top 15 ten years ago (Gäfvert, 2007). The airport accommodates a business park and houses up to around 36 companies, good for nearly 660 employees. There is a mixed business market among the businesses at Skavsta but the common sector is logistics and transport (CMA Research AB, 2007). The largest sector is within the airport service sector (231employees), second is within the Defence sector (106), Ryanair has around 80 people employed at Skavsta (Nilsson, 2004). Although Ryanair is the main operator at the airport Skavsta shows that besides the low-cost services also other businesses are taken on board in the airports operations. In total Skavsta Airport provides employment for 1052 jobs and 300 extra indirect jobs (Gäfvert, 2007). This in total results in that Skavsta Airport provides 5.8% of all Nyköping's working force with employment[4]. However, the theoretical rule of "1M passengers = 1000 jobs" seems not to apply for Skavsta; having 2,5 MPPA but providing only 1300 jobs. Even on the regional level the impacts are less than to be expected, see chapter 5.2.5.

Looking at the opportunities of Skavsta Airport's attraction for businesses and economy it is more than half of the companies that value the airport as a main reason why they established business at Skavsta Airport. For one third the access to runways and airplanes has been important; the presence of the airport is needed for some companies or important for good business. Around 25% were attracted by Ryanair and its costumers at Skavsta, proving the link Castells provided (chapter 2.2), that more connections makes more attractiveness for establishment around an airport. Another 30% says the low rentals and space available attracted them to move to Skavsta (CMA Research AB, 2007). Although it seems that the proximity of Skavsta Airport and Ryanair services are an important factor for businesses, Gäfvert argues that it cannot be stated most companies were dependent on Skavsta's development as they were already there before Skavsta really bloomed because of Ryanair (Gäfvert, 2007). However, most companies and in particularly new service branches and new airline/airport services have settled at Skavsta after 2003: eight out of the eleven companies in service industry. Moreover, of all the 36 companies 40% settled business at Skavsta Airport after 2001 when the airport started to flourish (CMA Research AB, 2007). Proving the increased transportation opportunities attracted more businesses, though naturally these are mostly related to the aviation market.

Stockholm-Skavsta did then not showing any real new investments as a result of the arrival of Ryanair but new branches popped up as a possible cause of the airport's (potential) growth. As in line with premises of chapter 2 the airport stimulated establishments of new companies, but the settlement of businesses in not directly related with the growth of low-cost airlines rather with the growth of the airport itself. As after the year 2003 when Ryanair started operating from Stockholm-Skavsta at a large scale, not much new businesses have come to the airport.

In the first years Ryanair started operating a lot of praise was given to the spin-off effects of the airport. As one would extract from theories, indeed the development should create a lot of more new jobs in the region and attract more tourists, providing the city and region with more income. The regional newspaper, Sörmlands Nyheter (2002), reported even that the municipality could enjoy an increase of 60M SEK in tax income, 1800 new inhabitants (2500 total in the region) and 1000 new jobs every year. Their main point was that this would put a lot of pressure on the school, health-care and housing system of the city. Now after 10 years of low-cost services at the

[4] Nyköping Kommun has a working force of 23.041 people of which Skavsta supports 1352 (SCB, 2009)

airport, it seems Skavsta Airport is still not fully credited for the expected tourism flows forecasted. Actually, Skavsta has not performed according to those expectations, as Ann-Margreth Karlsson, from Nyköping Kommun, answers to Sverige Radio (2009-05-04): there have not been any large investments or new settlements from businesses yet. The threshold is ought to be the 2,5 million passengers after which bigger changes in business establishments can be seen, said Ann-Margreth Karlsson in the article. As described before, Skavsta Airport did attract some business but this cannot be lined up with the growth of low-cost services. In that way the benefits of Skavsta seem indeed slightly disappointing.

Lately, the only clear direct new private development is the establishment of a new hotel at the airport last year. About 100 meters away from the terminal, 'Connect Hotel' is available for travelers at Skavsta. According to Skavsta's website (2009) the new hotel seems to be of good use for passengers.
On the other hand, there was the one example in 2004 when there was speculation that the Swedish building giant Skanska would solely invest in a new railway to Skavsta, connecting from the north (Nyköping) (Sverige Radio, 2004). This project however, never made it to realization but shows the willingness of private companies to invest in the development of Skavsta Airport as stipulated in chapter 2.4.

So although, private investments have stayed away, the increased importance of Skavsta Airport as a major transportation hub has attracted national transport development. A new railway track, 'Götalandsbanan', has been planned to be constructed between Stockholm and Göteborg. This track will be able to be used by high speed trains and provide a fast connection between these cities. Part of this track, 150km long, will be the so called 'Ostlänken' from Stockholm to Linköping. The railway will pass by Skavsta Airport and there is an option for having one of its major stops at Skavsta Airport too (Henrik Haugness, 2009). This fast connection will reduce the travel time from Stockholm to Nyköping to 40 minutes, improving international accessibility with the Skavsta station (Railize Int. AB, 2009). The combination of railway and airport may become a bigger magnet for business settlements as argued by Banister (1995): travel times will be reduced making the airport easier accessible which may be an incentive for companies to move and take advantage of the airport's opportunities.

Even though the private sector does not seem to see great opportunities at the airport the governments see the prosperity. In 2005 the municipality accepted the 'Master Plan Skavsta', which represents guidelines and development opportunities in short and long term perspective for one of Nyköping's most important development areas. The Master Plan provides guidelines for railway development, air service development, and business development (Nyköping Kommun, 2005). The Master Plan aims at securing the airport's land area, place for future air related and service businesses and other jobs, track reservation for the new Ostlänken railway track, reservations for other new roads and infrastructure around the airport and to secure natural values in the area (Nyköping Kommun, 2005). The possibility is created to increase maximum passenger amount to 8 or 10M a year with around 200,000 flight movements. This also includes less tight environment and noise restrictions. For realization of all this, taxiways have to be improved and the terminal and parking spaces will be expanded as well as connected to a new railway station. The investment in infrastructure however comes only after 10 years of low-cost services and 5 years of Ryanair base status. The improved accessibility seems therefore to be of importance in order to accommodate further growth and shows again that the location of a low-cost served airport is rather unimportant for its operations, but an airport need to develop if it wants to grow.

In compliance with the Master Plan Skavsta, Nyköping Municipality is aggressively marketing its city and Skavsta Airport is without a doubt part that. The marketing strategy of the municipality has taken a new approach since the last years with the 'Bo I Nyköping'-campaign. In this campaign Nyköping tries to get more notion in the Greater Stockholm region and is profiling itself as a more than good alternative besides Stockholm. The low-cost services have surely provided a new marketing incentive and opportunity for Nyköping City, Skavsta Airport now plays an important role as the close by airport provides easy weekend- and city trips for a more enjoyable life.

In total the municipality invested over 70 MSEK in marketing deals with the low-cost airline company Ryanair. The main reason was said to be the 1,000 jobs which should be created with every 1 million passenger (Sverige Radio, 2009-05-07), Skavsta Airport however has not seen these figures being applied yet.

In March 2003 the City of Nyköping closed a marketing deal with Ryanair of 55 MSEK. This deal has been discussed a lot in public and was even brought to several courts, including the EU committee. The deal included a hyperlink to the municipality on Ryanair's website and advertising space for Nyköping at Ryanair's aircrafts based at Skavsta for the period of 10 years (Sörmlands Nyheter, 2003-3-26).

Secondly, in the end of 2007 a second contract was signed for an advertisement deal with Ryanair during 2 years, equaling the costs 15 MSEK (Sörmlands Nyheter, 2007) with an option for prolongation of two years at the same price. The deal included the 'buy' of one of Ryanair's aircraft, flying throughout Europe, in order to wholly advertise it for the city (see figure 5.15). Nyköping Kommun obviously sees a large benefit of the low-cost airline for promoting its city to the outside world.

As in line with theories, the collaboration between the City of Nyköping and Ryanair by means of the marketing deals, has led to a lot of initiatives and new ways of expressing city marketing for Nyköping. For instance, in 2006 journalists from Kaunas (Lithuania), Riga (Latvia), Gdansk (Poland), and Düsseldorf (Germany) have come over on invitation to check-out the city and write positively about Nyköping in their local newspapers back home (Sörmlands Nyheter, 2006-8-1) as of which were all new Ryanair destinations in fact. This shows how directly linked low-cost services are with city marketing and the interest of local government in low-cost airlines.

Furthermore, the municipality had made a cooperation deal to establish a new company called 'Skavsta & Co' which is a collaboration between the city and Skavsta Airport. The new company is supposed to market the city even more and make sure tourists can find their way to Nyköping. It is expected to contribute largely to improved tourism flows to Nyköping (Sörmlands Nyheter, 2006-8-16) and proved to increased positive effect in the last three years (Nyköping Kommun, 2009).

Fig. 5.15: Ryanair Boeing carrying the titles of the City of Nyköping (airliners.net)

Tourism

Ann-Margeth Karlsson (Nyköping Kommun) presented in Sörmlands Nyheter (2005) that ever since Skavsta Airport started growing, the municipality has seen an increase in visitors too. Since 2002 Nyköping's tourism industry has increased its turn over of over 65% to the year 2006, which however is not only the benefit of the airport (Gäfvert, 2007). In 2005 there were 268,330 actual commercial night stays by visitors in Nyköping compared to the 1,199,345 people that passed through Nyköping (either via the airport or the motorway E4) (Gäfvert, 2007).

In 2007 four new routes to Germany were open and four new routes to Italy. This could clearly be seen in tourists visiting Nyköping: 2007 saw 80% more German and 310% more Italian visitors. In 2008 German visitors were leading foreign visitor statistics, followed by Brits, French and Italians (Höglund, 2009). But as a matter of fact, according to Henrik Haugness (Chef planning department at Nyköping Kommun) more foreigners can be seen walking around the city when a new route has opened (Nyköping Kommun, 2009). Josefina Höglund (2009) also illustrated this by the example of the new routes Ryanair opened up to Italy in 2007: there were obviously more Italian tourists walking around the city afterwards. There is a clear relationship between tourism in Nyköping and the development of routes at Skavsta airport but despite the slight increase in the tourism sector and job opportunities the large impact has stayed away (Sverige Radio, 2009-05-04).

That the airport is seen as largely important for the city's development is supported by an article in the regional newspaper, Sörmlands Nyheter, in 2003. It writes that the Nyköping municipality used a flexible procedure in 2003 for building permits at Skavsta Airport. The municipality is strongly supporting development of Skavsta Airport and sees the need for development. A new parking lot was given building permits within no time and also the permissions needed for the building of the new terminal in 2003 where given within 2 weeks. A process that requires change of the zoning plan and consultations was shortened in order to start the building procedure as soon as possible. One of the reasons stated was that there was not expected to be a lot of protests and further the municipality was more than supportive. Permission was given as well for building start even before the new detailed plan was approved. (Sörmlands Nyheter, 2003). Although, noise restrictions seem rather flexible, Henrik Haugness (Nyköping Kommun, 2009) argued that expansion of the flights and airport would not affect the city and its inhabitants extensively as the airport is situated northeast of the city, outside the ring road where just little housing are located and has space for development.

5.2.4 National Influence: Sweden

The importance of low-cost airlines for the Swedish Nation is expressed in a paper by Transportstyrelsen that low-cost airlines have boosted the Stockholm region's airports (Transportstyrelsen, 2008). Furthermore, Luftfartstyrelsen (nowadays included in Transportstyrelsen) (Luftfartstyrelsen, 2007) showed also that Skavsta's growth is unique for Sweden and is expected to see a growth to 8M pax in 2019, which implies an advised 250MSek investment in physical upgrades of the airfield which also includes the Ostlänken railway connection. They report that until 2019 most investment in Sweden will be made in a few of Stockholm's airports, among Skavsta, and other regional airports.

In Sweden there are only four privately owned airports, among which is Skavsta (SIKA, 2009). Swedish airports are run either by state or municipality or are privately owned. In the year 2007 civil aviation was operated from 41 of the 138 (EuroControl, 2009) airports in Sweden. Swedish civil airports accommodated over 28 million passengers in domestic and international flights both on scheduled and non-schedules schemes (SIKA, 2009).

Total passengers (t)	*2007*	*2008*	*Int.08*	*Dom.08*	*Freight.08*
Sweden	27,165,359	28,075,972	21,312,346	6,763,626	214,097
Stockholm-Arlanda	17,878,124	18,106,877	13,248,956	4,875,921	99,051
Göteborg-Landvetter	4,353,304	4,300,113	3,114,004	1,186,109	49,280
Stockholm-Skavsta	1,994,512	2,479,646	2,470,565	9,081	417
Stockholm-Bromma	1,802,584	1,852,715	144,304	1,708,411	309
Malmö airport	1,867,737	1,747,483	665,686	1,081,797	29,304
Stockholm-Västerås	178,741	186,612	185,170	1,442	1,706

Table 5.4: National airports situation in Sweden (source: SIKA, 2009)

As also expressed by H. Bryngelson (Vasakronan AB) the proximity of a large international airport to the capital is of importance for business and trade and Skavsta makes a good complement to Arlanda as it can expand in terms of noise and environmental limits. (in Jansson, 2006)
This is strengthened by a report that serves as a base for the National Transport Plan 2010-2020, that Skavsta and Västerås are two airports that act in complement to Arlanda, in particular with their focus on low-cost traffic. Skavsta has large potential as it, again, has more space for enlargement within its allowed environment restrictions. Focus for development will be the low-cost complementary flights from Skavsta and Västerås while Arlanda can focus on more international direct flights (Regionförbunden i Uppsala et al., 2008). Hence, the importance of Skavsta Airport is strengthened when seen in a regional perspective.

5.2.5 Regional differences: Nyköping vs Stockholm

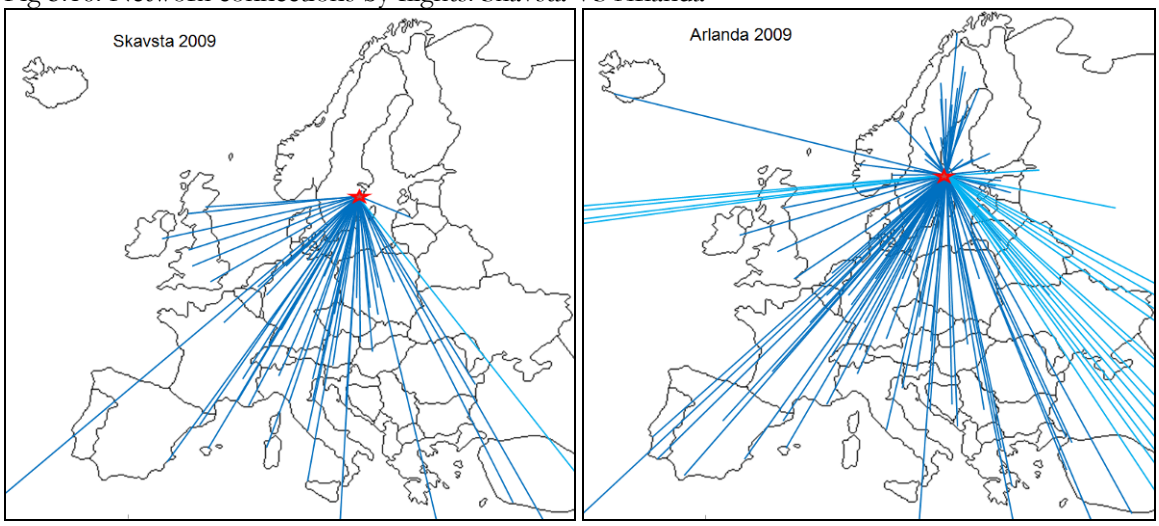
Within the Stockholm region, no less than four airports are named after the Swedish capital. Two of them located nearby the city within 50km: Stockholm-Bromma and Stockholm's Arlanda International Airport. The other two further away: including Stockholm-Skavsta and Stockholm-Västerås. As Skavsta Airport is part of the Stockholm Business Alliance it is allowed to carry the name of the capital (Jönsson, 2009). This represents the increasing attractiveness for regions and local elites to support low-cost services in the region, as in line with Castells' theory (chapter 2.2).

Skavsta Airport functions as a new airport for the Stockholm region, besides the main international airport Arlanda. Stockholm's tourism receives great benefit of the low-cost airport Skavsta. As referred to in chapter 5.2.2 the majority of the visitors, above 60%, pass through Skavsta Airport on their way to Stockholm, enhancing the gateway function Skavsta has for the Stockholm region. The increased catchment and 'travel' area of Skavsta Airport is influenced by travel behavior of Stockholm visitors too: more visitors are willing to choose Skavsta as an entry point to Stockholm. According to statistics on questions asked at the tourism desk at Skavsta Airport the tourist's orientation towards the Stockholm region is also obvious: around 60% of all questions dealt with Stockholm issues, just 10% of the visitors at the desk asked something about Nyköping (Höglund, 2009).
In 2006 Stockholm County accommodated 8,864,077 commercial overnight stays of which 68% in Stockholm City itself (SVB, 2007). 33% of the visitors came from abroad of which 6% from the other Nordic countries, and 19% from other European countries (SVB, 2007). A total of 21M visitors to Stockholm are using one of its airports. Arlanda accounts for 80% of those, equaling around 16.8M which is 93% of all Arlanda's passengers. And Skavsta accounts for 8% of all Stockholm visitors (1,636,566 passengers)[5]. This can be considered a substantial new amount of visitors Skavsta Airport is contributing to all of the Stockholm tourism industry.

[5] Arlanda 18,106,877: 93% of ARN to Stockholm: 16,800,000 = 80% of all

With the background of increased new demand by low-cost airlines, so does Stockholm receive a significant share of new visitors through this low-cost airport that might otherwise not have come to Stockholm. The Stockholm Visitors Board (SVB) also confirmed that Skavsta brings in a lot to the Stockholm tourism industry; the new routes have provided more seats which means more possibilities for people to visit. As in line with the arguments of Transportstyrelsen (see chapter 5.2.4) the SVB also argues that Skavsta provides a good complement to Arlanda and Bromma. The SVB sees in particular the impact of the low-cost airlines and especially from Skavsta as important for the growth in Stockholm's Tourism industry (Jönsson, 2009). The new trend presented in the theoretical background of short weekend-trips has also made it to Stockholm and according to the SVB this kind of trip has increased significantly the last years, with most respect to Ryanair which flies to Skavsta Airport. On the other hand, SVB argues that it are not only the new destinations and better accessibility from Europe to Stockholm that has positively developed Stockholm's tourism market. Moreover, it is the increased attractive experience of the city and the good city marketing tools. Skavsta Airport is seen by the Stockholm Visitors Board as one of the main access points to the city and is also named in every document as one of the alternatives. In addition, Ryanair collaborates with the SVB in campaigns abroad and the SVB organizes media visits and press trips in cooperation with Ryanair from Skavsta (Jönsson, 2009). So not only the local community enjoys the newly created marketing incentives but also the greater region takes it aboard in strategies.

Fig 5.16: Network connections by flights: Skavsta VS Arlanda



The complementary structure of Skavsta Airport for the region is also visible in the network difference between the two major airports of Stockholm: as figure 5.16 shows the concentration on European cities is the discrepancy. Skavsta only provides routes within the EU, except the seasonal flight available to Phuket. Arlanda provides a lot more long haul international flights to for instance USA, Middle East and Far East. As well as Arlanda is also linked to a lot of European cities, Skavsta shows more connectivity to Central and Eastern Europe. For the latter, the operations of WizzAir from Skavsta play part of it, providing service to Polish and East EU cities. Arlanda on the other hand offers a lot of destinations within Sweden and other Nordic countries whereas Skavsta offers no Swedish routes, besides one to Visby. This is obviously noted when looking at the domestic passenger number in table 5.4: Skavsta Airport is clearly out of class there. Here the differences between the low-cost model and full-services airline networks can be seen as the result of the heavy focus of low-cost airlines on tourism markets.

Skavsta	2,479,646:	66% of SKV	to Stockholm:	1,636,566 = 8% of all	

As also extracted from the European low-cost development (see chapter 4), the low-cost airlines have not simply captured passengers from the flag carriers and international airports but instead created a new market. For instance, from both airports only a few cities are double-served: London, Düsseldorf, Milan, Rome, and Barcelona are served from both of the Stockholm airports but to different airports: international airport from Arlanda versus low-cost airports from Skavsta. Also, tourist destinations like Crete, Las Palmas and Malta are linked to both airports.

The non-competition between Arlanda and Skavsta airport is evident as Arlanda has still grown largely the last years and the small overlap between the airports does not affect the development of either of them (Regionförbundet Sörmland, 2008). The focus of passengers between both airports can also be seen in an example of the route London-Stockholm where 36,5% chosen to fly from Skavsta or Västerås to London instead of Arlanda (Barret, 2004). Providing no real competition between the two but rather a complementary service.

It seems that the Nyköping municipality takes less advantage of the low-cost served airport as it is mostly passed by by the visitors. As in line with regional planning concepts, Gäfvert (2007) showed that Skavsta Airport also indirectly creates an additional 300 jobs plus a catalyst effect of 177 jobs in the region: supporting in total around 1500, both directly and indirectly not bounded to a specific region. Which is 0,11% of all employment in the Stockholm region[6]. Even though Skavsta supports over 1500 jobs the link of "1M passangers = 1000 jobs" is missing with Skavsta's 2,5 MPPA. Also, according to the study Gäfvert (2007) performed, Skavsta seems not to have any direct relation to the economical and development in the region. As during Skavsta's growth employment levels have not risen in the same way and it is assumed that Skavsta merely attracts businesses from within the region creating a displacement kind of development that may be related to Skavsta's development.
So the position of Skavsta Airport is more stronger in the region. As can be seen in the collaboration of Nyköping Kommun being part of the brand "Stockholm- Capital of Scandinavia" within the Stockholm Business Alliance (Jönsson, 2009).

[6] The Stockholm Region (including Stockholms län, Sörmland, Västmanland and Uppsala län) has a working force of 1.343.130 people of which Skavsta supports 1500 (Länsstyrelsen I Stockholms län: ab.lst.se, 2009 & regionfakta.com, 2009)

5.3 Düsseldorf-Weeze

Besides two previously presented case studies, this chapter will present the example of Weeze Airport in western Germany. Not being a profound case study this chapter will describe some of the interesting aspects of this airport and provide grounds for this report's analysis.

5.3.1 Introduction

The airport has had a rather interesting history and is in particular interesting from the point of its location. Because the airport is situated just less than 5 km from the Dutch border its catchment area reaches not only to German cities but also to cities in The Netherlands.
The airport was founded by the Royal Air Force in 1954 as a forward operating airbase at the European continent after WW2. In 1993 it was also given a civilian status and in 1999 the RAF operations ceased. Today the airport is privately owned by the Flughafen Niederrhein GmbH as part of Airport Holding GmbH. Though, the Kleve county and Weeze municipality remained a 0.07% share. This lives up to the ideals of the low-cost model (small, former military, private airport) and shows again the involvement of government in these situations. In 2002 a passenger terminal and apron were built and as of 2003 scheduled civil flight operations started and Ryanair opened its first route to London in 2003. From 2007 Weeze became also a Ryanair home base (airport-weeze.de, 2009).
Several other airlines besides Ryanair have been operating low budget flights from Weeze, among which were V-bird, Sky Airlines, Hamburg International, and TUI/Thomas Cook. Together serving a 54 destinations worldwide (airport-weeze.de, 2009).
As similar to other results and studies Düsseldorf-Weeze Airport also shows an alternative focus besides the main low-cost operations. Weeze Airport focuses its strategy on the low-cost operations, but also on domestic flights and charter flights. Furthermore, it has been developed as an event area where several activities and festivals can be organized (Flughafen Niederrhein GmbH, 2005).

The airport provides 1030 jobs of which 627 are directly at the airport (Flughafen Niederrhein GmbH, 2005). Around 40 companies are settled at the airport, which are fifty-fifty Dutch and German. It is said that the airport supports around 2.500 jobs in the Niederrhein region (ryanair.com, 2009). This would be more than in line with the notion of "1 million passengers = 1000 jobs", even providing significantly more jobs. Unfortunately, exact data had not been found yet and the source could be said to be a bit biased. But also in this case there is a clear local effect of around 1000 jobs and a larger influence in the region.

5.3.2 Passengers

Around 1.5 million passengers are using Weeze Airport these days. As typical for a low-cost served airport one airline takes on the major share of flights and here also Ryanair flights bring 90% of the passengers. As the airport just started operating for a few years ago the growth rate is high and more and more people take advantages of the new flights on offer.

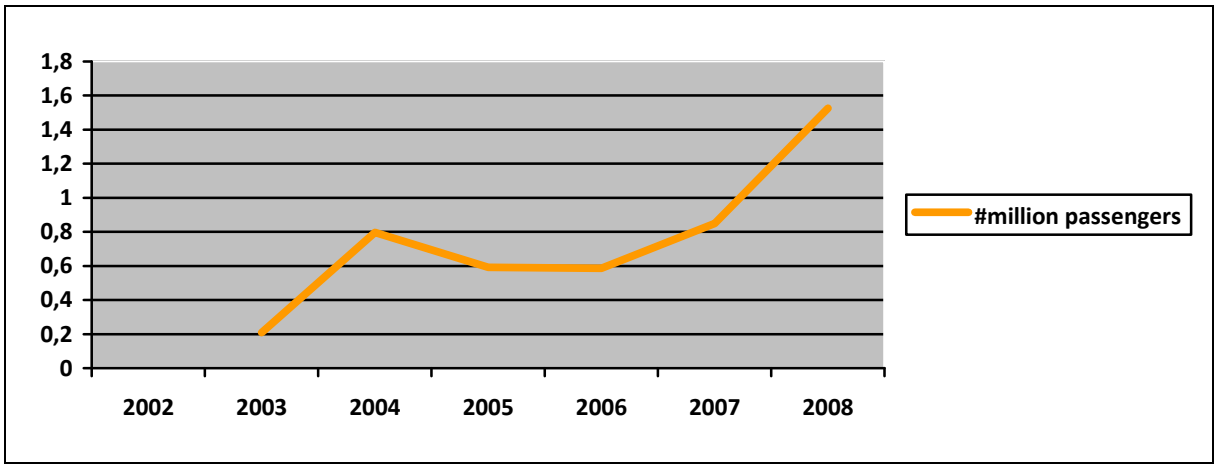


Fig. 5.17: Passengers growth at Düsseldorf-Weeze in recent years (Airport Weeze, 2009)

The drop in passengers between 2004 and 2006 is a result of ceased flight operations of the main airline V-Bird in 2004 (airport-weeze.de, 2009). After this, Ryanair picked up on the growth of routes and passengers again. The slow or flat growth in 2005-2006 could be a cause of the uncertain situation the airport was operating in at that time. There was a chance for the airport to be closed down and operating permits were about to be cancelled because of financial problems. This made some of the airlines to temporarily stop flying from the airport. But from 2007 on growth is speeding up as Ryanair opens its home base and more and more routes are served (airport-weeze.de, 2009).

5.3.3 Regional contexts

The interesting fact is that within the catchment area of Weeze Airport within 1 hour 10 M people are living of whom 6.3M Germans and 3.9M Dutch. Moreover, within 2 hours by car 35.5M people are living (Flughafen Niederrhein GmbH, 2005). This provides an excellent base for flight operations that the airport takes advantage of. However, contrasting these figures in the surrounding regions are the passenger numbers that show more than half of all passengers flying out from Weeze are from The Netherlands (see figure 5.18). As in line with the Hannover case study, passengers using Weeze Airport seem to take advantages of cheap tickets and are willing to travel longer distances to the airport in order to take the benefit, also from abroad.

That the airport attracts a lot of Dutch people is not merely the benefit of its location, but also the (none) competition with other low-cost airports in The Netherlands. Around Düsseldorf-Weeze there just a few airports and even fewer low-cost served airports (figure 5.19). The closest airport would in fact be Eindhoven Airport in The Netherlands, followed by Düsseldorf-International (G), Maastricht Airport (NL) and Dortmund (G).

Fig. 5.18: Origin of departing passengers from Weeze, derived from Airport Weeze, 2009

Subsequently the benefits of Weeze Airport are on the advantage of its location for its passengers (fig 5.19). Because of its more peripheral location in a less populated region there are few to no traffic jams on the way to the airport compared to when one tries to reach Amsterdam-Schiphol or Rotterdam Airport. Likewise, Weeze Airport is perfectly located in between the Rhine and Ruhr Economic regions and the Dutch Randstad region. This is supported by the fact that research of the Netherlands Institute for Spatial Research (RPB) (2005) showed that the difference between international and secondary airports in terms of potential catchment area is very much the same. To access an airport within 1 hour, Düsseldorf-International has the best potential, Weeze however comes close and is already has the same or even better potential as Amsterdam-Schiphol and Brussels International. Comparing a 2 hours travel time, there is not much difference anymore in potential catchment area. Moreover, Düsseldorf-Weeze seems to be in the center of where the most people can easily access the airport within 2 hours.

While previous studies explained the effect of low-cost airlines to have less effect on regular airlines by way of mostly creating new demands and attracting passengers that otherwise would not have travelled, the one competition for Weeze Airport should be Eindhoven Airport. It seems however that Dutch travelers do prefer to fly from Weeze rather than Eindhoven. This may be because of the easy accessibility and most probably the availability of enough and cheap parking spaces, that makes a trip by car to Weeze more attractive than to other Dutch airports.
What is more is that from mid 2008 the Dutch government implemented an environmental tax (so called 'ecotax') that added a substantial amount to the tickets' fares (12 Euros on European

flights and 45 Euros on intercontinental flights). In an article (Envirodesk, 2008) it was said that from the time the increased taxes were announced 51% more tickets were booked from airports in Belgium and Germany. Although, from mid 2009 on the Dutch Government decided to stop this 'ecotax' Weeze Airport still saw a double increase in passengers in 2008 (see figure 5.17).
It shows how sensitive people are to the lower fares and how willing people are to travel larger distances, even across borders, to catch this low-cost flight. This sensitiveness of passengers make that certain policy or market decisions can easily change travel behavior. Moreover, as previous studies also presented; the increase of catchment areas for low-cost served airports finds it existence in this sensitiveness.

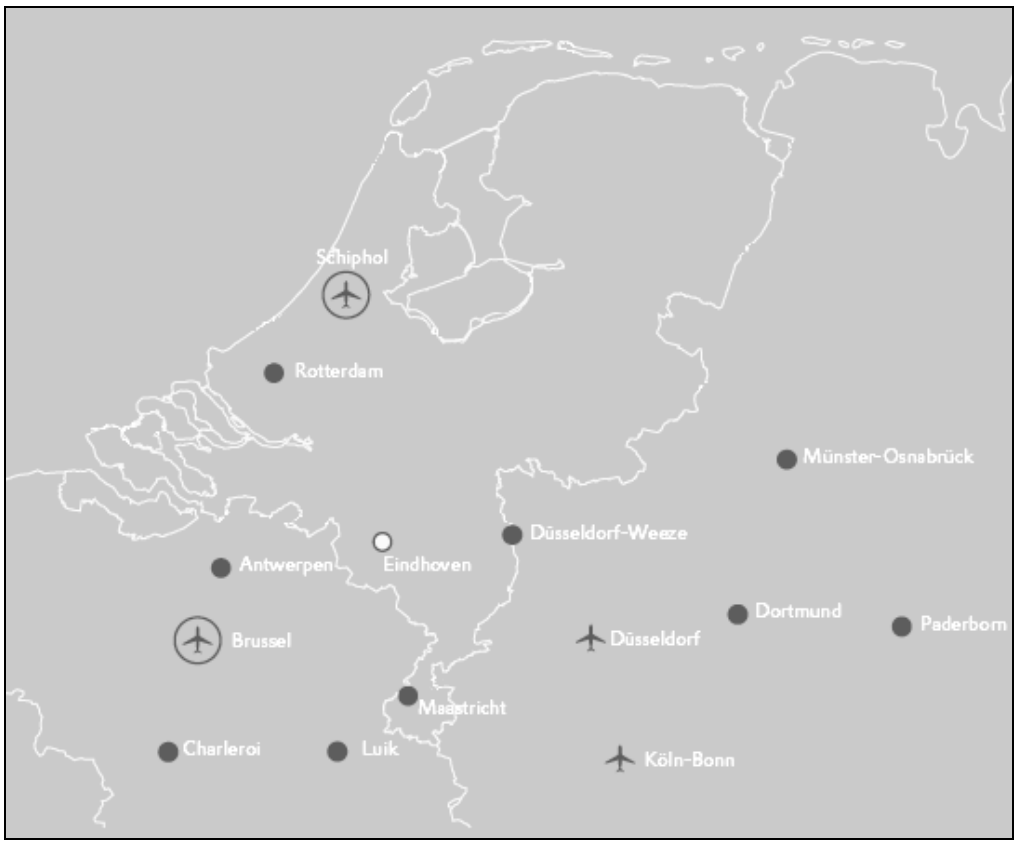


Fig 5.19: Airports in the Netherlands, West-Germany and Belgium, derived from RPB, 2005

The 'ecotax' did not only have an influence on the tickets fares and therewith scaring away passengers but in addition Ryanair decided not to make Eindhoven to one of its home bases. Because of this decision Eindhoven Airport has not been able to see a continued growth of routes and passengers, and new destinations were added to the Düsseldorf-Weeze route network instead. Dutch travelers then also had to look at other airports to find a flight to the destination they want but cannot be reached from Eindhoven. And so it happened that a large amount of Dutch passengers shifted to Weeze instead, because there were different destinations, easy acces and lower fares.

That also the local municipality supports the development of Weeze Airport is not only explained by the fact that they are still keeping a small share of the airport but also by one other thing. Lately the municipality agreed on less stringent noise restriction as a change in the detailed plans in order to let Ryanair stay and grow its landing and departures. Ryanair was about to bail out of Weeze Airport if they could not increase their business there. With Ryanair having such a lot of power the municipality was weak and changed the procedures in order to keep the benefits from the growing airport.

5.4 Short Conclusions on Cases

The case studies have helped to verify the hypothesis that the arrival of low-cost services at an airport does have an effect on the region and the urban planning procedures. All three examples show a typical structure for the low-cost model. The airports are all situated further away from a bigger city, see appendix A, and are all former military bases and nowadays privately owned. All airports have the major serves operated by one low-cost airline. However, in addition to this low-cost airline as the main business all three examples showed the focus on several other operations. Often also regional services and charter flights are offered besides the low-cost services and often freight or other operations are attracted, like events at Weeze and maintenance at Prestwick. The reliance on the low-cost airline is clear and to keep the business viable other operations are needed as well.

The examined airports have an already developed network of low-cost routes and have showed a rapid increase in passenger numbers after the start of low-cost operations. The airports' network configurations have definitely changed their status and the larger amount of routes and passengers have made them climb up ranks in national contexts.

Glasgow-Prestwick	**Stockholm-Skavsta**	**Düsseldorf-Weeze**
35 routes	46 routes	54 routes
2.4M passengers	2.5M passengers	1.5M passengers

The three airports showed an impressive expansion of their route network after 2002 and 2004. When comparing this development (see appendixes B and C) it is clear that the low-cost route network has directly been focused on tourist destinations in the south of Europe. In particularly Prestwick Airport seems to be focused on Mediterranean destinations from the start. The orientation towards Eastern Europe, from 2004 on, is also more obvious in the Glasgow-Prestwick case although Stockholm-Skavsta has been catching up on those routes in the last years. From 2004 on Prestwick Airport's network changed directions clearly the eastern parts of Europe while also concentrating on Spanish and the Canary Island routes. Stockholm-Skavsta in contrast has not changed it network as obvious as Prestwick and still has expanded equal numbers in central Europe too.

Weeze Airport is, compared to Skavsta's and Prestwick's airports, a relatively new airport having only received the Ryanair base status in 2007 (see appendix A). Nevertheless, Düsseldorf-Weeze Airport has also seen a 200% passenger growth in the last two years, as did Skavsta from 2003 on when it was appointed Ryanair base. Prestwick saw a little smaller figure of 170% passenger growth. The number of routes, already available from Weeze Airport is similarly impressive; they are though heavily focused on southern Europe and the Mediterranean coastline. Besides, the Germany airline Hamburg International adds some ten more charter routes which are not that numerous at Prestwick and Skavsta.

All three examples have presented a development that is mostly the benefit of one low-cost airline (in these cases Ryanair), which has more than the major share in the airport's passenger carriage. From a comparison of the cases it can be concluded that low-cost networks are oriented towards routes linking tourist destinations. Moreover, the competition with other (international) airports in the region is low as the airports often focus on different markets and operate on different routes, representing new networks and a complementary service for the region. From the case studies it was clear that low-cost airlines try to avoid competition with other airlines and airports and therefore serve their routes as the one and only operator. This is of advantage for all airports in the region as seldom are the exact same airports served and often there is a broader choice of destinations for the region's inhabitants. It can also be of disadvantage to the low-cost airport because it has to rely highly on this airline and cannot bring in other low-cost airlines

easily. In the case of Glasgow-Prestwick it made growth of the airport less feasible and the passenger number got to a sort of threshold as the airport is not able to expand its routes without having to give in on revenue. For Stockholm-Skavsta this is however not the case and the airport then also keeps on growing progressively.

As presented by the case study examples these secondary airports enjoy a relatively larger catchment area as a cause of the arrival of low-cost airlines. All three examples show that the low-cost effect is attracting passengers coming from 150-200 kilometers away to catch a flight. All three airports illustrate that about 50% comes from within a 100km radius, nevertheless the other half still travels further than 100km; Prestwick receives 40% of the passengers from over 100km, Skavsta 50% and Weeze also 40% (see appendix A).

Glasgow-Prestwick	**Stockholm-Skavsta**	**Düsseldorf-Weeze**
21% Glasgow	35% Stockholm region	39% East Netherlands
21% Strathclyde region	23% Sörmland region	30% West Germany
20% Ayrshire region	16% Nyköping City	14% Niederrhein region

The travel patterns of tourists flying low-cost airlines show a similar pattern, if not amplified, like from Prestwick Airport more than half of its visitors move on to bigger cities as Glasgow and Edinburgh and from Skavsta Airport half go on to Stockholm City (see also appendix A). The increased catchment areas have made these secondary airports to one of the new major gateways in their country. However not starting major competition but rather enhancing the regions' complementary structure. Connectivity is shown to be improved in both the Stockholm and the Glasgow case: with the 45% new demand Glasgow-Prestwick Airport attracts it brings 30% extra visitors to Scotland and Stockholm has also been provided 10% more additional visitors from Skavsta Airport.

The market position of low-cost services is of course also subject to the availability of aviation services in the region. As Skavsta Airport showed the catchment area can extend because in the region there are no other low-cost services available. Also in the case of Weeze Airport the catchment area is extended as a cause of low down operations at surrounding airports. As low-cost passengers are most attracted by its low fares, there seems to be no reason to choose flights from closer to home but for a higher price.

Employing	**Glasgow-Prestwick**	**Stockholm-Skavsta**	**Düsseldorf-Weeze**
Direct	1230 jobs	1052 jobs	625 jobs
Indirect	1733 jobs	1357 jobs	1030 jobs
Catalyst	2900 jobs	1534 jobs	2500 jobs

The indirectly created employment supports this, as although the direct employment from the airports Skavsta and Prestwick reaches a thousand number relatively more jobs are supported in the region: the relative number seems to be about 3:1; with 3 direct jobs, 1 indirect job is created[7].
The catalyst effects presented in the case studies may be a bit out of context as Prestwick talks about Scotland and Skavsta is about the Stockholm region, two different regions in terms of size and demographic situation that cannot be compared. Yet, the catalysts effects seem to be greater than the indirect effect of the low-cost airports. The case studies also showed that the rule of '1

[7] For Prestwick is 1230 direct jobs to 1700 indirect jobs: additional 530 jobs which is 40% of the direct jobs.
For Skavsta makes 1052 direct jobs 1357 indirect jobs: adding 305 extra jobs which is 30% of the direct jobs.

million passengers = 1000 jobs' does not apply to low-cost airports towards the locality but rather is the effect for the greater region. This may have to do with the specific orientation towards low-cost services which, as discovered before in this report, are highly focused on tourists that are said to have less expenditure. Moreover, the low-cost model does not allow lots of services which in its turn means that not much employees are needed, so less jobs.
It again does also imply that because of the increased effect area of low-cost served airports, these have more meaning for the region rather than just the local municipality. Herewith, both case studies support theories of regional development and the relation with transportation. But also all example airports accommodate an amount of companies that agglomerate around the airport and its business. Besides, even one-third of companies located at low-cost served airports say that the airport (and the low-cost airline) is of (high) importance for their business.

Population			**municipality - town**
Scotland	5.144.200	Prestwick	112.000 – 15.000 inhab.
Stockholm region	2.700.000	Nyköping	51.000 – 30.000 inhab.

As stated before, Glasgow-Prestwick Airport is situated in a much bigger region in terms of populations than Skavsta Airport. Yet, when comparing these numbers the catalyst effect of the airport seems rather similar. GPIA supports 2900 jobs in Scotland giving it 0.56 jobs/1000 inhabitants and Skavsta supports 1500 jobs in the Stockholm region serving 0.56 jobs/1000 inhabitants too. So in comparison both airports support the same amount of jobs per inhabitant, meaning that the notion of "1 million passengers = 1000jobs" may not apply directly but the catalyst effect is subject to the size of the region.

The combination of extra visitors and increased catchment area has in both cases seen the evolvement of the 'low-cost effect'. As low-cost airlines are oriented towards tourist markets and have settled the 'new' city-break trend, the increase in economic development is mostly within the tourism market and spread out over the greater region. The additional tourists seem to be drawn by the bigger cities, in these cases a majority of the passengers chose to travel to Glasgow, Edinburgh or Stockholm after landing at the airport, for Glasgow-Prestwick just 10% in Ayrshire region and for Stockholm-Skavsta 16% to Nyköping. Larger spill-over effects are seen in the greater regions rather than the local community.

Nevertheless, have both case studies showed the possible effect of low-cost services on migration patterns, in particularly after the airports had been adopted as Ryanair bases since 2003.
Scotland saw a noticeable increase in EU immigration from 2000-2001 which kept high since. And South-Ayrshire saw in 2006-2007 also an increased migration from the region to overseas. Even so, saw Nyköping Kommun an increased immigration from EU countries from 2003 on. The year 2006 and 2007 also showed most migration appearing between Nyköping and European countries.

All case studies also showed the involvement of government in the low-cost business by providing support to the airlines for serving their area. Both Skavsta and Prestwick case studies show that marketing has become an explicit part of the low-cost developments in terms of governmental support. And it strengthens the idea that air links are seen as one of the important assets a city can possible acquire and an important factor for regions economic growth. The well-developing airports and their explosive growth also resulted in looser planning procedures as the cases of Nyköping and Weeze showed in forms of for instance less stringent environmental and noise restrictions. That often governments are still involved with running the low-cost airport,

though they are often privately owned, was also underlined by the active marketing strategies involved in the case studies.

6. Analysis of low-cost effects

The aim of this thesis is accordingly to analyze the effects low-cost services have on planning related issues. In the previous chapters the concept of low-cost airlines and their effects on transportation networks and planning has shown an interesting relationship. It has become clear that low-cost airlines are not just a "one out of a hundred" airline but rather a "one of a kind" airline. The specific operation model, the hunger for profits, and the need to operate at the very lowest costs no matter what makes the low-cost airlines to be a renowned and outstanding service. As the operation model is so specific there is a noticeable impact on the costumers and the environment it is operating in. These effects seem different from traditional airlines. This chapter provides an overall analysis of the study of this thesis.

6.1 Policies on the base of network existence

On the base of this thesis research was the desire to look upon how low-cost airlines have developed their networks in Europe. The low-cost concept has clearly made a change in the way travel networks are organized within Europe, the effect is in fact that low-cost airlines have not rigorously changed the European city networks but rather enhanced them. As presented in chapter 4 the low-cost concept has developed quickly and became a key player in the European aviation market. For the question how 'low-cost networks have evolved' the answer can be found in the existence of low-cost airlines which relates back to the ideas of the European Union. The correlation between the implementation of policies and expansion of the EU is instantly recognizable. EU policies have stimulated growth of the low-cost airlines in a way by:

- Allowing privatization of the aviation market, making competition possible,
- Providing easier access to European regions, enhancing the easy development of the network,
- The own choice of routes and fare that have provided the low ticket prices and new destinations of low-cost airlines,
- The free movement in EU which has increased demands for travel,
- Inclusion of new member states in the EU that has more developed and made the low-cost network and its destinations grow.

The interesting development of the low-cost network has spread out over Europe as time went on. The nowadays low-cost network developments show its effects on tourist markets; while focus is directed to East Europe where new markets for leisure and holidays are popping up as new member states are joining in on the free-movement policies. Nevertheless, the low-cost airlines did not give up on destinations in the rest of the European Union. In the central and southern parts more bases have been set up, providing low-cost served airports with more connections and growing passenger numbers. The low-cost networks therewith appear to integrate new regions with well-know destinations by exploring new markets and expanding established markets. But if it was not the implementation of EU policies the low-cost branch would most probably not have existed, networks do not instantly grow but need a driving force and allowance to develop. In the case of low-cost airlines, the supported competition provided a driving force to make flying as cheap as possible and the EU Single Sky and Single Space made it possible to develop the network on feasible terms. For planning it shows also that in fact it are policies that make new creative ways of development possible, or not, and it is thus up to implement or not in order to either restrain possibilities for inventive developments or to control them.

And in fact, new networks have been developed by low-cost airlines as they search for niches in the aviation market and operate from secondary previously not integrated airports. These new networks serve new destinations, providing the EU's aviation networks with new routes and a totally new separate network which is not integrated in the hub-and-spoke networks.

Nevertheless, as will be shown in the next paragraphs the gateway function of the new airports for low-cost routes make that not many more new destination cities are being adopted in the network but rather networks of the bigger yet established destinations of European aviation networks are reinforced. Like in the Stockholm-Skavsta case it is Stockholm that is referred to from the low-cost airport, not the adjacent city Nyköping. As also with Glasgow-Prestwick; new routes are established to Prestwick but the journeys do not end there but in effect are related to Glasgow rather than Prestwick. Besides, as the Weeze airport example shows, a new entry and exit point for The Netherlands is adopted in travel schemes. Making it not so much about the new destinations, as they are often neglected, but more the new routes that are on offer, being the new network. It provides an uncomfortable position for planners when these secondary airports are suddenly growing out of nothing. Moreover, the unpredictable attitude of low-cost airlines makes it uneasy to plan for on beforehand.

6.2 Low-cost network enhances city network theories

As one of the driving forces for this research the aim was to identify how low-cost airlines work and how they connect places. As the cases of Glasgow-Prestwick and Stockholm-Skavsta showed, the arrival of a low-cost service at the airport made the possible travel destinations increase significantly, in particular after the acquisition of Ryanair base status. This increase in links makes the city becoming more integrated in the common world-wide network. This is most obvious when looking at Glasgow, where it before did not have any direct connections with the EU mainland these days via flights from Prestwick Airport direct access is available. This is often the case at low-cost served airports because new routes are created that fill up gaps in the aviation market, so repeatedly cities see new connections coming up as the new low-cost network adopts them. It is not mostly the overall European Union taking advantage of the increased integration but also the specific regions that get their share of improved opportunities, like theory on city networks inscribes cities are always depended on their inter-relations to each other (Taylor, 2004). The arrival of low-cost services provides an extreme example of these increased inter-relations. As in the case of low-cost airlines the increase in transportation links is more obvious because the airports chosen to fly on are more than often formerly low-profile airports with few traffic and underserved facilities, which were not adopted into the international travel schemes. But since the low-cost serves have these types of airports in their focus, those smaller cities suddenly see their links to other cities grow fast. This would imply that the city becomes more depended on its inter-relations to other cities (according to Taylor, 2004). However, this statement can be slightly restrained when talking about low-cost airlines. As theory explains, a network consists of three factors: agent, node and link which in low-cost airline networks are represented by: airline, airport and route. Following that, the low-cost services have brought more links and herewith presumably made the city more depended on other cities. This may however be a mistaken thought as in fact it seems that the city is more depended on the agent and the links themselves, not the inter-relationships. What the case studies also show is that the links do not have any effect on collaborations with other cities but alternatively the airlines are the ones who are in power and the city is depended on them to make the network, as was clearly presented in the Glasgow-Prestwick case where Ryanair could easily shift routes to Edinburgh. The weight should in the low-cost concept be put at the relations with the agent not the inter-relations to other cities. The latter is defended by the 'point-to-point' basics of low-cost airlines and their usage of isolated secondary airports.

On the one hand, the point-to-point routes low-cost networks have provided make them to provide cities with low connectivity links (according to Burghouwt et al., 2003) but conversely, the accessibility has dramatically increased by the new connections formed by low-cost airlines. Although, only one point is connected at once (connectivity), there are several points from which the airport can now be reached (accessibility). This also represents the spread out configuration

of the low-cost service networks, which is contradicting the hub-and-spoke operations of full-service airlines where there are several points connected at once, but in the low-cost networks there are only a few points to which the network can be accessed from one place. So even though, the networks of low-cost airlines may then be of low connectivity but cities from where the airlines fly see their air links to other destinations and therewith accessibility increase greatly. However, as discussed before (chapter 6.1) because of the nature of low-cost services the accessibility is not always associated with the adjacent city but rather with the bigger 'named' city. Theoretically, the nearby town sees an impressive increase of links but in fact it is reckoned that the bigger city eventually receives most of this improved accessibility. As will be explained below, this is partly because of the airport's marketing and its name as well as the provided connections by for instance busses that too run mostly to the 'named' city. This in effect provides a large challenge for local planning and regional planning.

Consequently, when elaborating on how low-cost airline services link cities and regions together, the low-cost concept actually shows a perfectly applied version of Taylor's city network theory. Low-cost airlines take the actor role to a maximum in their network development, because definitely it is not the cities making the network but the airline companies that exercise great power over their network development. Taking again into account the foundations of city networking: the agents and nodes, not the cities, comprise a network and as these smaller nodes see an impressive increase in connections they are most likely to act as major gateways in the networks. Which the case studies demonstrated by the large catchment and 'travel areas' of the airports' passengers: Skavsta passengers move on to the Stockholm area just 16% finds their way to Nyköping, 50% of GPIA's traffic goes to Glasgow City, and more than half of Weeze airport's passengers come from across the border (see appendix A).

Within chapter 4, the difference low-cost airlines make for a city were presented as seeing an increased integration of new cities joining the international tourist market in the EU. Although, this can however be contested with the previously explained 'low-cost effect'. If one looks closer it are the airports that make up these new destinations like an entry point on the way to a final destination and not the adjacent city. The increased catchment areas and larger 'travel areas' as presented by the case studies show the majority of the passengers choosing to travel to other cities as their flight's final destination. It may just be that the name of the airport is linked to the nearby city, like Glasgow-Prestwick Airport, but most people still see it as a way of getting to Glasgow. Skavsta Airport shows this effect even better as the airport already has been given the name of the capital: Stockholm-Skavsta Airport and the City of Nyköping is nowhere to be found. The low-cost served airports provide thus not mainly more links for the adjacent town but the impact on increased accessibility is also directed to the larger 'name-linked' city.

Speaking of which, according to city network theory it are those exchanges and links, as transportation, that make up and change the city's character (Smith & Timberlake in Sassen, 2002). As Friedmann (in Taylor, 2004) also states it is the function a city has that reflects its characteristics, of which here the city served by low-cost airlines should reflect its function as a transportation hub within the network. For the cases examined in this report, their profile is definitely affected by the arrival of low-cost services; Skavsta Airport and Glasgow-Prestwick Airport are seen as just 'Ryanair airports' which gives these cities a certain status directly linked with the availability of low-cost flights by the Ryanair airline company. Here the effect of low-cost airlines on the city's integration in networking can be clearly identified. With an obviously different operation and network structure, the low-cost airlines have altered the changes transportation can have on a city's characteristics. One would expect the city to become more integrated in the travel and tourist markets, and make name as a new tourist destination. The opposite happens in fact, with the services of low-cost flights the city just becomes an optional

travel stop for many travelers instead of final destination but does not see itself becoming a major transportation hub, nor a tourist destination, just a point at which travelers pass by on the way to their final destination. In addition, the willingness to travel further away for the lower fares of flight tickets make that low-cost airports serve as a gateway for the greater region, travelers pass through the local city on to further destinations. Like the case studies clarified: 150 kilometers is a normal distance for low-cost served airport passengers, Weeze also showed that the choice of flights, c.q. routes, is not bothered by country borders anymore. Hence, although located in Germany Weeze has become an important airport for Dutch travelers.
Smaller cities have become slightly more important in city networks when served by low-cost airlines but, the focus of low-cost airlines on tourism makes the airports not climb up to dominant status in a network. Nevertheless they become increasingly important in terms of nodal points and gateways for a region's accessibility. For this, the low-cost effect is of large effect on how a regional develops its transportation systems. Aligning the previously stated conclusion that the low-cost services not merely provide access for the nearby town but rather connections to the city; affecting regional perspectives of the airport and low-cost services.

This is in effect closer to the city network theory than compared to the flag carrier airlines that provide integrated networks were people travel from city to city instead of node to node via gateways as it is said not the city being the feature that makes up the network. Besides, the nodes of low-cost services are the secondary airports that seldom are located close to a city. Here the low-cost development also contradicts the basic theory that transportation nodes are defined by their location and have to enjoy good infrastructure and accessibility that link it to other cities (Johansson, 2008). In fact, in the case of low-cost airlines the choice of airport is not a choice of accessibility, but one of money. The low-cost business model only allows these airlines to serve airports that do not charge such high fares and can give the airline certain economical advantages. The case studies also show the lack of infrastructure to the airports: Skavsta is in the planning of getting its own railway station now, only after 10 years of full low-cost services. Location advantages for air operations is not part of the low-cost airline dictionary and reverts the basic planning ideas that large transportation points, c.q. airports, need good fundamental access infrastructure.

6.3 A spread out influence

The effects low-cost airline services have had on urban planning is mostly visible at a regional perspective. As chapter 4 showed, the low-cost aviation market is heavily focused on tourism markets living up to a change in travel behavior and new trends as city-breaks and more frequent friends-and-relatives visits. The new demand that has been created by low-cost services is mostly thanks to the increase in tourism destinations and the accessible low fares. The heavy focus on tourists means however that the exchanges made through the new links established by low-cost services are basically just tourists passing through; only just a small part of the passengers could be assigned business clients or of high importance to the nearby city's profile.
As the case studies illustrated, because low-cost airlines have their focus on tourism the contribution to the city's development is not as broad as one may expect. In chapter 2.4 is stipulated that the focus on tourism does not return much benefit for the local regions economic development as the spill-over effects are spread out to the greater region in line with the increased catchment areas. Moreover, the jobs provided are less than a major airport because low-cost airlines tend to save on extra handling, personal, desks, facilities, etcetera. As was also presented in chapter 2.4, is that airports can create significant replacement effects that show only an increase in traffic but not the same in economic development for the locality.

The increased catchment areas have made these secondary airports to one of the new major gateways in their countries that however they did not start major competition but rather enhanced the regions' complementary structures. The case studies showed how complementary the low-cost services work as to the international airports like Stockholm-Arlanda and Glasgow International. Continuously, this does also imply that because of the increased influence area low-cost served airports have more meaning for the region rather than just a municipality.
This underlines the regional development concept where it is said that large infrastructure development has an enabling effect throughout the region but on the other side it does not comply largely with the arguments that infrastructure supports economic growth. It is said that development is directly related with transportation systems but in the case of low-cost services the effects are rather indirectly visibly. Besides the on-site employments at the airports the support to the economy is only indirect by increasing tourism markets, which are said not to contribute in large amounts. Moreover, the case study of Skavsta Airport showed an example which struggles with these theories as well. The expected boost for the local economy has not been visible and it seems that economic investments are running behind around low-cost served airports. It also is an important insight that the low-cost effect seems to be lower than one should expect from airports and high traffic numbers. But because of the nature of low-cost services, flights have short turnaround times which have the effect that passengers often arrive rather late at airports. Therewith there remains less time and will to spend at the retail facilities at the airport itself. Additionally, as stated before low-cost airline do not need a lot of service and facilities at the airport, meaning that less employees are need. Then also, when passengers travel on to further distances they don't spend much in the surroundings of the airport either. Requiring again even more attention from regional planning perspectives in cooperation with the nearby town to balance the effects.

That the larger catchment area is typical for low-cost served airports relies on partly the marketing of the airport and visible relation with bigger 'name-linked' cities, as well as other nearby low-cost served airports and competition with them. As could be derived from the case studies Skavsta en Prestwick the competition with international airports is none or not worth noting yet. The Weeze Airport example in addition illustrated that decisions taken at low-cost served airports in the surrounding regions (can be of 150km distance) can significantly influence the travel behavior of people, like the implementation of higher taxes.

Developments that can be seen as to be supported by low-cost airlines, are often only in a way of the need for better land access to the airport and improvement of airport infrastructures. That transportation encourages developments and economic investment is less visible for low-cost services may be a cause of the much focused market of low-cost airlines and the spread out spill-over effects.

6.4 A case of proper marketing

The link between low-cost airlines and city marketing became more than obvious during this thesis research. Low-cost airlines have brought new incentives and new ways for marketing of a city, which are an important part of how a city can make a difference. And as Jenssen (2006) argues, cities strive for difference and identity, of which both low-cost airlines can bring in to city marketing: identity by promotion of the airport as one of low-cost airports, difference by providing low-cost flights (often perceived more convenient and faster than international hubs) as a special attribute for the city. As Nyköping Kommun demonstrates, nowadays the identity of the city is directly related with Ryanair, which is taken as an advantage that is more and more promoted in order to attract tourists to the town. This extra, new way of marketing has had its effects as the share of Skavsta's passengers visiting the town increased 500% in three years.

From the analysis it became also clear that the low-cost airlines themselves are the actors making the networks. On the other hand, the case studies show how high the interaction between governmental organization and the airlines is. Though, the decisions are up to the airlines to establish a link or not, it are just the accommodators that have to accept bargains and grab opportunities which mostly shows that the interaction is not about which precise link to set up but whether more links can be set up and more passengers can be attracted in which often the airline has the strongest hand.
For this fact, we saw in the case studies how the arrival of low-cost flights changed perspectives of city marketing and was improved by linking city marketing to the low-cost services. This interaction is not wrong or something false but as a matter in fact the involvement of governmental organizations in running the airport and attraction or deals with the airlines is argued to be one of the main features of networks. As described by Castells (in Taylor, 2004) the networks represent a three layer dimension of where the third one is the interests of local elites and businesses to support the development and practices of the network. Of course, air links are of peculiar asset to cities and regions and improve accessibility largely, in particular longer distances and direct connections. The obvious example is the case study of Skavsta Airport where the City of Nyköping has taken major interest in the low-cost services and particularly the Ryanair airline company that makes up most of today's traffic. But also the Glasgow-Prestwick case showed a story in line with Castell's network dimensions. There it was the Scottish Government promoting and attracting airlines to serve the region with the Route Funding. But besides, Prestwick Airport saw also a requirement of the local business society to the Scottish Government to give the airport the same status as Edinburgh and Glasgow International in the policy programs (Graeme Purves, 2009).
The enhanced interaction in marketing between government and airline is absolutely in line with the basics of city marketing. As Berglund (2008) described city marketing is the communication with external markets and responds to demands according to the needs and wants of consumers. The low-cost airlines come in as partly an external market that wants to make use of the city's facilities. The need of an airline is clearly the presence of an airport, but the wants of low-cost airlines can differ from other parties with their business model focused on lowest fares and profit making business. Marketing deals then are on the basics of communications and bargaining for services. On the other side, citizens and society also demand good access and air links are an important transportation mode. Business groups and local elite also have their part in demanding good connections when there are possibilities. So it comes out to a role-play where the low-cost airline is often on the stronger side. It seems low-cost airlines have the bargain power in their model to change as fast as possible may something not function that well, in opposite to the flag carriers low-cost airlines often have the 'first-come-first-serve' advantage and often are the only airline serving a route. As Burghouwt et al. (2003) argued, the configuration of full service airlines makes them more defendable to changes and easy to absorb new developments rather than low-cost airlines. But on the contrary, when looking at the development low-cost airlines in Europe and in the case studies clearly the low-cost airlines change their network all the time and make no insurance for a long standing network, adopting new developments easily. Herewith, planning is indirectly affected by the low-cost services in the urban marketing strategies as a cause of this aggressive behavior inscribed in the low-cost business model.

At last there is an interplay between the various motives and effects of low-cost airlines. As this business is so much focused on the cheapest fares and tourism, the location of the node is not of high importance. This results again in that the catchment area of the airport has become relatively large, while the demand for travel increases and the airport starts to act as a gateway for the region.

Though this idea can also be identified for traditional airlines and international hub airports there is a clear distinction for low-cost services. International airports are build and organized to collect and handle passengers in large amounts that come from larger distances. This makes these airports more costumer friendly; comfortable in use and easy in access. Low-cost served airports are in contrast not really prepared for this phenomenon at all and passengers regularly have to deal with worse service and comfort or difficult access, which in the end also became the mark for low-cost airlines. Only some times, after a while the boosted airports have to improve their infrastructure and facilities, like retail shopping and parking, as chapter 2.1 illustrated mostly to the benefit of the airport's profit however.
The 'low-cost effect' in its turn responds to a larger spin-off effect for the region but a lower effect for the locality, opposite of what is often expected from increased air traffic. And that is why there is always heavy marketing involved (as also addressed by chief executive of GPIA Mark Rodwell, 2009). Because of the spread out influence the local municipality sees the possible positive effects but does not see these coming to them and tries to realize larger impacts on its own municipality by aggressive marketing. The difference in interaction with the new phenomenon of a low-cost served airport is on the one hand that the region talks on about marketing and improving existing advantages and supporting the improvement of low-cost flights as a new market. Often the region is already served by another airport too, that is however not focused on low-cost flights, as can be seen in Glasgow and Stockholm. On the other hand the town next to the airport sees totally new opportunities and starts to act upon these by means of a new way of marketing.

In the end it looks like the low-cost services have supported a distinctive kind of airport development that suddenly grows fast, responding with a vast increasing catchment area and becoming to act as a gateway for a region. Opposite of what was stated in theory chapter 2.2 these low-cost served airports are not regarded as major hubs in a region but rather as a good complement besides main airports. Moreover, the importance of good infrastructure seems not to be a reason for low-cost airlines to develop their networks towards isolated places. Besides, these effects of new travel demand and change in travel behaviour to larger distances have also started new potentials and needs for marketing. Nevertheless, although low-cost services seem mostly to affect regions it are for the most part the municipalities that actively reply to the development in their marketing strategies. This may be a result of the less than expected outcomes for the locality and the perception of "just" complementation for the regions access.
This low-cost effect has herewith also its influence for regional planning. Planning has to regard the sudden fast growth of secondary airports, both in passengers and in a smaller degree related businesses. Moreover, planning has to consider the spread out effect of the low-cost services, whereas the wide effect is affecting more than the local economy. As also the effects of low-cost airlines seem less concentrated the need for regional support and cooperation looks evident. The perspective of a complementary airport structure also affects regional planning perspectives and implies that secondary airports become more important. This also redirects regional investments to better transportation and accommodation capacities for handling the larger flows of passengers throughout the greater regions, from and to bigger cities to the low-cost airports. Then also, the fast development of one airport does not give assurance that it will keep its status and stay complementary to the region's airports as low-cost airlines unhesitatingly make quick changes in networks and routes. Planning has become subject to a wide spread phenomenon that requires monitoring.

7. Discussion

Although the analysis has pointed out the clear effects of low-cost airline services on a region and its planning there remain a few thoughts. What the case studies have shown is the evolvement of the 'low-cost effect' on a local scale. At the European scale the effects are clear and planning can be generally directed to incorporate the low-cost development in the balancing of European integrated developments. But in terms of local regional development low-cost services have made it more difficult to arrange strategies. The analysis of the report implies a different nature of low-cost network development than normal networks.
There are winners and losers as a cause of the 'low-cost effects', as stated by Francis et al. (2006), which mostly lies in the specific nature of low-cost airlines; rapidly changing networks and their power to change as they want. What in my opinion also makes it easy for low-cost airlines to act as they want is the reliance and positive attitude of governments and airport authorities towards low-cost airlines. As discovered, expectations of low-cost services as major stimulators for the city and its region are often somewhat too high. Of course, airlines are on the base for an airport's growth and especially low-cost airlines make without doubt much difference for the smaller, isolated, underserved airports. But the way low-cost airlines are received is more one of a warm welcome than a skeptical evaluation. On the other hand, low-cost airlines are also easy partners and do not require as much as full-service airlines which makes it easier for airports to accommodate them. On top of that, low-cost airlines bring a boost in the traffic numbers that could not have been thought of before. But after a while, the airport puts itself in a position of no choice rather than to rely on the low-cost airline without making much profit. An idea is that it would be better if the low-cost services are a bit more organized and controlled but then again this turns against time and recently implemented policies to make the aviation market more free and deregulated.

One other thing which is often acted upon is that generally speaking privatization is considered to support more competition. But the low-cost airlines have so far only shown a creation of new demand and few competition with other kinds of airlines does exist yet. Also within the low-cost segment the competition is not harsh as often there only exist a few monopolies by a few airlines. As presented the three major airlines keep their share and do not easily give in on new-comers. Also the fact that low-cost airlines often operate on routes as the only airline does not apply for competition. Originally, the low-cost model has evolved out of the possibility for competition with major airlines and their high fares, but when time went on it became a new market that stands on its own with a few highly ranked companies driving it.

Clearly the low-cost development is an interesting issue regarding planning. The relevance for planning is already pointed out in the previous chapter, but exactly how to cope with the low-cost phenomenon is not stipulated as it was not part of this thesis' aim. Nevertheless, a brief insight in the importance and possible adaptations can be set out here. Thinking about low-cost airlines and how to deal with their behaviour and impacts within the field of planning connects the low-cost developments with a few city planning aspects.

First of all, the development and adaptation of the 'low-cost phenomenon' is not easily done because of the previously illustrated unpredictable behaviour of low-cost airlines. In order to respond to the actions of low-cost airlines one needs to be aware of the possible consequences of shifts in its network. Of course, when an airfield has a certain amount of aircrafts from an airline based on its airfield, like the case studies, it cannot directly be demoted to exclusion of the low-cost network. But airports with few routes and no based aircraft may run the risk of being excluded sooner or later at once. It is just to have this thought in the mind when developing according to this phenomenon. This is about seeing the possibilities and the threats of this development.

This may also be a threshold for investment on the other hand. As seen in the case studies large investments have stayed away or are surely not at the same positive growth line as the airports' developments, in particularly private investments. The unpredictability of low-cost services and maybe the lack of long-term assurance may withhold companies from putting in large scale investments.

Secondly, for urban planning, when acting upon low-cost effects, the focus should be on regional development, to try to build up an overall vision, where the issues of large catchment areas and indirect effects are integrated. The flow of passengers makes it difficult to develop specifically as they spread out over a large area, but a region wide initiative for enhancing the opportunities low-cost serves give is a step towards a safer adaptation of low-cost airlines in planning issues, rather then local focus. Also the development and acknowledgment of complementary systems for air transportation in a region is a requirement. Herewith, changes in low-cost networks can more easily be countered upon if the picture of complementation is clear.

Thirdly in the planning process of these secondary airports, airport authorities and governments will have to cope with periods of very fast traffic growth at secondary airports. As seen in the case studies, this may result in increasing noise pollution in airport regions, peaking problems and new terminal layout requirements. However, the monopoly choice of low-cost airlines to choose their airports makes also that some airports enjoy a steady growth while others do not see a thing at all. Also regarding the cases, the impact can seem to vary as well as one talks about different airports. To apply specific strategies for regional development can be tricky with the rapidly changing low-cost networks, so it is needed to keep close track on low-cost developments.

But not only this, marketing has become a more important part of the planning process in way of seeing possibilities for development and growth. The features of city marketing are being put to the test and naturally airlines have provided good opportunities for marketing. But with the arrival of low-cost airlines the questions arose what is legal and what not. The Scottish Route Development Fund had been of great value to the region but seen illegal from an EU perspective. Nyköping's deals were also brought to EU but considered rather legal. Brussels-Charleroi Airport was also a case that often pops up with low-cost airline development; its marketing deals were also found illegal and had to stop. But low-cost airlines seem to have the power to demand these deals in terms of advantages, as there are a lot more other places they can fly to as well. And without these airlines the airports lose its main operator and go back to the state they were before the prosperous growth.

The question is then however, what might happen in the future? Eventually, one could see the increasing demand and increasing networks reaching to a limit where there is no expansion anymore. Will low-cost airlines then start to take over passengers of traditional full-service carriers? Or will the market even out to an equilibrium? And can the low-cost airlines keep their business model up and provide only low fares? As Mark Rodwell (2009) said: what will happen if the low-cost airlines can not keep their low prices? The costumers are by now expecting to get low fares for their flights. This image that is created of low-cost airlines has set up an expectation level for people that can easily disappoint. For instance, flights for 10 Euro are becoming the standard, if one sees a price of 50 Euro one-way the doubts come and it looks rather expensive. So if the low-cost airlines can not keep down their prices, the demand may decrease and low-cost airlines may lose shares again. Now already, people are avoiding low-cost airlines because of bad experiences with the services (Barret, 2004). Then also their networks will be decreased and airports served by low-cost airlines will see negative growth however the airports may have invested a lot to accommodate these services. As often is the case the low-cost served airport do not make much profit of the low-cost services. What will happen is subject to several

developments regarding the low-cost aviation market. As Barret (2004) argues, the success of low-cost airlines (referring to Ryanair) is most likely to continue. It seems low-cost airlines will continue to increase their markets and will be the main driving forces for the increasing aviation market. The low-cost concept is still developing and prices seem to go down all the time by different campaigns and business changes. Also, there are still places undiscovered and niches left available in the networks. But what may happen when there are no more niches or destinations to be served and markets get saturated? Will then competition with full-service airlines start up and do low-cost airlines have to face them in competing for the same market? What then may happen is mainly speculation but one could imagine that full-service airlines will try to come closer to the low-cost model so they too can press prices down, but still retain the high quality of service. Low-cost airlines on the other hand may refrain from changing their model, but try to keep the fares as low as possible and focus on the convenience passengers get from the swift and easy atmosphere and access at the low-cost airports. Also, improved land access may provide more incentives for people to chose low-cost airports compared to congested international airports. As with Skavsta the new railway will most probably increase passenger numbers more with those that may otherwise have chosen Arlanda. Yet, secondary airports will always have the disadvantage of being further away and less easy to access, however they are also less congested.
If the competition comes down to nearly the same prices for the same routes, people may convert again in small numbers to the traditional airlines. Low-cost airlines will however keep the advantage of small airports and the relaxed atmosphere it provides and keep on serving new places not accessed in the traditional hub-and-spoke network. And it is also in the business model of low-cost airlines that when a route does not provide enough profit, it will be dropped and other routes will be sought. So if competition becomes too hard, where will it lead to? There is no answer yet.
Nevertheless, plans from low-cost airline Ryanair provide a possible insight in the future. It is said that Ryanair would like to start up a subsidiary company that flies to the United States, so providing low fare, intercontinental routes from secondary Ryanair bases (like Stockholm-Skavsta and Glasgow-Prestwick). So, maybe the low-cost companies will try to expand their markets overseas as well, in their search for niches in the aviation network.

These days there is also a strong bias towards young people boarding low-cost flights (O'Connel & Williams, 2005). But Barret (2004) also already showed that more and more business people take low-cost flights, which may in my opinion be related to the new destinations served that provide easier access to businesses and the sleek procedures at the low-cost airports that result in shorter travel times. In addition, I think it are mainly smaller companies and private businesses that chose these less costly flights. At this point it may come to more competition as well between traditional services and low-cost services.

Last point of speculation is, as Barret (2004) also calls it: the threat from the EU Committee. The decisions taken by the European Union can have large effects on the development of low-cost services. As could be seen in Scotland, new routes can not be supported anymore, providing less possible development for the region. Also the Brussels-Charleroi case showed a threat towards subsidies from governmental authorities. These subsidies are often a basic need to keep the low-cost services at an airport as the airline has many other choices that can easily give it the advantage it wants. If the EU wants to control the aviation market more again, then low-cost services may see a more difficult future as well. This, making it easier for traditional airlines to compete.

8. Conclusions

The thesis started out from the idea to explorer the low-cost airlines concept and its implications for planning. Of this the model and way of working by low-cost airlines has been clarified and it can be concluded that this sort of transportation has become rather important for travelling and is intertwined with urban planning concepts.

First of all, the thesis was aimed at examining the development of low-cost services in Europe. It can be stated that it has developed quickly and has become a key player in the European aviation market, holding a large passenger's share and presenting most of the air traffic growth. The development followed generally four stages: starting in 1995 in the UK/Ireland, in 1997 the step was taken to mainland Europe flying to central en southern destinations, 2002 saw the integration of Scandinavia, and from 2004 the network spread to Eastern Europe while still bases are increased in central and southern parts. As the model is focused on serving underused secondary airports the network configurations are orientated towards 'point-to-point' routes providing new entry points/gateways for regions but with low connectivity.
The existence of low-cost airlines relates back to the ideas of the European Union. The correlation between the implementation of policies and expansion of the EU is instantly recognizable. EU policies have stimulated growth of the low-cost airlines in a way by:

- providing easier access to European regions, enhancing the easy development of the network,
- the own choice of routes and fare that have provided the low ticket prices and new destinations of low-cost airlines,
- the free movement in EU which has increased demands for travel,
- inclusion of new member states in the EU that has more developed and made the low-cost network and its destinations grow.

Also the surplus availability of underused secondary airports in Europe made it easy for low-cost airlines to look for partners. That is also why underused secondary airports suddenly developed fast. The creation of new low-cost networks has provided regions with new nodes and improved accessibility for the European aviation network. This improved accessibility has not only stimulated air travel demands but also made it easier for migration that has possibly increased within the EU due to low-cost flights as illustrated in the case studies.

Secondly, the main purpose of performing this study was to look upon the effect low-cost airlines have on city networks. Low-cost airlines have provided new gateways, new routes, new markets, and as a result a new network. The choice of operating from new nodes lies in the low-cost model where locations do not matter but profitable operations are the aim. Subsequently, the low-cost networks operate perfectly according to city network theories where the agents/airlines are making the network while being accommodated at operational nodes/airports; it are not cities making the network but the airlines. However, they neglect the basic assumption that transportation nodes should be supported by good infrastructure. The creation of a new network comes alongside the traditional hub-and-spoke network which in effect enhances the existing city networks but via different nodes. This is, as those cities associated with, and referred to, the low-cost network are commonly the larger cities not the adjacent 'airport towns'. Thus, a totally new network exists that is in the end adopted in the traditional travel destinations of passengers, not referring to new destinations.

Thirdly, the research was supposed to expose the changes of low-cost airlines on travel behaviour. The growing travel trends indicate a direct effect on the movement of people and their travel behaviour as new demand has been induced by these airlines. The lower fare of low-cost services has invented the shorter holiday breaks (the city breaks), increased friends-and-relative visits, and moreover made it possible for more frequent trips. This has its implications

for the tourism markets as well, as new sorts of tourists are attracted to regions but with shorter lengths of stay. There is a clear change in travel behaviour of travellers choosing to fly with low-cost airlines. It is apparent that for cheap tickets passengers seem to be wiling to travel longer distances to an airport, showing an increased catchment area that can even cross country borders.

Consequently, as a fourth point in the thesis' study aim, regional planning has indirectly seen the effects as a cause of this change in travel behaviour. The increased catchment area of the low-cost served airports indicates the spill-over effects being spread out over the larger region instead of the locality. The more benefit is coming to the region as tourist flows spread out out of the region over a larger area. The local town also experiences less than the expected spin-off effects from the low-cost services. Mainly, because of the redirected tourism flows to bigger cities and also since there are few employees needed at low-cost served airports.
What more did low-cost airlines effect for the region is that the region gets new access points that make a complementary structure for aviation markets. Hence, there is no competition yet between the international airports and low-cost served airports in terms of passengers and destinations. This is stimulated by travel behaviour as passengers see the new airports/nodes as a way of getting to the bigger cities and established destinations. The improved network and accessibility is therewith mostly to the benefit for the bigger city, not so much for the adjacent airport city.
The region and city then also differ in their perception towards the low-cost services. Regions seem to react positive to the low-cost developments, but do not seem to totally take it in on their strategies and mainly 'just' support the progress of low-cost served airports. Nevertheless, it implies that planning perspectives have changed on the regional level in the way that secondary airports become more important in infrastructure schemes and are becoming to make a complementary structure. Opposite from that, the local cities (in particular the adjacent 'airport town') do see new opportunities and try heavily to react on it and extract the benefits from the airports. Which they do not see fulfilled directly, but just in small supply of jobs, tourism and related businesses.

Then finally, planning is indirectly affected by the low-cost services in the urban marketing strategies as a cause of the aggressive low-cost business model. Marketing became more obvious, as airlines have a strong position but seem to be connected to marketing deals that provide the city a safeguarding of the services and a new opportunity to promote the city.
The consequence of directed tourism flows also makes the need for aggressive marketing by the adjacent town to attract tourists. Acting to the huge opportunity of having such a lot of tourist passing by and within reach but it is pitiful if they would not visit the city.

At last the hypothesis of this study can be confirmed: low-cost airlines do have an effect on planning issues, is it though indirectly with more action for the locality but rather more meaning to the region. Regional planning concepts are affected by the new networks, changed travel behaviour, longer travel distances, easier migration and stimulated marketing. This all should be subject to regional scrutiny while planning for these rapid developments. Indeed, a regional perspective is preferred when planning with low-cost services: contemplation and cooperation is needed when the effects of low-cost services are to be fully utilized. Although, with the unpredictable nature of low-cost airlines it is the best to keep close track of developments and be prepared to change ideas and perspectives.

9. Personal Assessment

Although there was quite a lot of time available for this thesis, there where a few constraints which made that part of the results came out a bit different than thought of at the start. First of all, the search for contacts took a long time and to find the right person to contact to was a real trick. In the end, I found out, as described in the methodology chapter, that it would have been better to send a draft question list before meetings so you can make sure the person you would like to talk to can give you the information you want or already give you an other contact on beforehand.

This also resulted in that in a relatively late period real data and real results were becoming visible. At the same time, I think I was too focused on the case studies and acquiring data for them so that part of the European data could not be retrieved anymore. This concerns detailed data about the development of the networks of all low-cost airports in Europe and a detailed comparison of the past fifteen years between the airports of Prestwick, Glasgow Int. and Skavsta, Arlanda.

Furthermore, because of really late replies from Weeze Airport and authorities over there it was not possible anymore to make a full analysis like done with Skavsta and Prestwick. So unfortunately, the Weeze case study had to be degraded. Luckily, it could still give valuable information.

Although, the case studies do provide a rather detailed analysis of the airports and their implications, more could have been investigated. More study can be done about migration and the relation to low-cost services as well as passenger data and the relation to catchment areas.

Yet, as also with the network and route analyses the data that is most desirable is often not directly accessible and has to be acquired either via payments or memberships. If funding was available more data may have surfaced during the study.

For that same reason, there has not been done any investigation in foreign labour activities caused by low-cost airlines. This could be a study on it self.

Also information concerning communication between authorities and airlines is of course not public and confidential.

References

Literature

Airport Weeze, (2009). 'Presentation Weeze Airport'

Ayrshire Joint Structure Plan Committee, (2007). 'Ayrshire Joint Structure Plan – Growing a Sustainable Ayrshire'

Banister, D., (1995). 'Transport and Urban Development', Taylor & Francis

Barret, S. D., (2004). 'The Sustainability of the Ryanair model' in *International Journal of Transport Management*. 2004, Volume 2, Issue 2, pp 89-98.

BBC News, (2001). 'Low-cost airlines open up Europe', acquired via http://news.bbc.co.uk/1/hi/business/1446847.stm at 01 March 2009

Behnen, T., (2004). ' Germany's changing airport infrastructure: the prospects for 'new comer' airports attempting market entry' in *Journal of Transport Geography*. December 2004, Volume 12, Issue 4, pp 277-286.

Berglund, E., (2008). 'City Marketing' presentation and seminar during the course *City Networks in Regional Context* in the Spatial Planning Master Program at the Royal Institute of Technology, KTH, Stockholm, Sweden at 26 February 2008

Burghouwt, G., Hakfoort, J., van Eck, J.R., (2003). 'The spatial configuration of airline networks in Europe' in *Journal of Air transport Management*. September 2003, Volume 9, Issue 5, pp 309-323.

Button, K. J. & Vega, H., (2008). 'The Effects of Air Transportation on the Movement of Labor' in *GeoJournal*. January 2008, Volume 71, Issue 1, pp 67-81.

Civil Aviation Authority, (2007). ' UK Airport Statistics: 2007-annual, Table 08 Air Passengers by Type and Nat of Operator 2007 ' acquired via CAA's UK Airport Statistics via www.caa.co.uk/airportstatistics

Civil Aviation Authority, (2008). 'Aviation Trends – Quarter 4 2008' acquired at www.caa.co.uk/aviationtrends

Civil Aviation Authority, (2008). 'UK Airport Statistics: 2008-annual, Table 08 Air Passengers by Type and Nat of Operator 2008' acquired via CAA's UK Airport Statistics via www.caa.co.uk/airportstatistics

Civil Aviation Authority, (2008). ' UK Airport Statistics: 2008-annual, Table 10 2 Domestic Terminal Pax Traffic 2008 ' acquired via CAA's UK Airport Statistics via www.caa.co.uk/airportstatistics

Civil Aviation Authority, (2008). ' UK Airport Statistics: 2008-annual, Table 10 1 EU and Other intl Pax Traffic 2008 ' acquired via CAA's UK Airport Statistics via www.caa.co.uk/airportstatistics

Civil Aviation Authority, (2008). ' UK Airport Statistics: 2008-annual, Table 13 1 Freight by Type and Nat of Operator 2008 ' acquired via CAA's UK Airport Statistics via www.caa.co.uk/airportstatistics

CMA Research AB, (2007). 'Skavsta-regionen – Nulägesbil och förutsättningar för utveckling'

O'Connell, J. F. and Williams, G., (2005). 'Passengers' perceptions of low cost airlines and full service carriers: A case study involving Ryanair, Aer Lingus, Air Aisia and Malaysia Airlines', in *Journal of Air Transport Management*. July 2005, Volume 11, Issue 4, pp 259-272

Dobruszkes, F., (2006). 'An analysis of European low-cost airlines and their networks' in *Journal of Transport Geography*. July 2006, Volume 14, Issue 4, pp 249-264.

Ellis, G., (2008). 'UK Planning in the context of Europe' presentation during the course *Applied Analysis & International Planning Practice* in the Spatial Planning Master Program at the Royal Institute of Technology, KTH, Stockholm, Sweden at 16 September 2008

Envirodesk, (2008). 'Nederlandse milieu-tax op vliegtickets jaagt passagiers over de grens', acquired at envirodesk.drupal.ma.cx/node/44297 accessed at 2009-08-25

EuroControl, (2007). 'Trends in Air Traffic, Volume 3'.

EuroControl Performance Review Commission, (2009) 'Performance Review Report, An Assessment of Air Traffic Management in Europe during the Calendar Year 2008'

European Low Fares Airline Association, (2004). 'Liberalisation of European Air Transport: The Benefits of Low Fares Airlines to Consumers, Airports, Regions and the Environment'

European Low Fares Airline Association, Assembly of European Regions & Forum of European Regional Airports, (2007). 'Social Benefits of Low fares Airlines in Europe'

European Parliament Committee on Transport and Tourism, (2007). 'The Consequences of the Growing Low-Cost Airlines Sector', Brussels

Flughafen Niederrhein GmbH, (2005). 'Brochure Airport City Weeze, Your base for business'

Francis, G., Humphreys, I., Ison, S. & Aicken, M., (2006). 'Where next for Low-Cost Airlines: A spatial and temporal comparative study' in *Journal of Transport Geography*. March 2006, Volume 14, Issue 2, pp 83-94.

Gillen, D. and Lall, A., (2004). 'Competitive advantage of low-cost carriers: some implications for airports' in *Journal of Air Transport Management*. January 2004, Volume 10, Issues 1, pp 41-50.

Glasgow and the Clyde Valley Structure Plan Joint Committee, (2006). 'Glasgow and the Clyde Valley Joint Structure Plan 2006 – The Twenty Year Development Vision'

Glasgow-Prestwick Airport, (2008). 'Draft Master Plan'

Graham, B. & Shaw, J., (2007). **'**Low-cost airlines in Europe: Reconciling liberalization and sustainability' in *Geoforum*. May 2008, Volume 39, Issue 3, pp 1439-1451.

General Register Office Scotland, (2003). 'Scotland Census 2001' acquired via www.gro-scotland.gov.uk/census/censushm/scotcen2/reports-and-data/scotcen8.html at 25 August 2009

General Register Office for Scotland, (2009). 'Scottish Statistics' acquired at www.gro-scotland.gov.uk/statistics/index.html

Gäfvert, H., (2007). 'En analys av Stockholm Skavsta flygplats och dess påverkan på Nyköpins kommun', thesis Linköping University 2007

Jensen, O. B., (2007). 'Cultural Stories: Understanding Cultural urban Branding' in *Planning Theory*. 2007, Volume 6, Issue 3, pp 211-236

Johansson, M., (2008). 'City networks and city systems: differing times, differing outcomes' presentation during the course *City Networks in Regional Context* in the Spatial Planning Master Program at the Royal Institute of Technology, KTH, Stockholm, Sweden at 25 January 2008

Jansson, C., (2006) Stockholm – viktigast i Sverige En tillväxtplan för utveckling av huvudstadsregionen. Eriklids Förlag, Stockholm.

Luftfartsstyrelsen, (2007). 'Flygets utvecklingsmöjligheter 2010-2019'

Luftfartstyrelsen, (2007). 'Planeringsunderlag om brister i infrastrukturen' (planning arguments for transportation shortcomings), acquired at http://transportstyrelsen.se/sv/Luftfart/Flygplatserflygfalt/Infrastrukturplanering/

Nilsson, N., (2004). 'Bidrar lågprisflygplatser till lokal ekonomisk tillväxt?' University of Stockholm 2004

Nyköping Kommun, (2005). 'Skavsta flygplats och arbetsområde – Fördjupning av översiktsplanen'

Nyköping Kommun, (2009). 'Allt fler Skavstaresenärer är på väg till Nyköping', pressinformation released 2 September 2009, received via Josefina Högelund by email at 2009-09-02.

Nyköping Kommun, Eriksson, M., (2007).'Flyttningar till och från Nyköpings Kommun 1991-2006'

Nyköping Kommun, Eriksson, M., (2008). 'Befolkning i Nyköpings kommun 2007, samt befolkningsutvecklingen 1998-2007'

Pantazis, N. & Liefner, I., (2006). 'The impact of low-cost carriers on catchment areas of established international airports: The case of Hanover Airport, Germany' in *Journal of Transport Geography*. July 2006, Volume 14, Issue 4, pp 265-272.

Politics.co.uk, (2008). 'European Single Market', acquired via http://www.politics.co.uk/briefings-guides/issue-briefs/foreign-policy/european-single-market-$366685.htm at 08 July 2009

Railize International AB, (2009). 'Flerregional systemanalys för Ostlänkenstråket'

RDC Aviation, (2002). 'Low-cost Monitor 2002'

RDC Aviation, (2003). 'Low-cost Monitor 2003'

RDC Aviation, (2005). 'Low-cost Monitor 2005'

RDC Aviation, (2006). 'Low-cost Monitor 2006'

RDC Aviation, (2007). 'Low-cost Monitor 2007'

RDC Aviation, (2008). 'Low-cost Monitor 2008'

RDC Aviation, (2009). 'Intra European capacity report'

Regionförbunden i Uppsala, Sörmlands och Örebro län, Länsstyrelserna i Stockholms och Västmanlands län samt Gotlands kommun, (2008). 'Infrastrukturplaneringen 2010-2020, systemanalys Stockholm-Mälarregionen och Gotland'

Regionförbundet Sörmland, (2008). 'Skavsta flygplats 2020' (Skavsta Airport 2020)

Ruimtelijk Plan Bureau (Netherlands Institute for Spatial Research) (RPB), (2005). 'Verkening Regionale Luchthavens' (Exploration Regional Airports). Nai Uitgevers, Den Haag

Sassen, S., (2002). 'Global Networks, Linked Cities', Routledge

Scottish Executive Development Department, (2005). 'Scottish Planning Policy 17, Planning for Transport'

Scottish Government, (2009). 'About the Air Route Development Fund' acquired at http://www.scotland.gov.uk/Topics/Transport/19675/air-route-dev-fund/about-air-rdf

South-Ayrshire Council, (2009). www.south-ayrshire.gov.uk/about/ accessed in May 2009

Statens institut för Kommunikationsanalys (SIKA) Statistik, (2008). 'Luftfart 2007, Civil Aviation 2007'.

Statens institut för Kommunikationsanalys (SIKA) Statistik, (2009). 'Luftfart 2008, Civil Aviation 2008'.

Statistiska centralbyrån (Statistics Sweden) (SCB), (2009). www.scb.se accessed at 21 May 2009 and 20 August 2009

Stockholm Visitors Board, (2007). 'Facts about Stockholm's tourism industry, edition 2007'

SQW Consulting, (2008). 'Economic Impact of Glasgow-Prestwick Airport'

SQW Consulting & TNS Travel and Tourism, (2007). 'Passenger Research Glasgow Prestwick Airport – presentation of findings' acquired via www.south-ayrshire.co.uk in 2009

Sverige Radio – Ekot, (2004). 'Skanska vill bygga järnväg till Skavsta flygplats', article published at 20 October 2004, accessed via www.sr.se/ekot/artikel.asp?artikel=490587 at 2009-05-21

Sverige Radio, (2009). ' Näringslivsvinster av civilflyg kan dröja', article published at 04 May 2009, accessed via www.sr.se/cgi-bin/uppland/nyheter/artikel.asp?artikel=2809472

Sverige Radio, (2009). 'Skavstalöften om jobb har inte infriats', article published at 07 May 2009, accessed via www.sr.se/cgi-bin/sormland/nyheter/artikel.asp?artikel=2817766

Swedish Transport Agency (Transportstyrelsen), (2009). transportstyrelsen.se accessed in May 2009

Sörmlands Nyheter, (2002). '1000 nya jobb skapar många bieffekter', article published at 12 September 2002, accessed via www.sn.se/nyheter/nykoping/1.323468

Sörmlands Nyheter, (2003). 'Snabba beslut när Skavsta behöver bygga ut', article published at 19 March 2003, accessed via www.sn.se/nyheter/1.315711

Sörmlands Nyheter, (2003). 'Avtal med Ryanair kostar mångmiljonbelopp', article published at 26 March 2003, accessed via www.sn.se/nyheter/nykoping/1.324568

Sörmlands Nyheter, (2005). 'Så ska Nyköping locka tourister', article published at 09 May 2005, accessed via www.sn.se/nyheter/nykoping/1.330578

Sörmlands Nyheter, (2006). 'Journalister ska marknadsföra Nyköping', article published at 01 August 2006, accessed via www.sn.se/nyheter/nykoping/1.275010

Sörmlands Nyheter, (2006). 'Nyköping storsatsar på Skavsta', article published at 16 August 2006, accessed via www.sn.se/nyheter/nykoping/1.275733

Sörmlands Nyheter, (2007). 'Klart för nytt Ryanairavtal', article published at 03 September 2007, accessed via www.sn.se/nyheter/nykoping/1.292244

Tam, R. & Hansman, R.J., (2002). 'Impact of Air Transportation on Regional Economic and Social Connectivity in the United States'. In *AIAA Aircraft Technology, Integration, and Operations Forum*, Los Angeles, CA, October 2002.

Taylor, P. J., (2004). 'World City Network: A Global Urban Analysis', Routledge

The Independent, (2007). 'Low-Cost Airlines Boost property Prices', acquired via http://www.independent.co.uk/life-style/house-and-home/property/lowcost-airlines-boost-property-prices-449909.html at 01 March 2009

Transportstyrelsen, (2009). 'Flygets Utveckling 2008'

UK Department for Transportation, (2003). 'The Future of Air Transport – White Paper', The Stationary Office Limited, UK

UK Department for Transport, (2003). 'The Future of Air Transport – White Paper, Key Facts Scotland' acquired via www.dft.gov.uk/about/strategy/whitepapers/air/keyfacts/

van der Zwan, J., (2006). 'Low-cost Carriers – Europe, Een onderzoek naar de Europese low-cost carriers en hun netwerkontwikkeling' (research on the development of low-cost networks in Europe), thesis at University of Utrecht

Websites

Airport Weeze, (2009). www.airport-weeze.de accessed 9 July 2009

Carlstedt Arkitekter AB, (2009). www.carlstedtarkitekter.se accessed at 2009-07-13

Cheapo.com, (2009). www.cheapo.com accessed at 01 March 2009

Civil Aviation Authority, (2009). www.caa.co.uk accessed July 2009

Eurocontrol, (2009). www.eurocontrol.int accessed at 29 July 2009

Glasgow-Prestwick Airport website, (2009) www.gpia.co.uk accessed at 2009-04-03

Ryanair, (2009). www.ryanair.com accessed at 2009-08-25

Stockholm-Skavsta Airport website, (2009) www.skavsta.se accessed at 2009-08-03

U.S. Department of State, (2009). http://www.state.gov/e/eeb/tra/ata/ accessed at 29 July 2009

Van der Zwan, (2009). www.jvdz.net acquired in 2008/2009

Personal Correspondences & Interviews

Cameron, I., (2009). Scottish Government, Department of Transport, Aviation. 'Email correspondence with Iain Cameron at Scottish Government' at 2009-08-06

Glasgow City Council Development and Regeneration Services Office, (2009). 'Interview with Anne Murray and Jan Freeke' at Thursday 2009-07-23, 14:00, Glasgow, Scotland

Glasgow City statistics, (2009). Acquired via email from Jan Freeke at Glasgow City Council Development and Regeneration Services Office at 11 June 2009

Haugness, H., (2009). 'Email correspondence with Chef of planning department at Nyköping Kommun Henrik Haugnes's at 18 August 2009

Höglund, J., (2009). 'Telephone conversation with Josefina Höglund of Nyköping Kommun, Tourism Development' at 2009-08-19

Höglund, J., (2009). 'Email correspondence with Josefina Höglund of Nyköping Kommun, Tourism Development' at 2009-08-21

Jönsson, A-C., (2009). 'Email correspondence with Ann-Charlotte, Manager Press of Stockholm Visitors Board' at 2009-08-05

Nyköping Kommun, (2009). 'Interview with Chef Henrik Haugness and Magnus Eriksson of the planning department at Nyköping Kommun', 02-03-2009

Purves, G., (2009). 'Interview with Chief Planner Graeme Purves' carried out Friday 2009-07-24, 10:00 at Scottish Government Office, Edinburgh, Scotland

Rodwell, M., (2009). 'Interview with airport's Chief Executive Mark Rodwell' carried out Thursday 2009-07-23, 10:00 at Glasgow-Prestwick Airport, Prestwick, Scotland

Appendixes

Appendix A

Comprehensive overview of selected case studies

	Glasgow-Prestwick	Stockholm-Skavsta	Düsseldorf-Weeze
EU region	UK	Scandinavia	Central
Municipality	South-Ayrshire	Nyköping	Weeze
Region	Scotland	Sörmland	Niederrhein
Adjacent town	Prestwick	Nyköping	Weeze
Named city (km)	Glasgow (45)	Stockholm (90)	Düsseldorf (61)
Capital city (km)	London (535)	Stockholm (90)	Berlin (508)
Closest secondary airport	Edinburgh	Linköping	Eindhoven
Closest hub airport	Glasgow Int.	Stockholm-Arlanda	Düsseldorf Int.
Passengers/year[8]	2.4 M	2.5 M	1.5 M
Number of routes	35	50	59
Ryanair destinations[9]	29	36	49
Total low-cost routes	32	40	50
Ryanair base (year)	Yes (2003)	Yes (2003)	Yes (2007)
Number of airlines	4	5	5
Direct employment	1230 jobs	1052 jobs	625 jobs
Indirect employment	1733 jobs	1357 jobs	1030 jobs
Catalyst employment	2900 jobs	1534 jobs	2500 jobs
Companies at airport	80	36	40
Origin outbound passengers	21% Glasgow 21% Strathclyde 20% Ayrshire region 8% Lothian 7% Tayside	35% Stockholm region 18% Sörmland 16% Central Sweden 15% Östergötaland 10% Southern Sweden	16% Gelderland (NL) 14% Niederrhein (G) 12% Rheinland (G) 11% Ruhrgebiet (G) 11% Noord-Brabant (NL) 8% Limburg (NL)
Destination inbound passengers	49% Glasgow 26% Ayrshire 25% Edinburgh	50% Stockholm 23% Sörmland 16% Nyköping 11% Svealand	n.n.

[8] Total airport passenger numbers in 2008 retrieved from the particular airports' websites
[9] Number of destinations retrieved from Ryanair website, 27 August 2009

Appendix B

B-1 Route development Skavsta Airport

Year	*Routes*	*Operator*	*Comments*
1997	+London-Stansted	Ryanair	
2000	Malmö	Fly European	
	Tenerife	TUI Nordic[10]	
	Preveze	TUI Nordic	
2001/10	+Helsinki	Finnair / GoldenAir	
	+Visby	Trygg Flyg	
2002	+Frankfurt-Hahn	Ryanair	
	Paris	Goodjet	
	Riga	Trygg Flyg	
	Gdansk	Trygg Flyg	
2003	*-Helsinki*	*Finnair*	
	-Visby	*Trygg Flyg*	
	+Brussels-Charleroi	Ryanair	
	+Paris	Ryanair	
	+Aarhus	Ryanair	
	+Glasgow-Prestwick	Ryanair	
	+Hamburg-Lubeck	Ryanair	
	+Oslo-Torp	Ryanair	
	+Tampere	Ryanair	
	+Visby	Gotlandsflyg	
2004	*-Oslo*	*Ryanair*	
	-Tampere	*Ryanair*	
	-Aarhus	*Ryanair*	
	+Rome	Ryanair	
	+Milan	Ryanair	
	+Rotterdam	Transavia	
	+Katowice-Krakow	Ryanair	
	+Budapest	Ryanair	
	Warsaw	Air Polonia	
2005	*-Visby*	*Gotlandsflyg*	
/12	+Gdansk	WizzAir	
	+Warzaw	WizzAir	
	+Barcelona-Gerona	Ryanair	
	+Düsseldorf-Weeze	Ryanair	
	+Riga	Ryanair	
	+Shannon	Ryanair	

[10] TUI Nordic also know as: Fritidsresor or TUIfly Nordic

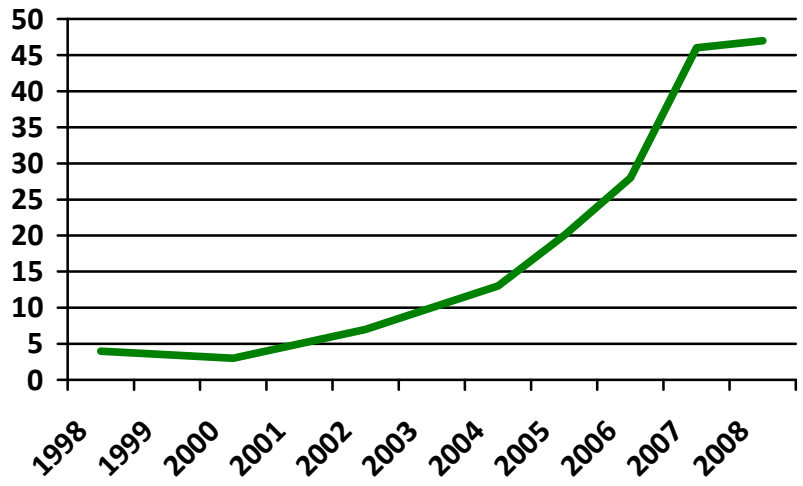
/05-/10	Lahore	SweFly	
	Oslo	SweFly	
	Leeds	SweFly	
	Luton	SweFly	
	Copenhagen	SweFly	
	Helsinki-Boston	Finnair	
2006	*-Rotterdam*	*Transavia*	
/03	+Kaunas	Ryanair	
	+Gdansk	Ryanair	
	+Chania	TUI Nordic	*Summer only route*
	+Mallorca	TUI Nordic	*Summer only route*
	+Burgas	TUI Nordic	*Summer only route*
	+Antalya	TUI Nordic	*Summer only route*
	+Lanzarote	TUI Nordic	*Winter only route*
	+Las Palmas	TUI Nordic	*Winter only route*
	+Phuket	TUI Nordic	*Winter only route*
	+Las Palmas	Ving / My Travel[11]	*Winter only route*
2007	*-Shannon*	*Ryanair*	
/06	+Rimini	Ryanair	*Summer only route*
	+Marseilles	Ryanair	
	+Venice	Ryanair	
	+Alghero	Ryanair	
/06	+Bremen	Ryanair	
	+Vienna(Bratislava)	Ryanair	
/10	+Basel	Ryanair	
	+Karlsruhe/Baden baden	Ryanair	
	+Berlin-Schönefield	Ryanair	
	+Pisa	Ryanair	
	+Valencia	Ryanair	
	+Alicante	Ryanair	
	+Porto	Ryanair	
	+Eindhoven	Ryanair	
	+Liverpool	Ryanair	
	+Malta	Ryanair	
	+Trapani	Ryanair	*Winter only route*
	+Salzburg	Ryanair	
/10	+Dublin	Ryanair	
/12	+Grenoble	Ryanair	*Winter only route*
	+Poznan	WizzAir	
	Skien	Vildanden	*Relocated to Bromma*
/09	+Visby	Gotlandsflyg	
	+Monastir	TUI N	*Summer only route*
	+Monastir	Ving / My Travel	*Summer only route*
2008			
/05	*-Kaunas*	*Ryanair*	
	-Brussels	*Ryanair*	

[11] Ving / My Travel also includes Thomas Cook Scandinavia Airlines and operates for Apollo too

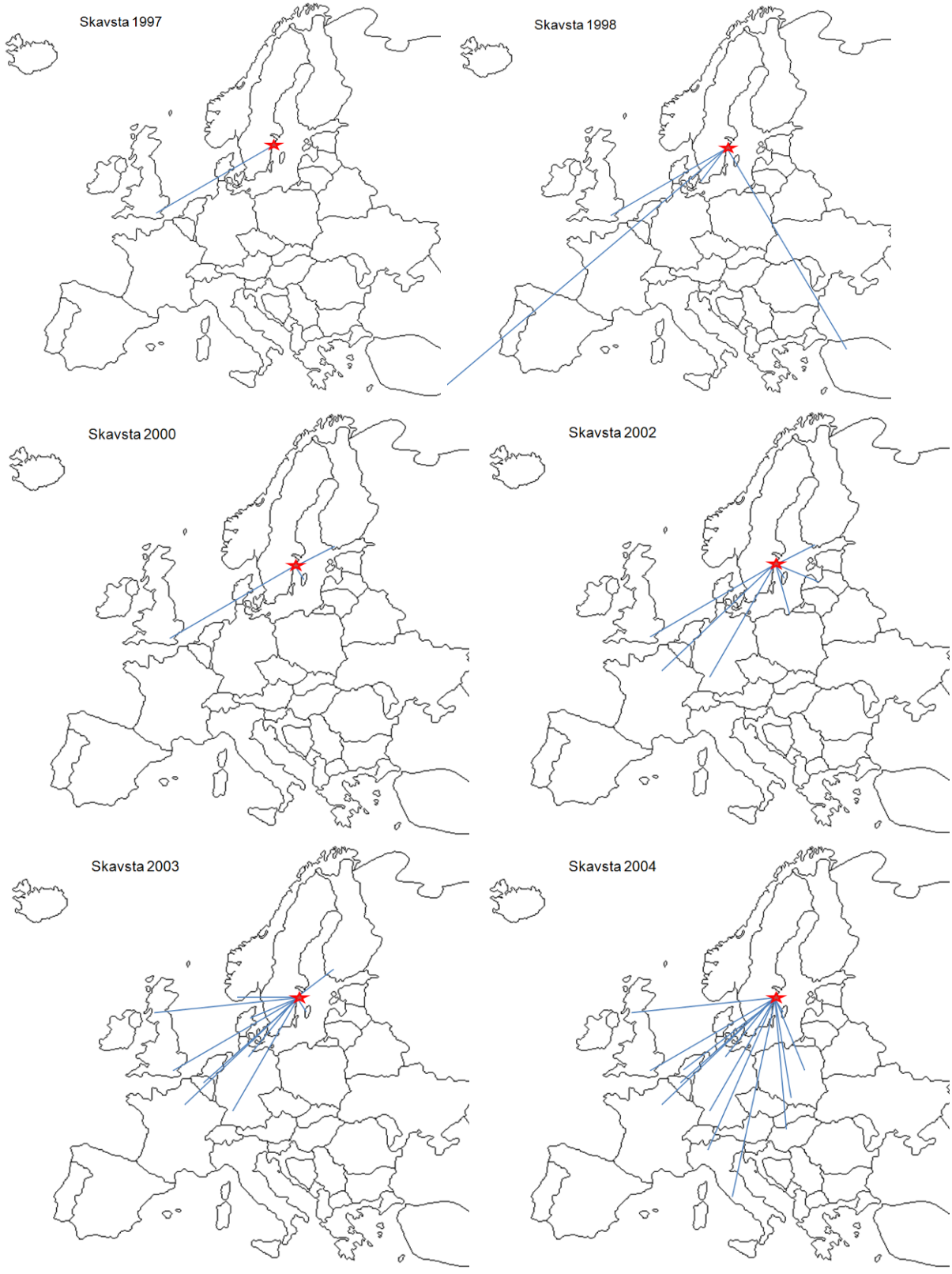
	-Gdansk	*Ryanair*		
/06	Rostock	Ryanair		*Summer only route*
/07	+Birmingham		Ryanair	
/09	+Edinburgh	Ryanair		
/11	+Cracow	Ryanair		
	+Lodz	Ryanair		
	+Wroclaw	Ryanair		
	+Prague	Ryanair		
	+Klagenfurt	Ryanair		
	+Larnaca	TUI Nordic		
2009/*05*	*-Porto*	*Ryanair*		
	-Valencia	*Ryanair*		
	-Lodz	*Ryanair*		
	-Salzburg	*Ryanair*		
	-Lanzarote	*TUI Nordic*		
	-Monastir	*TUI Nordic*		
	-Monastir	*Ving / My Travel*		
	-Poznan	*WizzAir*		
/04	+Zadar	Ryanair		
	+ Mallorca	Ryanair		
	+Toulon	Ryanair		

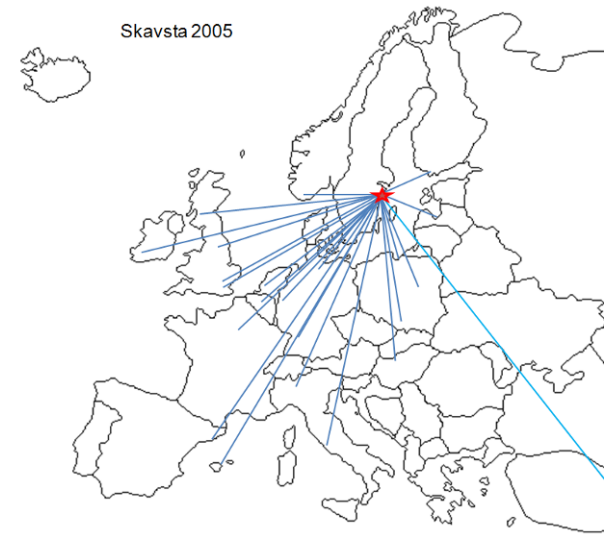
Sources: email correspondence chef Skavsta Airport: Dot Gade Kuolivare, Website Skavsta Airport: www.skavsta.se, Newspaper Aftonbladet: www.aftonbladet.se, Online news webpage The Local: www.thelocal.se, Website Ryanair: www.ryanair.com, Website Finnair: www.finnairgroup.com and the report '*Bidrar lågprisflygplatser till local ekonomisk tillväxt?*' from Nilsson, 2004.

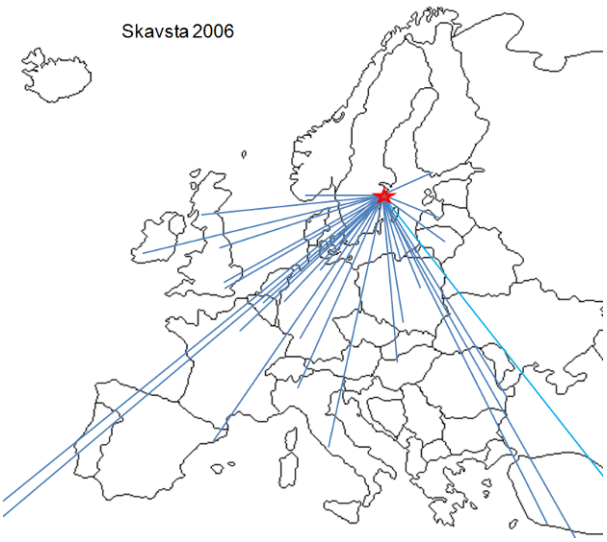
B-2 Number of routes to Skavsta over the years:

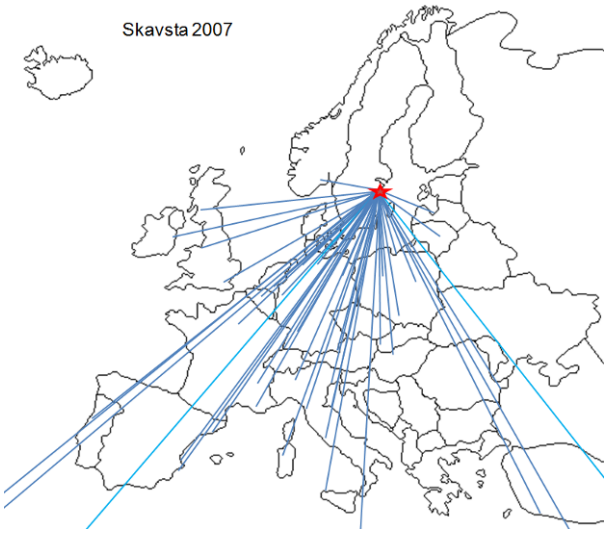


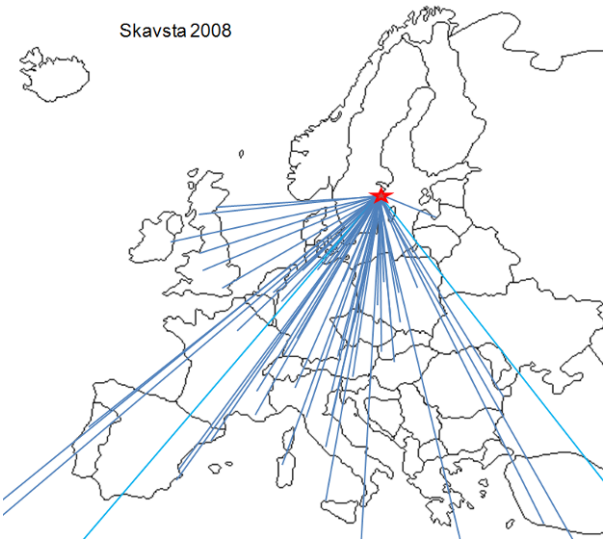
B-3 Network development of airline routes from Stockholm-Skavsta Airport 1997 - 2009

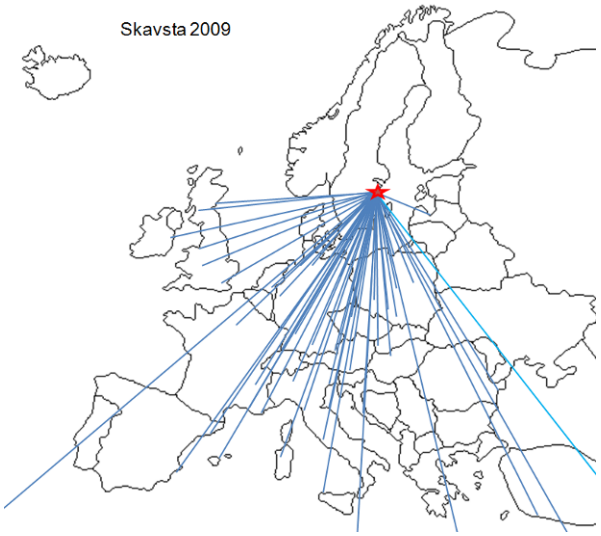



Skavsta 2005


Skavsta 2006


Skavsta 2007


Skavsta 2008


Skavsta 2009

Appendix C

C-1 Route Development Prestwick Airport

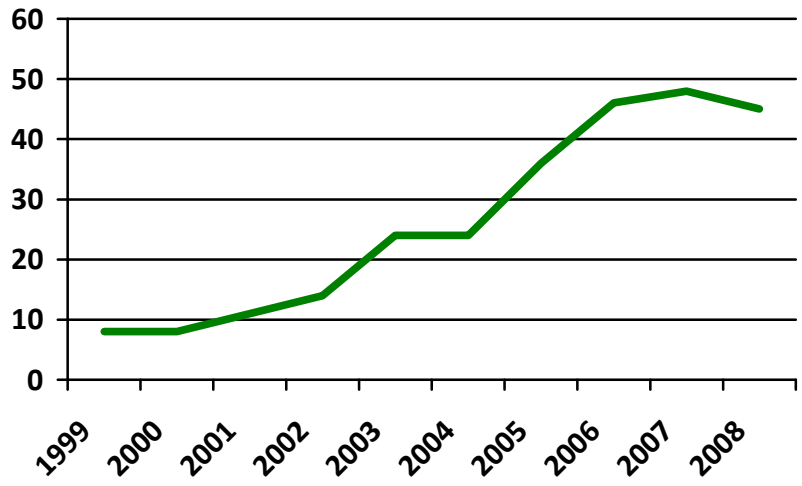
?	+Paris	??	*surely before 1999*
?	+Palma Malorca	??	*surely before 1999*
?	+Tenerife	??	*surely before 1999*
?	+Orlando	??	*surely before 1999*
1994	+Dublin	Ryanair	
1999	Donegal	Aer Arran	
	+Ibiza	??	
2000	Frankfurt-Hahn	Ryanair	
2001	*-Ibiza*	*??*	
	-Orlando	*??*	
	Belfast City		
	+Jersey	??	
	Brussels	Ryanair	
	+Alicante		
	+London-Stansted	Ryanair	
2002	Bournemouth	Buzz	*until ???*
	Amsterdam		
	Barcelona		
	+Oslo (Torp)		
2003	*-Jersey*		
	Berlin-Tegel		
	+Skavsta	Ryanair	
	+Gothenburg	Ryanair	
	+Shannon	Ryanair	
	+Rome-Ciampino		
	+Rome-Fiumicino	Ryanair	
	+Faro	Ryanair	
	+Gerona	Ryanair	
	+Arrecife	Ryanair	*Summer only route*
	+Orlando		
	+Bournemouth		
	+Cardiff Wales		
	+Isle of Man		
/03-10	Palma	FlyGlobespan	*relocated to Glasgow Int.*
/03-10	Nice	FlyGlobespan	*relocated to Glasgow Int.*
/03-10	Malaga	FlyGlobespan	*relocated to Glasgow Int.*
/03-10	Rome	FlyGlobespan	*relocated to Glasgow Int.*
2004			
	+Düsseldorf-Weeze	Ryanair	
	+Donegal	Ryanair	

	+Bergamo	Ryanair	
2005	*-Rome-Fiumicino*		
	-Isle of Man		
	Burgas		
/11	+Krakow	Ryanair	
	+Tarbes-Lourdes		
	+Hamburg-Lubeck		
	+Pisa		
	+Amsterdam	Transavia	
	+Barcelona		
	+Murcia	Ryanair	
	+Ibiza		
	+Belfast		
	+Moscow		
	Port of Spain	??	*(Trinidad&Tobogo)*
2006	*-Orlando*		
	+Dalaman	Scottravel Holidays	*Summer only route*
	Basel		
	+Grenoble	Ryanair	*Winter only route*
	+Cork	Ryanair	
	+Derry	Ryanair	
/03	+Wroclaw	Ryanair	
	+Marseille	Ryanair	
	+Rovaniemi	Ryanair	
	+Warsaw	WizzAir	
	+Gdansk	WizzAir	
/10	+Riga	Ryanair	
	+Eindhoven	Ryanair	*until ???*
2007	*-Hamburg-Lubeck*		
	-Cardiff Wales		
	-Moscow		
	+Grenoble	Ryanair	*Winter only route*
/10	+Belfast	Ryanair	
	+Budapest	Ryanair	
	+Kaunas	Ryanair	
	+Katowice	WizzAir	
	+Malaga	Ryanair	
	Dalaman		*Summer only route*
	Tel Aviv		
/10	Tenerife	ThomasCook	
/10	Majorca	ThomasCook	
/10	Gran Canaria	ThomasCook	
/10	Lanzarote	ThomasCook	
	Lanarca		
2008	*-Amsterdam*	*Transavia*	
	-Ibiza		
/04	Barcelona-Reus	Ryanair	

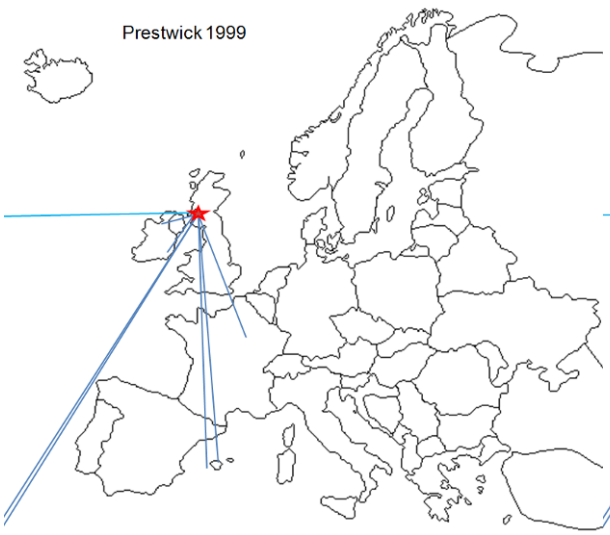
/10	*-Cork*	*Ryanair*	
	+Cork	AerArran	
/02	+Poznan	WizzAir	
/10	Faro	Ryanair	*Winter only route*
	Malaga	Ryanair	*Winter only route*
	Tenerife	Ryanair	*Winter only route*
	Turin	Ryanair	*Winter only route*
2009	*-Rovaniemi*	*Ryanair*	
	-Dalaman	*ScottTravel*	*Summer only route*
	-Poznan	*WizzAir*	
	-Katowice	*WizzAir*	
	Dalaman	Holidays4U	*Summer only route*
	Palma Mallorca	charter	*Winter only route*

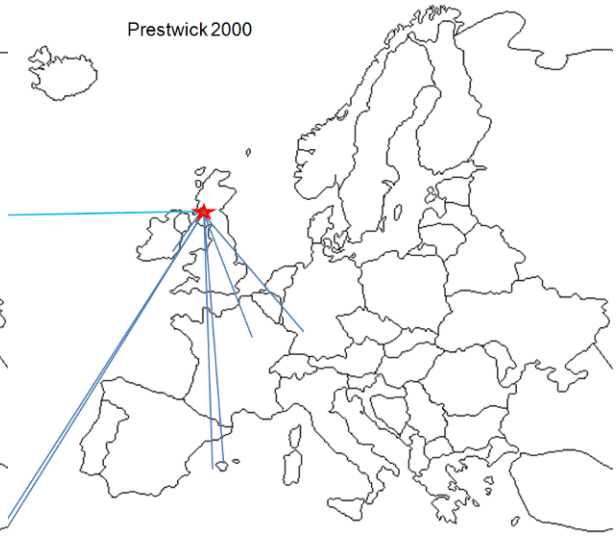
Sources: Website Glasgow-Prestwick Airport: www.gpia.co.uk, Website Ryanair: www.ryanair.com, Ryanair full year results presentations of 2004 and 2009 (acquired from www.ryanair.com), Website BBC: news.bbc.co.uk, website WizzAir: www.wizzair.com, Website City of Derry: www.derrycity.gov.uk, Website of City of Cork: www.corkchamber.ie and News website Easier.com: www.easier.com/ads/Travel/Flights.

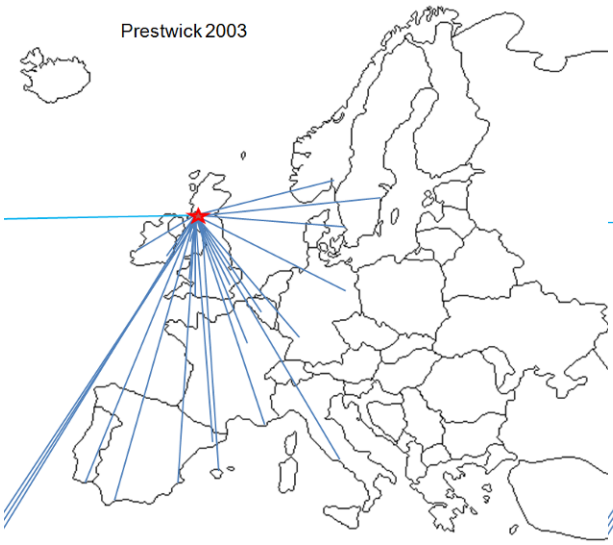
C-2 Number of routes of routes to Prestwick over the years:

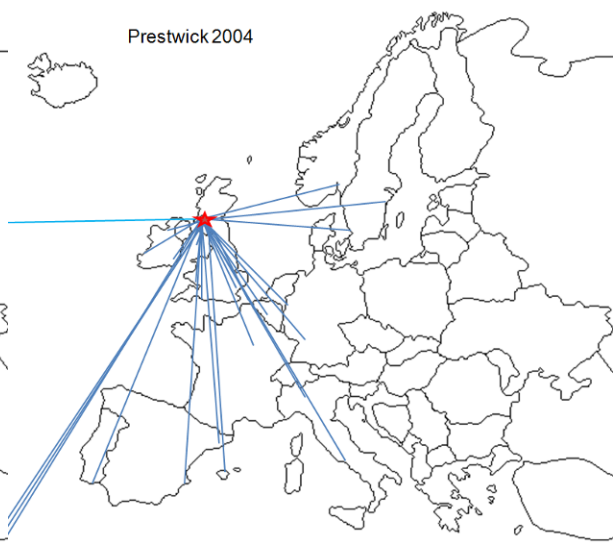


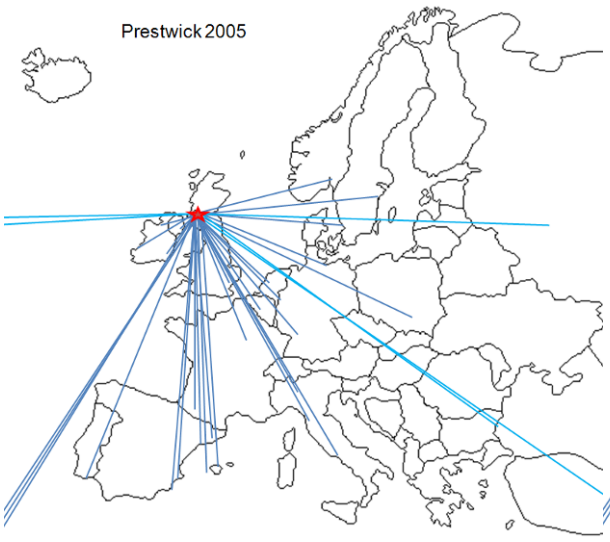
C-3 Network development of airline routes from Glasgow-Prestwick Airport 1999 - 2009

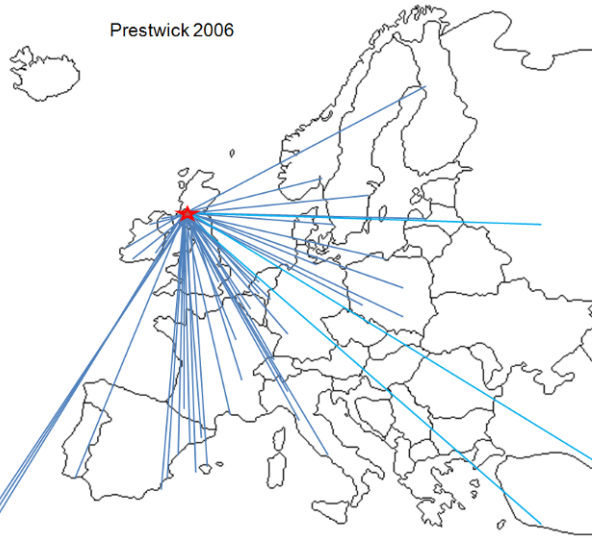


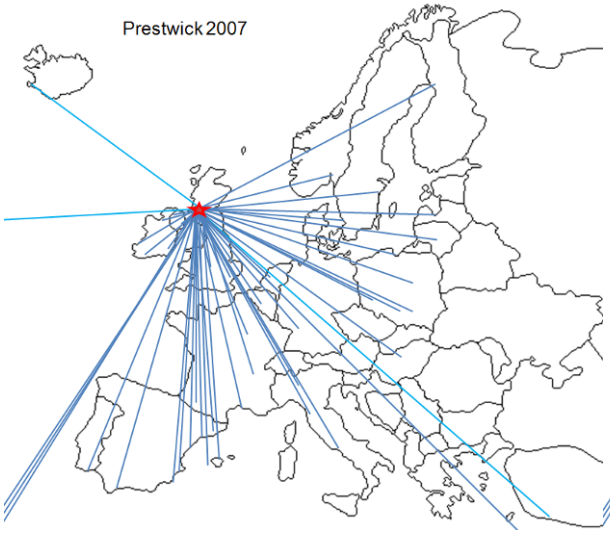


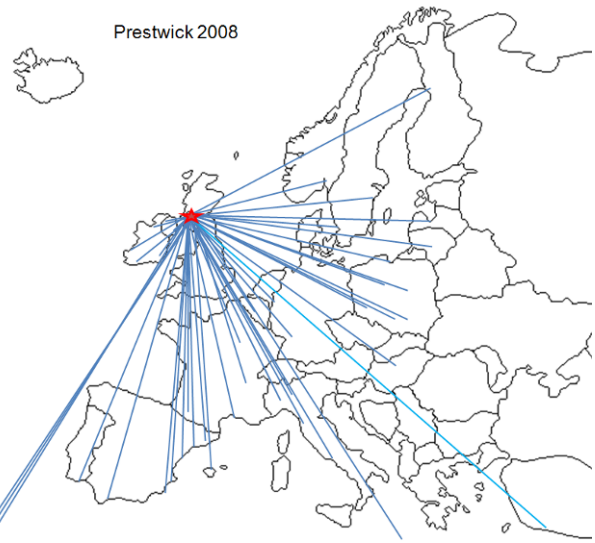


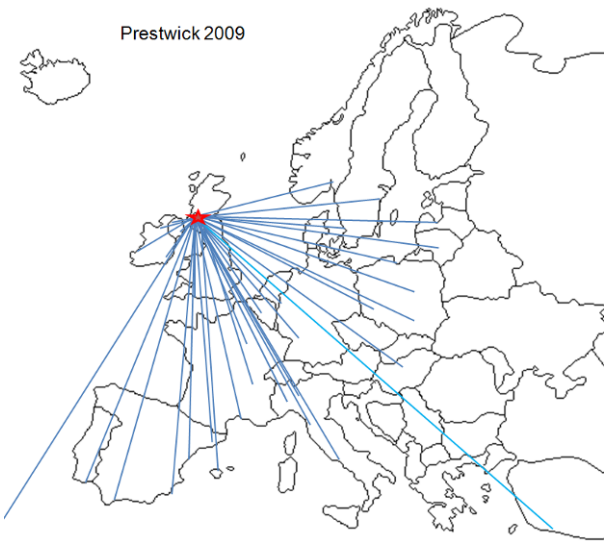



Prestwick 2005


Prestwick 2006

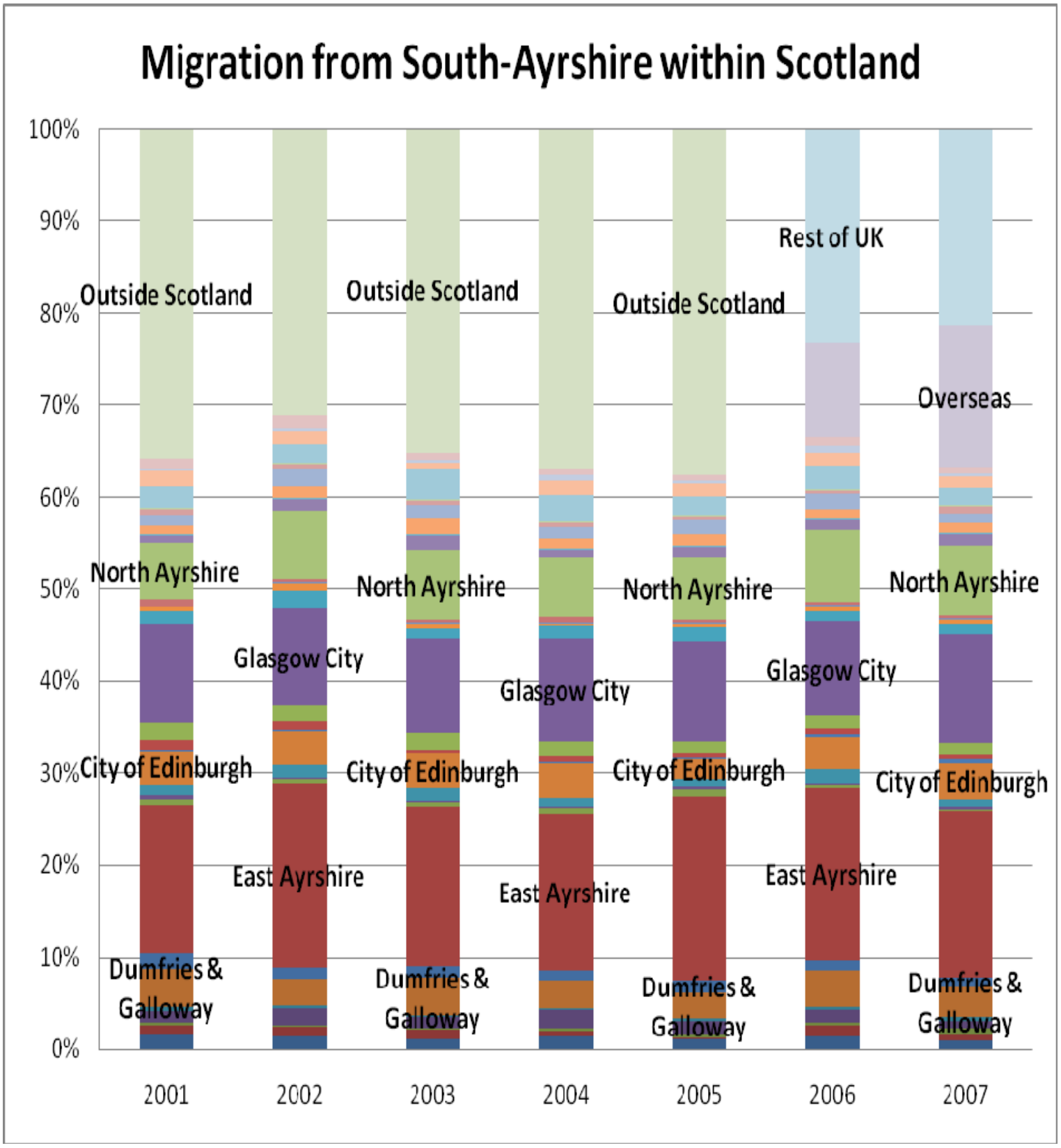

Prestwick 2007


Prestwick 2008

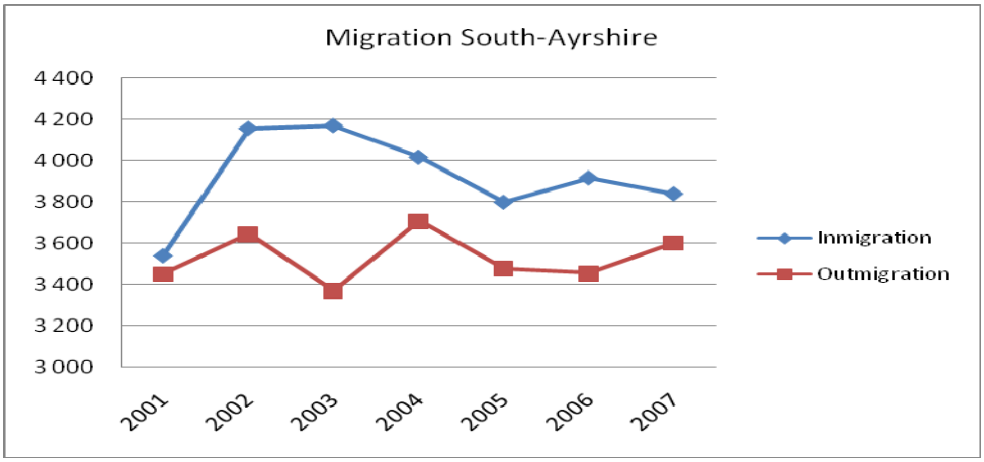

Prestwick 2009

Appendix D

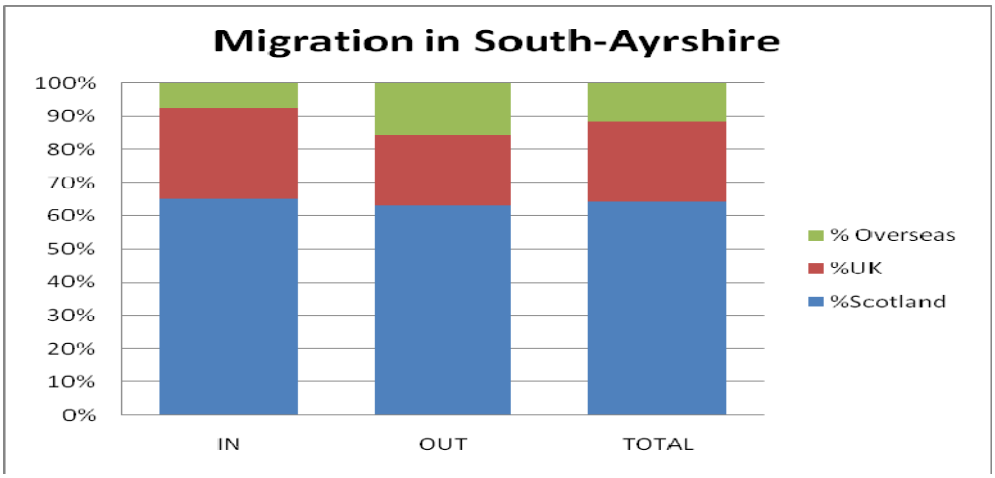
South-Ayrshire Migration Demography (derived from GRO Scotland 2009)



Migration development in South-Ayrshire region, 2001-2007 (derived from GRO Scotland 2009)



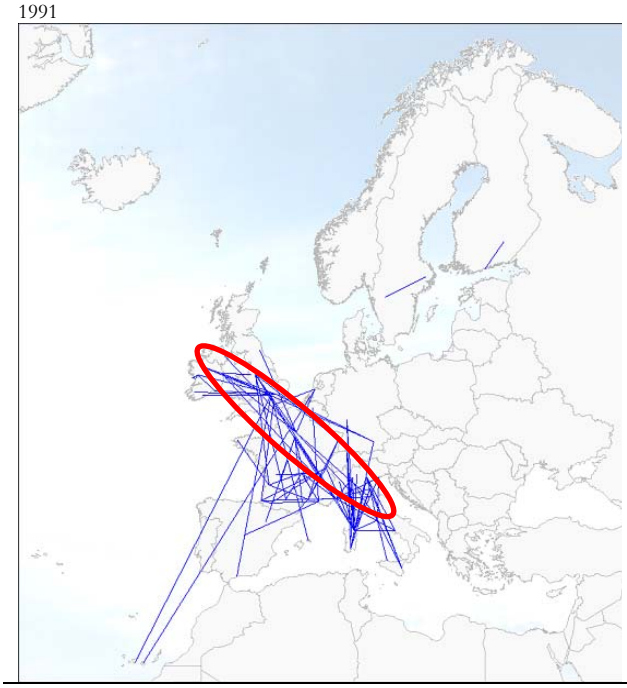
Relative migration patterns in South-Ayrshire 2007 (derived from GRO Scotland 2009)



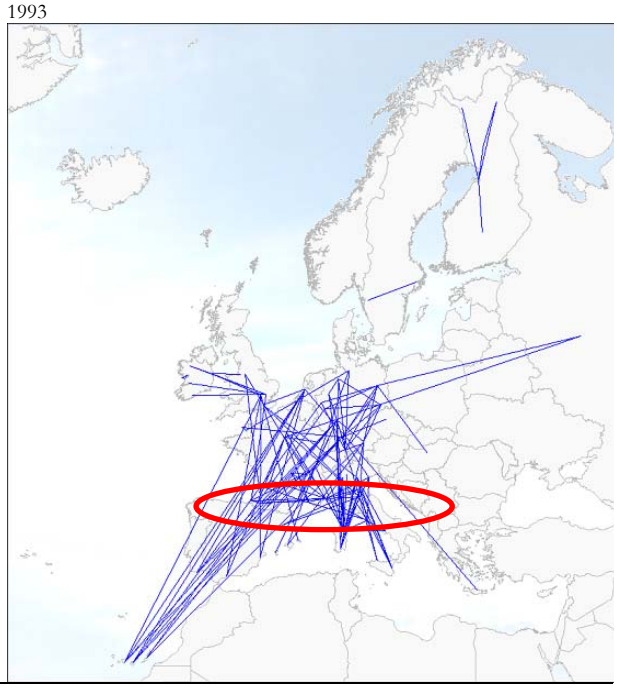
Appendix E

Total Low-cost network development (according to van der Zwan 2006)

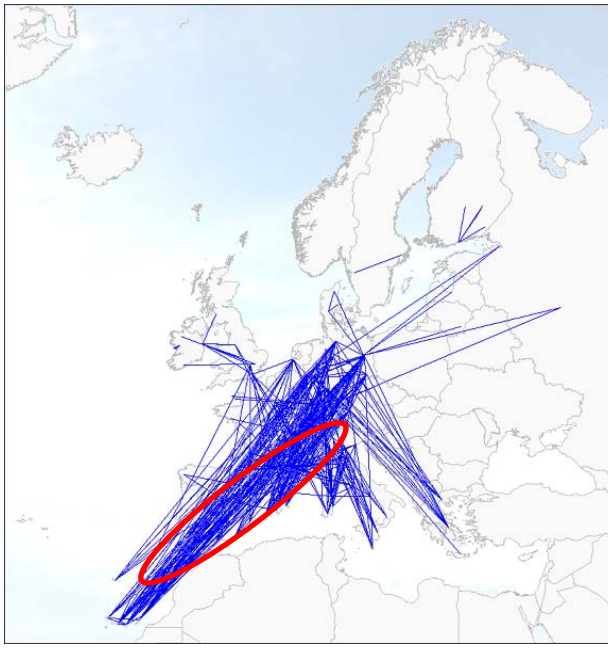
1991



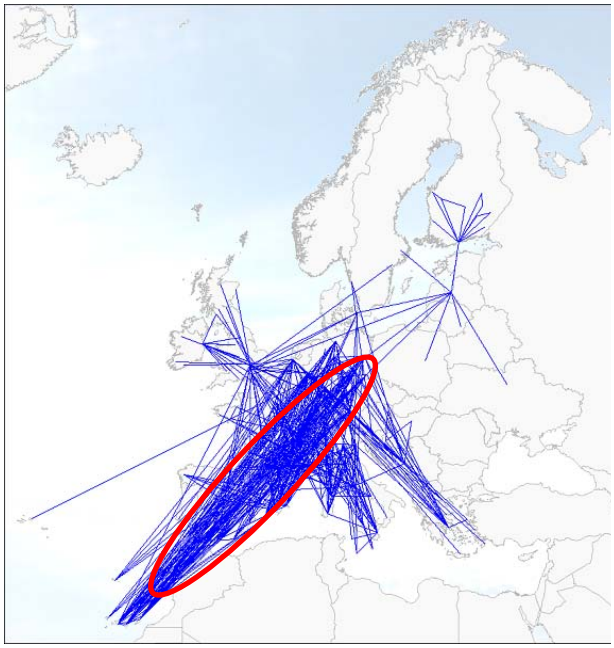
1993



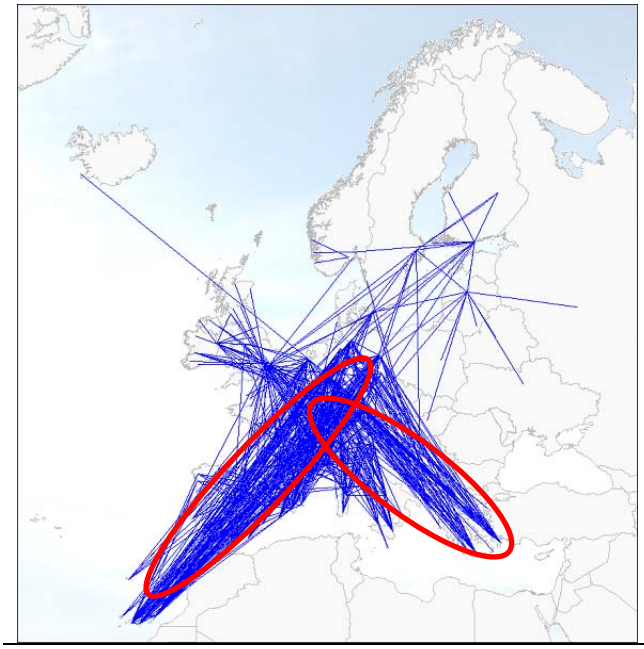
1995



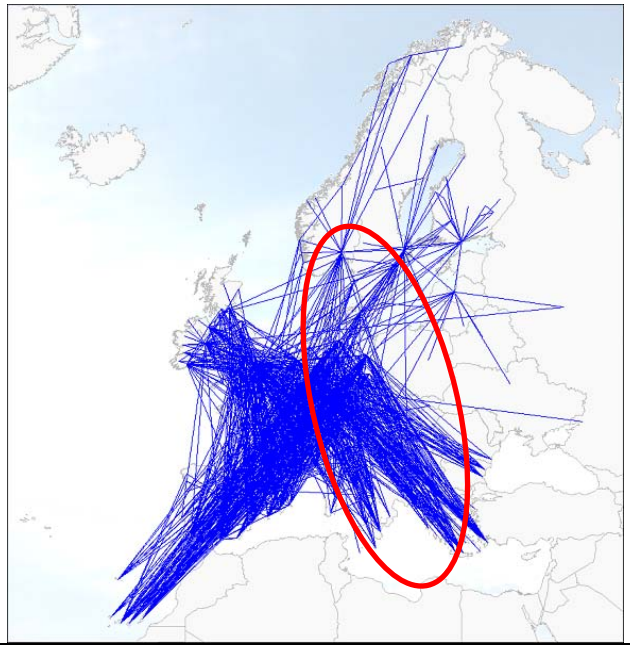
1997



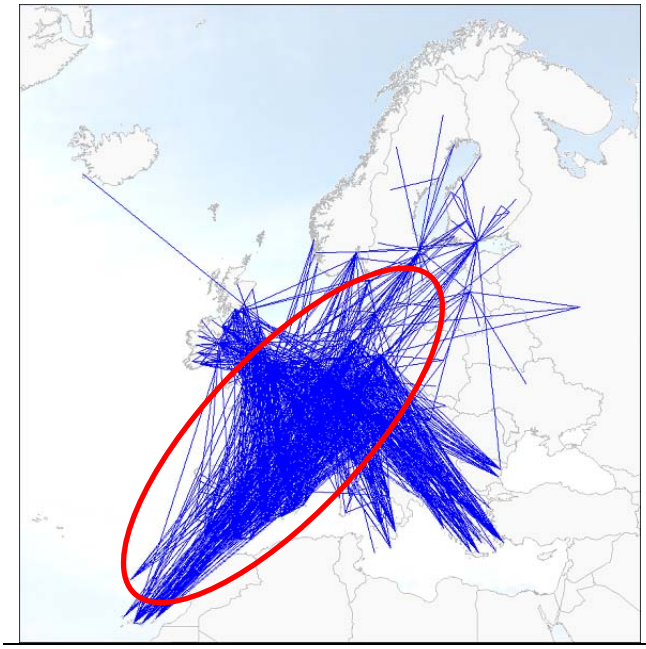
1999



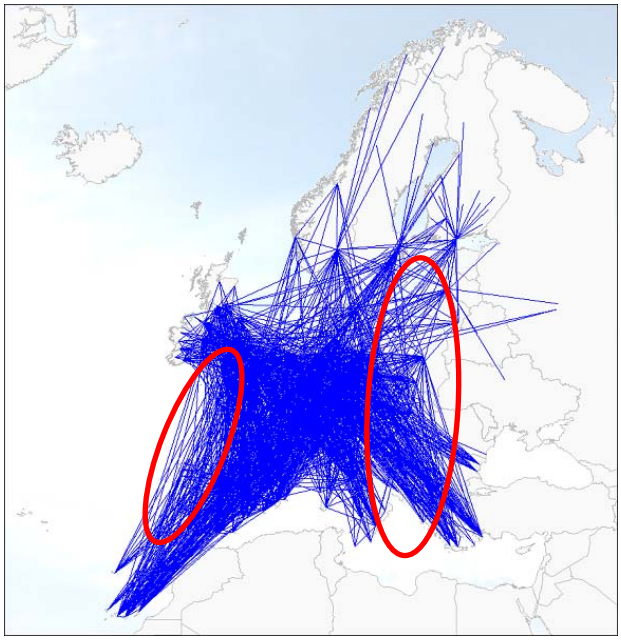
2003



2004



2005



Appendix F

F-1 Ranking of countries in Europe with the highest low-cost airline seat capacity

Departing LCA Seat Capacity

	2002	%total	2003	%02-03	%total	2004	%03-04	%total	2005	%04-05	%total	2006	%05-06	%total	2007	%06-07	%total
UK	28054433	38,0	38059278	*35,7*	33,2	44097898	*15,9*	30,6	52772501	*19,7*	29,5	58311061	*10,5*	27,2	66351678	*13,8*	25,4
Germany	5692198	7,7	10265487	*80,3*	8,9	14984713	*46,0*	10,4	22648038	*51,1*	12,7	28036595	*23,8*	13,1	40680642	*45,1*	15,6
Spain	8826878	12,0	16254231	*84,1*	14,2	20048675	*23,3*	13,9	27258994	*36,0*	15,3	32451496	*19,0*	15,1	40022448	*23,3*	15,3
Italy	10120980	13,7	16937357	*67,3*	14,8	20147974	*19,0*	14,0	20792636	*3,2*	11,6	25269202	*21,5*	11,8	30780463	*21,8*	11,8
Ireland	7543956	10,2	8940148	*18,5*	7,8	9532776	*6,6*	6,6	10995841	*15,3*	6,2	13425489	*22,1*	6,3	15212762	*13,3*	5,8
France	3112642	4,2	5974287	*91,9*	5,2	8874638	*48,5*	6,2	8993213	*1,3*	5,0	11059463	*23,0*	5,2	13855453	*25,3*	5,3
Norway	838148	1,1	3101939	*270,1*	2,7	3814523	*23,0*	2,7	4394872	*15,2*	2,5	6460417	*47,0*	3,0	7520259	*16,4*	2,9
Netherlands	3032645	4,1	3617186	*19,3*	3,2	4252238	*17,6*	3,0	4812164	*13,2*	2,7	5733014	*19,1*	2,7	6179846	*7,8*	2,4
Poland	0	0,0	0		0,0	919875		0,6	2182753	*137,3*	1,2	4187842	*91,9*	2,0	5342660	*27,6*	2,0
Sweden	564802	0,8	1767434	*212,9*	1,5	2952904	*67,1*	2,1	4788093	*62,1*	2,7	5576032	*16,5*	2,6	5239949	*-6,0*	2,0
Switzerland	1366674	1,9	2306189	*68,7*	2,0	2877918	*24,8*	2,0	3682334	*28,0*	2,1	4598249	*24,9*	2,1	5151161	*12,0*	2,0
Portugal	543320	0,7	844730	*55,5*	0,7	1066738	*26,3*	0,7	1688803	*58,3*	0,9	2690078	*59,3*	1,3	3850535	*43,1*	1,5
Austria	275834	0,4	880064	*219,1*	0,8	1746055	*98,4*	1,2	2228848	*27,7*	1,2	2384612	*7,0*	1,1	3657088	*53,4*	1,4
Denmark	434047	0,6	916503	*111,2*	0,8	1494094	*63,0*	1,0	1627162	*8,9*	0,9	2489514	*53,0*	1,2	2999031	*20,5*	1,1
Greece	492704	0,7	842006	*70,9*	0,7	1078548	*28,1*	0,7	1602155	*48,5*	0,9	1634253	*2,0*	0,8	2386624	*46,0*	0,9
Belgium	2542823	3,4	3091329	*21,6*	2,7	2825365	*-8,6*	2,0	2566175	*-9,2*	1,4	2988144	*16,4*	1,4	2289924	*-23,4*	0,9
Czech Republik	207516	0,3	457143	*120,3*	0,4	1252371	*174,0*	0,9	1562040	*24,7*	0,9	1739822	*11,4*	0,8	2130030	*22,4*	0,8
Hungary	0	0,0	43584		0,0	754320	*1630,7*	0,5	1669234	*121,3*	0,9	1596718	*-4,3*	0,7	1618902	*1,4*	0,6
Romania	0	0,0	9860		0,0	83703	*748,9*	0,1	123410	*47,4*	0,1	531076	*330,3*	0,2	1360463	*156,2*	0,5
Slovakia	60003	0,1	134748	*124,6*	0,1	319247	*136,9*	0,2	596162	*86,7*	0,3	1079337	*81,0*	0,5	1099500	*1,9*	0,4
Latvia	0	0,0	0		0,0	38500		0,0	341235	*786,3*	0,2	551035	*61,5*	0,3	674749	*22,5*	0,3
Croatia	195	0,0	5700	*2823,1*	0,0	56962	*899,3*	0,0	198006	*247,6*	0,1	456986	*130,8*	0,2	647730	*41,7*	0,2
Finland	0	0,0	79191		0,1	219814	*177,6*	0,2	339006	*54,2*	0,2	448502	*32,3*	0,2	473129	*5,5*	0,2

(Table Continued)

Bulgaria	6678	0,0	17766	*166,0*	0,0	19166	*7,9*	0,0	35386	*84,6*	0,0	146884	*315,1*	0,1	327922	*123,3*	0,1
Lithuania	0	0,0	0		0,0	0		0,0	25551		0,0	192666	*654,0*	0,1	279817	*45,2*	0,1
Malta	6195	0,0	9550	*54,2*	0,0	12240	*28,2*	0,0	17665	*44,3*	0,0	32264	*82,6*	0,0	187344	*480,7*	0,1
Cyprus	21424	0,0	149102	*596,0*	0,1	286827	*92,4*	0,2	404555	*41,0*	0,2	300791	*-25,6*	0,1	160870	*-46,5*	0,1
Estonia	0	0,0	0		0,0	28953		0,0	107921	*272,7*	0,1	132972	*23,2*	0,1	136431	*2,6*	0,1
Slovenia	0	0,0	0		0,0	42220		0,0	106149	*151,4*	0,1	104967	*-1,1*	0,0	103130	*-1,8*	0,0
Serbia Monten.	1575	0,0	6132	*289,3*	0,0	8436	*37,6*	0,0	51400	*509,3*	0,0	24382	*-52,6*	0,0	79343	*225,4*	0,0
Macedonia	0	0,0	0		0,0	12300		0,0	36800	*199,2*	0,0	26100	*-29,1*	0,0	11330	*-56,6*	0,0
Moldavia	0	0,0	0		0,0	0		0,0	0		0,0	0		0,0	9216		0,0
Albania	30237	0,0	61561	*103,6*	0,1	39228	*-36,3*	0,0	0	*-100,0*	0,0	1776		0,0	8006	*350,8*	0,0
TOTAL	**73775907**		**114772505**			**143889219**			**178649102**			**214661739**			**260828435**		

F-2 Top ranked airports according to their growth percentage

Figure 2.10: Top 20 growth airports 2006 v 2005, low cost departing capacity

	From	Airport	2002	2003	2004	2005	2006	06 v 05
1	WRO	Wroclaw			44,563	55,024	294,428	535.1%
2	MXP	Milan (Malpensa)	71,127	300,286	481,995	283,062	1,250,929	441.9%
3	SCQ	Santiago De Compostela				72,405	284,581	393.0%
4	BBU	Bucharest - Baneasa	0	3,910	42,345	112,692	437,082	387.9%
5	LDY	City Of Derry (Eglinton)	75,093	96,404	86,124	62,305	234,279	376.0%
6	NWI	Norwich				86,271	282,764	327.8%
7	GDN	Gdansk			54,356	143,998	469,289	325.9%
8	SPU	Split	90	2,850	17,466	52,277	117,319	224.4%
9	LIS	Lisbon	66,043	189,359	274,025	340,679	762,085	223.7%
10	ZAG	Zagreb			16,312	63,874	132,138	206.9%
11	OPO	Oporto	35,611	10,120	20,485	215,790	428,917	198.8%
12	BSL	Basle Mulhouse			165,013	608,065	1,194,308	196.4%
13	KRK	Krakow			66,493	483,611	940,537	194.5%
14	MRS	Marseille	29,353	140,076	309,221	115,274	210,514	182.6%
15	GRX	Granada	105			114,410	207,999	181.8%
16	SVG	Stavanger	71,644	242,234	232,405	254,498	453,488	178.2%
17	MAD	Madrid	478,546	712,757	746,105	1,097,299	1,953,272	178.0%
18	BTS	Bratislava	37,816	99,138	273,887	545,936	970,914	177.8%
19	GNB	Grenoble		148	1,924	75,143	133,489	177.6%
20	SVQ	Seville	28,389	51,148	111,881	433,886	760,520	175.3%