THE ROLE OF SECONDARY AIRPORTS FOR TODAY'S LOW-COST CARRIER BUSINESS MODELS: THE EUROPEAN CASE

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Abstract

One of the core characteristics of Low-Cost Carriers (LCCs) is their use of secondary and regional airports. However, nothing is fixed as the market constantly evolves and carriers modify their strategies in order to achieve growth. This paper uses the examples of Ryanair, easyJet and Norwegian to show how changes to LCC business models are affecting secondary airports across Europe. Using a content analysis, this paper first describes how airport choice factors for LCCs have evolved over the last 10 years. This is followed by a data analysis of historical and current airline network capacity to identify how LCC traffic at secondary airports is developing. The paper finds that cost, demand and efficiency are still the most important criteria for LCCs when choosing an airport to operate from. However, it also identifies that LCCs have become more interested in serving business passengers, which is why they are increasingly using primary airports (accounting for 58% of their recent capacity growth). Through the use of a selection of case airports it is finally concluded that the evolution of LCCs increases competition between primary and secondary gateways. In most cases, secondary airports are losing a significant amount of LCC traffic and only sustain flights to less important destinations. This research puts into question the future importance of secondary airports for LCCs. As not all airports have been impacted by the hybridisation of LCCs to the same extent, the results are not equally applicable to the whole European airport industry.

Key words: Low-Cost Carriers (LCCs), hybridisation, secondary airports, regional airports, primary airports, airport-airline relationship

1. Introduction

The emergence of Low-Cost Carriers (LCCs) is one of the events that has revolutionised the aviation industry. The concept originating from the USA was adopted in Europe starting in the 1990s and developing rapidly. At the beginning of the 21st century, LCCs were growing at an average annual rate of 14%, compared with Full-Service Network Carriers (FSNCs) 1% (OAG, 2013). Currently, LCCs are the major players in the market- nearly 50% of the overall intra-European traffic is served by just 9 member airlines of the European Low Fares Airline Association (ELFAA, 2015).

One of the basic characteristics of the LCC business model is the use of secondary airports (Doganis, 2006), which has incentivised some countries to develop facilities or even whole airports dedicated to these particular airlines (e.g. Warsaw Modlin Airport). Indeed, the cooperation between LCCs and certain airports (e.g. Brussels Charleroi) has brought mutual benefits (Barbot, 2006). Nevertheless, numerous LCCs have recently moved to primary airports or expressed an interest in doing so. This, in turn, calls the future role of secondary airports in the LCC business model into question. In fact, a wider change is taking place in the industry. The increasing competition has made both LCCs and FSNCs move away from their typical business models and evolve into hybrid forms in order to attract more passengers from intermediate market segments. Klophaus et al. (2012) recently found that a large percentage of low-cost carriers have evolved into hybrid carriers which blend low-cost traits with those of full service network carriers. Therefore, the aim of this paper is to investigate the role of secondary airports in today's more hybridised European LCC networks.

According to ICAO (2014), there are currently 19 LCCs in Europe. Since they differ in various aspects, such as market share and strategy, it is impractical to include all of them in one piece of research so this work focuses on the three largest European LCCs by passenger numbers in 2014, i.e. Ryanair, easyJet and Norwegian. The choice of airlines is motivated by their strong position in the market, the wide range of home markets across Europe they operate in, and the nuanced variations in business model between LCCs (Ryanair – pure LCC, EasyJet – hybridised LCC with dominating LCC elements and Norwegian – hybridised LCC with dominating FSC elements). As they are now well-established carriers with significant market power, secondary airports are under higher pressure to respond to any changes in their business models (Francis et al, 2003).

The research area ought to be specified in geographical terms as well. Because the European market includes numerous sub-markets of different sizes and maturity, LCCs and commercial aviation in general have not yet developed to the same extent across the whole continent. Hence, the scope of the research has been narrowed down to the four biggest LCC markets in Europe, i.e. the UK, Spain, Italy and Germany. These countries were the cradle of the European low-fare traffic revolution and currently account for 58% of the European market by number of seats (DLR, 2014). Therefore, they are considered to be a representative sample and provide authoritative data for the remaining European countries.

To lay the course for this investigation, the following research question was formulated: Will competition between primary and secondary airports for LCCs increase, making the latter lose low-fare traffic? The findings are reported in the following order. Section 2 summarizes the most pertinent literature on LCC airport choice factors; Section 3 details the content analysis methodology and results; section 4 contains the results of the current LCC network analysis and primary/secondary airport case examples and section 5 concludes.

2. Airport choice factors for LCCs

The general airline requirements for airports have been described by various authors, such as Jarach (2005) and Halpern & Graham (2013). LCCs specifically were the subject of analysis in Warnock-Smith & Potter (2005), who ranked airport choice factors based on a survey carried out among European budget carriers. The findings of the work are presented below.

Table 1: LCC airport choice factors (10 years ago)

Rank	Factor
1	Demand for LCC services
2	Quick and efficient turnaround facilities
3	Convenient slot times
4	Good aeronautical discounts
5	Positive forecasts for business and tourism
6	Cost conscious airport management
7	High airport competition
8	Good surface access
9	Spare airport capacity
10	Good environmental policy
11	Ambitious expansion plans
12	Privatised, deregulated airport
13	Good non-aeronautical revenues
14	Good experience of LCCs
15	High level of airline competition

Source: Warnock-Smith and Potter (2005)

High demand in the regions for LCC services came out first with other important factors being quick turnaround times and convenient slot times. Less important or indeed negative factors influencing LCC choice included high level of airline competition and good prior experience of dealing with LCCs.

3. Content analysis methodology and results

To investigate whether these requirements have changed, a similar ranking method has been conducted for the purposes of this paper. A list of 13 potential airline requirements was extracted as part of a detailed literature search (Table 2). The list included some of the factors mentioned by Warnock-Smith and Potter (2005), but it was also updated with additional requirements determined through the trade press. The next step was to conduct a content analysis by collating 27 different secondary reference materials in which airline managers and industry executives described their network policies (i.e. interviews, press publications, conference materials). The articles were obtained using a range of search terms in a meta-search database called Summon in late November 2015. Articles were sifted for relevance and for a balance of views between industry managers and expert industry observers to arrive at the final pool of 27 articles (see Appendix A). The material was analysed and the requirements ranked according to how frequently each of them was mentioned. Table 2 presents the results of the analysis.

Table 2: LCC airport choice factors (current)

Rank	Factor	Frequency
1	Airport costs/availability of discounts	15
2	Demand for LCC services/catchment area	11
3	Quick and efficient airport operations	10
4	Proximity to the primary city	9
5	Free airport capacity/slot availability	8
6	Airport potential to attract business passengers	6
7	Airline competition	5
7	Airport competition	5
9	Airport potential to attract leisure passengers	4
10	Availability of LCC - dedicated facilities	2
10	Good non-aeronautical revenues	2
10	Positive experience of LCCs	2
11	Airport ground accessibility	1

Source: Adapted from trade press/content analysis

The most frequently mentioned factor was airport cost and availability of discounts, which confirms a lasting focus of LCCs on ever lower operational costs. Secondly, LCCs expect their airports to support quick and efficient operations, primarily with regard to aircraft turnaround, which they require to be no longer than 20-25 minutes. Norwegian, for instance, organises special training for ground handling providers, during which employees are taught how to turn the aircraft around quicker (Bjørn Erik Barman-Jenssen, Norwegian's Director of Ground Operations in an interview for Eva, 2013). Ryanair's CEO, Michael O'Leary, acknowledged his airline will never enter the top three busiest airports in Europe (i.e. LHR, CDG and FRA) due to inability to achieve such turnaround times there (Clark, 2014). Efficiency of passenger-related processes (e.g. fast track security control) was mentioned to a lesser extent within the gathered material.

The demand for LCCs services was ranked the second most important criterion. On the one hand this indicates that demand is still a significant factor for the carriers. On the other hand, it appears to be a little less important than 10 years ago, which may suggest maturity of the European LCC market. Statistics show that currently LCCs are responsible for 45-50% percent of the European market compared to 22% in 2005 (in terms of the seat capacity offered; ELFAA, 2015; Khan, 2014). In other words, while a decade ago the airlines were still developing and needing to look for demand in order to grow, today they are much more established and therefore more attractive automatically.

Proximity of the primary city was the fourth most important factor. This reflects the increasing focus of LCCs on primary airports. They are more attractive for business passengers (the other joint fourth ranked factor), which constitute a growing 20-25% of all the passengers carried by LCCs. It is, however, debatable whether a much higher share is achievable. According to a CAA Passenger Survey carried out in 2013, business travellers constitute a comparable 23% share of total airline traffic, which suggests that LCCs are already close to the average. Interestingly, airport attractiveness for leisure passengers was mentioned less frequently (ninth), which shows that, though in previous studies (e.g. Eugenio-Martin and Inchausti-Sintes, 2016) leisure traffic has been shown to be the core focus, some LCCs are turning some of their more recent attention to higher yield potential of some business travellers that may be attracted by competitive fares.

Airlines also pay some attention to free airport capacity and availability of slots (fifth), especially at bigger airports, where convenient flight times are essential to attract business traffic. Richard Matthews, easyJet's Slot Strategy and Scheduling Manager, stressed the importance of slots particularly between six and eight in the morning, admitting they are crucial for the carrier to perform desirable aircraft rotations for the rest of the day (easyJet, 2013).

Airport and airline competition were only ranked joint seventh. Again, this may be explained by the stronger position of LCCs in the market and their higher buying power, which may allow them to turn their attentions to omore pressing factors. With regards to airline competition, however, the result may be biased by business PR. Even though the airlines claim not to be afraid of competing with other carriers, statistics indicate quite the opposite situation. According to CAPA (2015), easyJet and Ryanair offer only 4% of their capacities on overlapping routes. Norwegian was not included in the study, but it may be assumed that the figure would be even lower than for easyJet and Ryanair, as they operate wider networks.

Airlines pay minor attention to LCC-dedicated facilities (ranked joint tenth). Rather they focus on limited, more efficient use of existing infrastructure to achieve quicker and cheaper processes. That has already been recognised by airports, which more often convert the existing infrastructure to suit the needs of LCCs rather than build completely new facilities (Graham, 2014). Moreover, aspects such as airport non-aeronautical revenue and ground accessibility are less important for LCCs (ranked joint 10^{th} and last respectively). This shows LCCs concentrate on their core service of transporting passengers while they believe that it is a given for airport operators to look after the remaining services. Finally, a good experience of LCCs is also the joint least significant factor, which suggests that airlines are confident their existing policies will be effective for any new airports in their networks regardless of whether they have previous experience with LCCs or not.

4. Today's LCC networks

4.1 Data approach

Once changes to airport choice factors were described, it was possible to analyse the actual impact of LCC hybridisation on airports. Therefore, the proceeding network analysis was carried out in order to identify whether and how traffic at particular secondary airports has changed.

The analysis involved an in-depth study of the chosen airlines' (Ryanair, easyJet and Norwegian) historical and current flight information, which were derived from OAG database and ticket reservation systems of the respective carriers (unless stated otherwise). Because an analysis of yearly capacity would be too data intensive a smaller sample period of the first full week of April 2015 (i.e. 7 consecutive days beginning the first Monday of April) was chosen. The motivation for such a choice was twofold. First, it supports data reliability, due to the fact that April inaugurates the summer season in aviation, which is usually more intensive than the winter one. Second, the analysis would be up-to-date, as airline schedules for April 2015 were the latest available at the time of writing. The analysis covers airports in the four countries mentioned at the beginning of the paper, i.e. UK, Spain, Italy and Germany, which were split into primary, secondary and regional airports with the latter being distinguished from secondary airports by their proximity to small to medium size catchment areas (by population) only. Airports that serve large catchment areas were always designated as primary if there were no other commercial airports serving the same or part of the same catchment area. In cases where there were multiple airports serving larger catchment areas the largest was designated primary status and the remaining airports were given secondary status even if there was more than one. The final list of airports and their classifications for this study are provided below in Table 3.

Table 3: List of airports used in study

Country	**Primary Airports**	**Secondary Airports**
Germany	CGN – Cologne	DTM – Dortmund
	DUS – Dusseldorf	FMM - Memmingen
	HAM – Hamburg	HHN – Frankfurt Hahn
	MUC - Munich	LBC – Lübeck
	FRA - Frankfurt	NRN - Weeze
	TXL - Berlin	SXF – Berlin Schönefeld
Italy	FCO - Rome	BGY - Bergamo
	MXP - Milan	CIA – Rome Ciampino
	VCE - Venice	LIN – Milan Linata
Spain	BCN - Barcelona	GRO – Girona Costa Brava
	MAD - Madrid	REU - Reus
United Kingdom	BFS –Belfast	LGW – London Gatwick
	BHX – Birmingham	LPL – Liverpool
	LHR - London	LTN – London Luton
	EDI – Edinburgh	PIK – Glasgow Prestwick
	GLA – Glasgow	SEN – London Southend
	MAN - Manchester	STN – London Stansted
		EMA – East Midlands

Regional airports list:
Germany: BRE,DRS,FKB,FMO,LEJ,NUE,STR
Italy:AHO,AOI,BDS,BLQ,BRI,CAG,CIY,CRV,CTA,CUF,GOA,NAP,OLB,PEG,PMF,PMO,PSA,PSR,SUF,TPS,TRN,TRS,TSF,VRN;
Spain:ACE,AGP,ALC,BIO,FUE,IBZ,LEI,LPA,MAH,MJV,OVD,PMI,SCQ,SDR,SPC,SVQ,TFN,TFS,VLC,VLL,XRY,ZAZ
United Kingdom: ABZ,BOH,BRS,INV,LBA,LDY,NCL

4.2 LCC network developments

On average, secondary airports still serve the highest share (38%) of LCC capacity, while regional and primary airports handle 35% and 28% of the traffic respectively (Figure 1). This suggests that secondary gateways are still the most important for budget airlines. However, the distribution of capacity growth, as presented in Figure 2, indicates a different trend. In fact, it is primary airports where the LCC traffic has been developing at the fastest pace, showing that they are increasingly important for LCCs. The decreasing role of secondary airports would be even more evident if the London market was excluded from the analysis (London is responsible for 22% of the total traffic using secondary and tertiary gateways and therefore has a big impact on the overall results). In the remaining markets, secondary airports handle only 20% of the low-fare traffic, compared with 34% for primary airports.

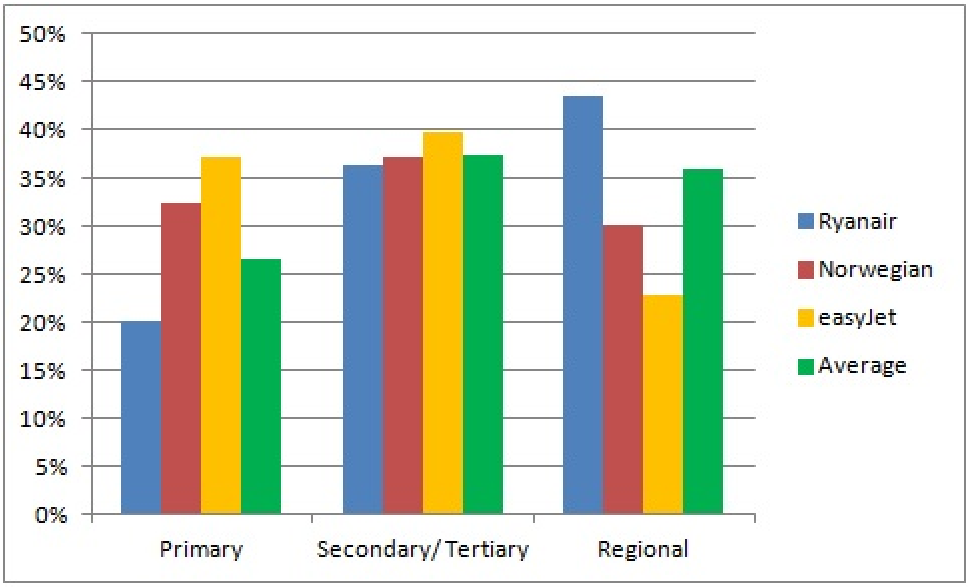

Figure 1: Breakdown of LCC seat capacity by airport type (Norwegian long-haul services not included). Source: Author calculations based on Flightglobal database (2015)

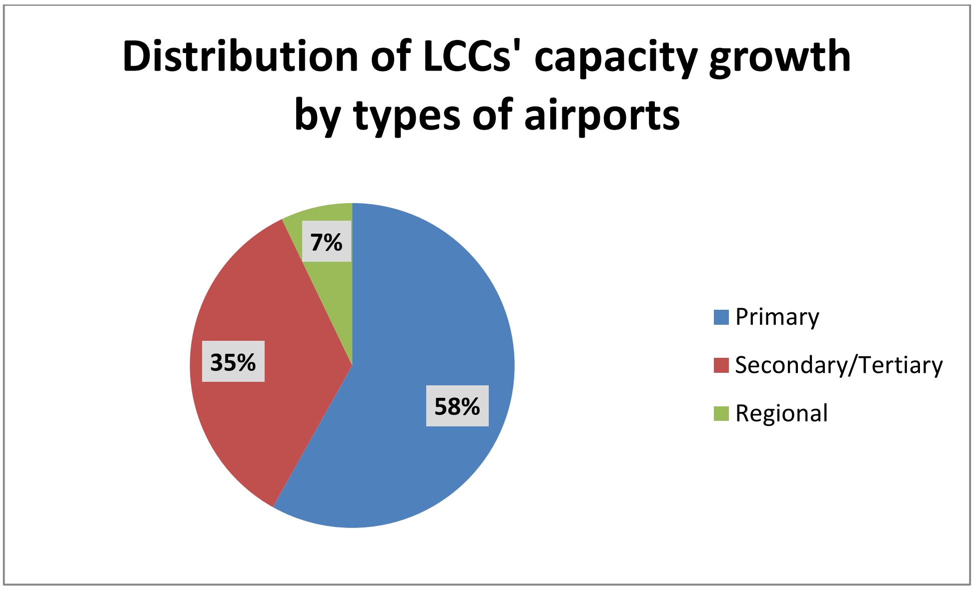

Figure 2: Distribution of LCC capacity growth by type of airports, compared to February 2014. Author calculations based on Flightglobal database (2015).

Particularly Ryanair and easyJet influence the above results, as these two airlines provide over 90% of total seat capacity. Out of the three carriers, easyJet offers the highest share of capacity (37%) from primary airports. It also serves most of the top 100 busiest European routes, the majority of which link two major airports (see Figure 3)[1].

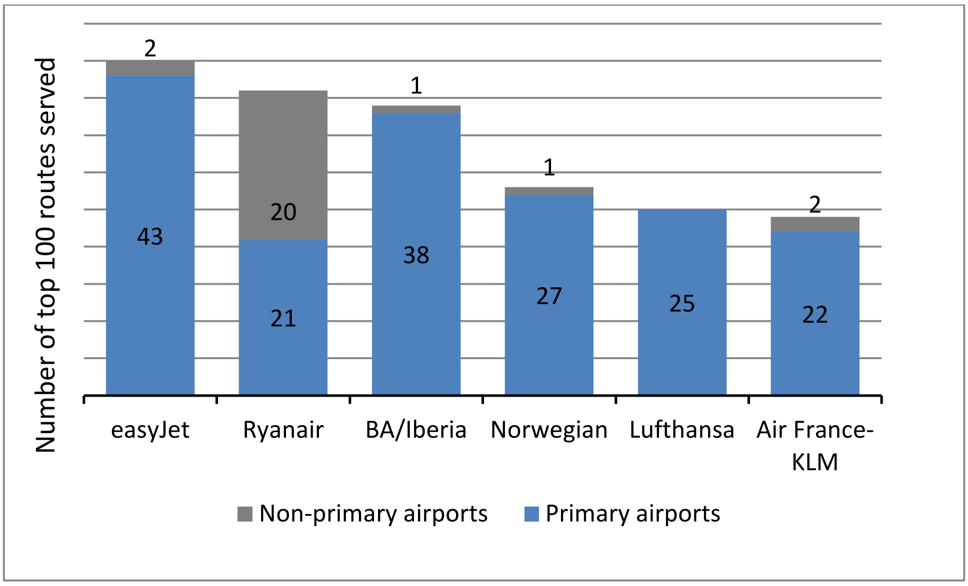

Figure 3: Presence of LCCs on top 100 European routes. Source: easyJet Annual Report (2014)

[1] This is extracted from an easyJet annual report. While it is true that easyJet has focussed its strategy on serving major gateways, the comparison with other carriers as depicted in Figure 3 may be subject to some degree of bias.

Having developed a strong market position and a low cost base, Irish carrier Ryanair is able to extend its network into major airports. In many cases, such a change has negatively impacted minor airports previously used by the airline. Today, Ryanair serves primary gateways in Madrid, Barcelona, Rome, Manchester, Hamburg as well as Athens, Brussels, Copenhagen and Lisbon in the rest of Europe. The airline expects 50% of its growth to take place at major airports in the coming 5 years (Michael O' Leary for Bloomberg, 2014); whereas this paper's analysis showed that they are currently responsible for as much as 75% of Ryanair's new capacity.

Norwegian also focuses on primary airports, although its network is smaller than those of easyJet or Ryanair. The airline gradually has been expanding across Europe, but the growth is hindered by the strong dependence on the Scandinavian market, which translates into a higher operational cost base and reduced competitiveness of the airline. As of April 2015, Norwegian operated 411 routes between 128 airports, compared to 132 and 75 respectively in 2007. The carrier's focus on Central Europe has decreased, as Norwegian (NAS) has closed its base in Warsaw and established new ones the United Kingdom and Spain instead (London Gatwick, Tenerife, Malaga, Alicante, Las Palmas, Barcelona and Madrid). Moreover, in serving routes to the USA and Asia, Norwegian is the first European LCC to operate long-haul flights. While it is too early to predict how the intercontinental network will develop, based on the comments of airline managers in the press, it is expected that any development will involve primary airports.

Nevertheless, it would be an over-interpretation to say the role of secondary airports is marginal. As has been already stated, they handle 38% of LCC total seat capacity, which is the highest result out of the three airport types. Moreover, there are still cities across Europe where budget carriers focus on smaller airports rather than move to primary gateways. As it is difficult to generalise on why secondary airports have or have not sustained the operations of particular LCCs, the following analysis will present a number of case examples to try and explain the possible reasoning for these occurrences.

4.3 Examples of markets dominated by primary airports

4.3.1 Barcelona

The Barcelona market is a good example for presenting how traffic patterns change across airports when a carrier launches services from the primary gateway. Ryanair had been operating from the secondary airport of Girona and Reus only until September 2011, when a new base at Barcelona El Prat, the city's only airport for easyJet and Norwegian, was established. The move to El Prat was motivated by strong inbound and outbound traffic, lower seasonality of demand, free airport capacity and relatively low airport charges (Reals, 2010). The following graph presents how Ryanair's move to Barcelona El Prat has impacted the traffic at smaller airports.

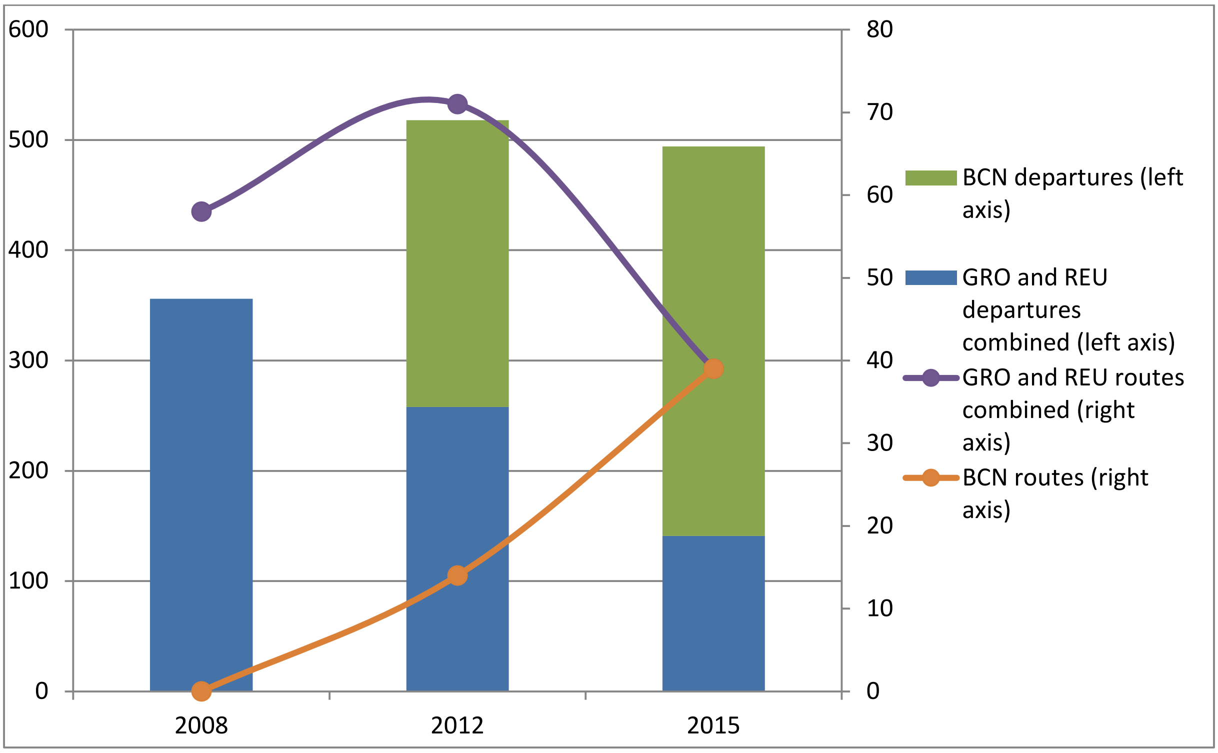

Figure 4: Ryanair routes from airports serving Barcelona Source: OAG database

The entry of Ryanair to the primary airport has negatively influenced the airline's capacity in Girona and Reus. After less than half a year, El Prat airport was serving more FR flights than the two smaller airports put together and since then, that gap has increased further. The change has not been as rapid in terms of number of routes. Initially, five times as many destinations were offered from GRO and REU as from BCN. This is because at the beginning only the most demanded, high-frequency routes were served from the primary airport. Currently, with a similar number of destinations, there are three times as many flights served from BCN than from GRO (353 and 121 respectively). On average, there are 9 weekly flights on each route at El Prat, compared to 4 at Girona and 3 and Reus (6 before the BCN base was launched). The busiest routes from GRO and REU would be ranked only 13th and 25th respectively at BCN.

Table 4 provides detail about the types of destinations served from each airport. The routes offered from the primary BCN are more attractive, which explains the high frequency of flights. Some of these routes had been previously some of the major ones at GRO and REU. Most of them, however, had not been served until Ryanair entered El Prat. This particularly includes domestic routes (13 of the total of 39) as well as flights to European centres. Girona and Reus have retained less significant services to other non-primary airports abroad. The degradation of traffic is apparent in Girona particularly, as it served 2.16 million passengers in 2014, compared with 5.5 million in 2008 (AENA statistics). What is equally interesting is the fact that the carrier has not completely withdrawn from GRO and REU even after three years launching its base at BCN. This means that the smaller airports may be used by Ryanair to increase competitive pressures on El Prat as well as to develop demand on newly launched destinations.

Table 4: Top 5 busiest routes at BCN, GRO and REU by Weekly Frequency (WF)

GRO 2008		**REU 2008**		**GRO 2015**		**REU 2015**		**BCN 2015**	
Destination	WF	Destination	WF	Destination	WF	Destination	WF	Destination	WF
Milan Bergamo	21	Stansted	14	Brussels Charleroi	9	Dublin	5	Rome Fiumicino	28
Rome Ciampino	21	Dublin	7	Pisa	9	Eindhoven	4	London Stansted	28
Paris Beauvais	18	Liverpool	7	Dusseldorf Weeze	8	Brussels Charleroi	3	Milan Bergamo	21
London Stansted	16	Frankfurt Hahn	4	Paris Beauvais	6	Palma de Mallorca	3	Brussels Zaventem	21
Frankfurt Hahn, Paris Charleroi	14	Glasgow Prestwick	3	Cagliari, Eindhoven, Frankfurt Hahn, London Stansted	5	London Stansted	3	Palma de Mallorca	21

Source: OAG database, airline reservation systems

4.3.2 Ryanair in Cologne and Hamburg

Analogies can be found with regard to Dusseldorf’s secondary airport (Weeze). There Ryanair has developed in nearby Cologne, rather than at the implicit primary airport in Dusseldorf.

Furthermore, the changes are more moderate as the airline is not yet present in the German domestic market, which is caused by the strong position of the incumbent carrier (Lufthansa) and high airport costs (CAPA, 2013). Change, however, is actually taking place. In March 2015 Ryanair announced it will double its capacity at CGN from the winter season (Ryanair 2015). This means the airport will handle levels of capacity comparable to that currently offered in NRN (137 weekly flights on 40 routes). Moreover, the carrier revealed it will re-enter the German domestic market, by launching 4 daily Cologne-Schonefeld services (ch-aviation, 2015).

Change is even more apparent in Hamburg, where Ryanair ceased operations from bankrupt LBC (Lubeck) and moved to HAM, Germany's fifth busiest airport by passenger numbers. Taking into consideration the increased activity of Ryanair in other major cities (e.g. Stuttgart and Berlin), one can expect further developments in the low-fare services in Germany, especially between primary airports.

4.3.3 Manchester and Liverpool

Established in 1999, Liverpool was one of the first easyJet bases. Until 2008, the airport had been developing especially owing to low-fare services. Then, Manchester Airport, the primary gateway for the region, introduced a new charging system. The changes included reductions in landing fees (-38%) and more convenient off-peak charges, which naturally attracted LCCs at the cost of LPL.

EasyJet launched its Manchester base in March 2008. Since then, the airline has gradually increased traffic at both LPL and MAN, but the scale of growth was significantly lower in Liverpool (Figure 5). Currently, the airports serve a similar level of easyJet traffic- while there are more destinations offered from MAN (31), it serves fewer (150) flights per week than LPL (25 and 157 correspondingly). Some of the routes overlap, including the three most frequent ones: Belfast International, Amsterdam and Geneva.

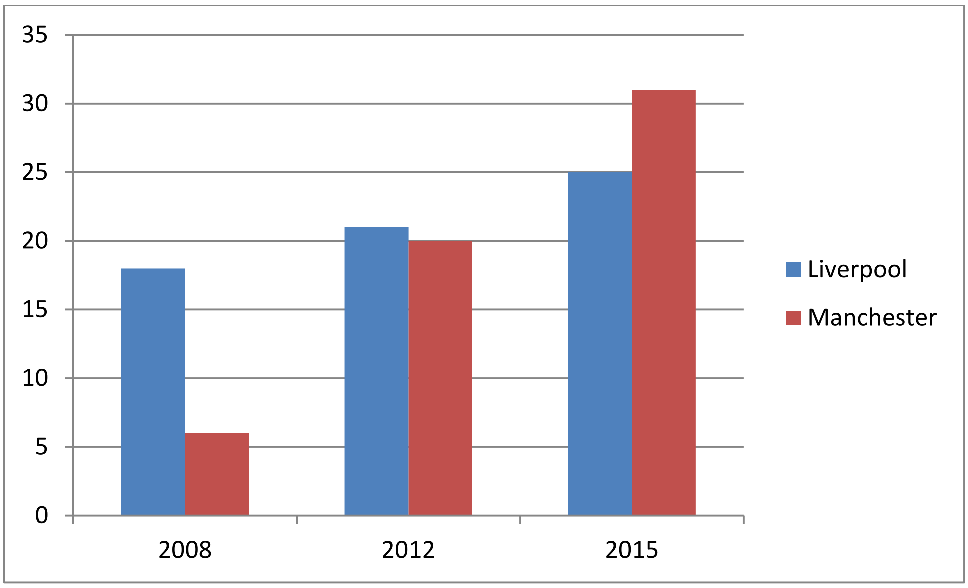

Figure 5: Number of easyJet routes served from MAN and LPL

MAN, as it is located more inland, serves a bigger catchment area and thus is more attractive for airlines, especially given the reduced fees. Since 2011, the year when Ryanair also established a base at MAN, traffic at LPL has been declining year-on-year and the airport itself has been unprofitable (Gleeson, 2014). Currently, all the three LCCs offer more capacity from Manchester than Liverpool. The airport operator's attempts to reverse this negative trend by attracting new types of airline have hitherto been unsuccessful for various reasons. First, all the FSNCs which have served LPL in the past failed to maintain their routes. Second, charter carriers seem to prefer Manchester and Leeds-Bradford Airport. Third, smaller LCCs are unwilling to enter an airport, where 95% of the capacity is offered by easyJet and Ryanair (CAPA, 2014). Partly due to MAN, LPL's current predicament is clearly difficult to manage.

4.3.4 EasyJet in Belfast and Milan

In Belfast, easyJet concentrates on the primary airport (Belfast International, BFS). Nonetheless, the potential of Belfast George Best Airport (BHD) was tested in 2010, when two daily Luton flights were transferred to the city's secondary gateway. Even though BHD is more attractively located (i.e. closer to the city), the service did not meet sufficient demand and was relaunched at BFS. Since then, the carrier has been developing only at the primary airport, where it currently offers 263 weekly flights to 22 destinations (compared to 30 and 3 correspondingly in 2010). In the same way as Ryanair, easyJet heavily focuses on domestic routes, all of which are served more frequently than international ones.

In 2006, easyJet launched a base at Malpensa, Milan's primary airport. At the same time, it served two routes (London Luton and Paris Orly) from the secondary Linate[2]. Since that time, the airline has become the biggest carrier at Malpensa, but it did not grow significantly at Linate until 2013. Then, the Italian Competition Authority (AGCM) awarded rights to easyJet to operate flights between Rome Fiumicino and Milan Linate (Maslen, 2012). Current traffic figures show how important the route is for easyJet's intra-Italian network. With 35 weekly flights, it provides nearly a fifth of the total capacity in the domestic market operated by the airline. Out of all of the 35 destinations offered from Malpensa, only two are served more frequently- London Gatwick and Paris CDG (37 and 48 weekly flights).

4.3.5 Norwegian outside Scandinavia

Considering the distribution of seat capacity between different types of airport (Figure 1), Norwegian appears to be a classic LCC with a prevailing focus on secondary and regional airports. Nevertheless, the carrier's network outside Scandinavia should be assessed cautiously. It is still at the initial stage, and depends to a great extent on flights in the Norwegian domestic market.

In fact, the only secondary airport that sees a high growth of Norwegian services is London Gatwick, which is its biggest overseas base. With flights to 42 destinations (excluding long-haul traffic), it serves as much as 31% of Norwegian's total seat capacity in that part of Europe in 2015. This directly influences the high secondary airport result as shown in Figure 1.

Nevertheless, the airline has significantly reduced its traffic at other secondary airports. Actually, apart from Gatwick, it uses only Berlin Schönefeld, where it operates 48 weekly flights (compared to 120 in 2012). Norwegian has completely withdrawn from Liverpool and Rome Ciampino and moved to Manchester and Fiumicino instead. At the same time, NAS uses another 8 primary airports, i.e. CGN, HAM, MUC, BCN, MAD, MAN, FCO and MXP. Some of these airports are considered by the airline to be potential candidates for long-haul operations (Norwegian Air Shuttle, 2014).

[2] LIN deviates from the standard definition of secondary airport. In fact, it is an example of a 'city airport', i.e. a secondary airport specialising in business traffic. Thus, easyJet's move to LIN would mean the airline is even more focused on serving business passengers. Nevertheless, for the purposes of transparency, LIN is included within the overall definition of secondary airport in this paper.

4.4 Examples of markets dominated by secondary airports

4.4.1 Munich, Berlin and Frankfurt

Consider the cases of Berlin, Munich and Frankfurt, respectively the 1st, 3rd and 5th most populous urban areas in Germany. There are two airports serving the capital city. Both the primary - Tegel (TXL) and the secondary Schonefeld (SXF) are operated by Flughafen Berlin Brandenburg and are located in similar proximity to the city. Whereas Munich is served by two independent airports - the main one (MUC) located 28 km northeast of the city and the secondary one near Memmingen (FMM), is situated 110 km from the city centre. Likewise, there are two airports in Frankfurt: the primary one, Frankfurt International, operated by Fraport, and the secondary one Hahn (recently sold by Fraport to local authorities).

In Munich, both Norwegian and easyJet use the primary MUC, as the move to the remote FMM would be inconsistent with their business models (i.e. focus on primary airports). It is not the case for Ryanair, which still uses the secondary Memmingen. One reason for that may be the level of airport charges at MUC, which are over five times as high as at FMM (as shown in Table 5). The carrier has tried to enter the airport, although it failed to acquire convenient slots (ch-aviation, 2014). Both problems would be solved if Ryanair decided to operate during off-peak periods, but then it would be unable to offer flights at times attractive to business passengers.

Table 5: Comparison of charges for airports serving Munich, Berlin and Frankfurt

Airport	**Total charge at peak times (7-9HRS)**	**Total charge at off-peak times (11-13) HRS**
MUC	€ 7,932	€ 3,965
FMM	€ 1,474	€ 1,474
SXF	€ 2,135	€ 2,135
TXL	€ 2,705	€ 2,705
FRA	€ 4,656	€ 4,656
HHN[3]	€ 388	€ 388

Source: Author calculations based on the schedules of fees available on airport official websites[4]

[3] Estimated value; airlines performing 90% of aircraft turnarounds in a year in less than 30 minutes are exempted from aircraft-related charges.

In Berlin, all the three airlines use the secondary SXF. Currently, the airport is a base for easyJet, and from October 2015 for Ryanair (CAPA, 2015a). There may be following reasons for airlines avoiding Tegel.

a) The sole airport operator encourages the use of the secondary airport for LCC traffic.
b) TXL is scheduled to be closed as soon as the new Berlin Brandenburg Airport (located adjacent to SXF) is built. Thus, the airlines themselves may be unwilling to set up operations at an airport which is going to be closed.
c) TXL is located only 10 minutes drive-time closer to the city centre than SXF, which reduces benefits of a potential move to a primary airport.

Frankfurt is served only by Ryanair, which uses the secondary Hahn. All three LCCs avoid the primary FRA, Germany's biggest airport. This may be due to financial reasons, as shown in Table 4. More importantly, however, FRA is a major hub with a prevailing share (55%, Fraport, 2012) of transfer passengers. Considering the capacity constraints the airport is facing, it is more likely to attract FSNCs which use larger aircraft and operate hub-and-spoke type networks.

4.4.2 Ryanair in Rome

In Rome, Ryanair operates from both the primary Fiumicino and the secondary Ciampino (Norwegian and easyJet use the primary airport only). The Irish airline decided to enter the main airport in December 2013, trying to gain from the difficulties which Alitalia, Italy's flag carrier, was experiencing at the time (CAPA, 2013a). Currently, Fiumicino is mainly used by FR for the domestic network, with some routes being transferred from Ciampino. The growth of traffic at the smaller airport has been weakened, but not broken. It operates 291 weekly flights on 45 routes from Ciampino, compared to Fiumicino's 175 and 10 respectively. Thus, competition from the primary airport has not impacted CIA to the same extent as it has affected GRO and REU, for example. This may be explained by the fact that both airports in Rome are located in a comparative proximity to the city, therefore Ryanair would not benefit as much from a firmer move to Fiumicino.

[4] Assumptions typical for LCCs: Flight operated on Boeing 737-800 (75,000kg maximum take-off weight), load factor 85%, scheduled time of arrival/departure between 7 and 9 am (11-13 for off-peak), intra-European route, remote position stand at the airport, 25 min turnaround time.

4.4.3 London market

In London, all the three airlines avoid the primary Heathrow and use chosen secondary and tertiary airports (Gatwick, Luton, Stansted and even Southend). This is due to high levels of charges and congestion at LHR (as shown in Table 6). As the airport operates at nearly 99% capacity, aircraft need to spend a significant amount of time not only in holding traffic before the landing, but on the ground as well- as little as 3% of narrow body aircraft achieve a turnaround time of less than 30 minutes (Heathrow Airport Limited, 2011). For airlines, this means lower aircraft utilisation and higher fuel costs (on average, aircraft consume fuel worth £30 for every minute of flight[5]).

Table 6: Level of charges and holding times for London airports

Airport	Airport charges (£)	Average holding time (minutes)
LHR	6,866	4.4
LGW	3,336	1.1
STN	1,821	0.8
LTN	2,565	0.2

Source: Author calculations based on the available charging schedules and easyJet Annual Report 2007

Given the circumstances, Heathrow is likely to focus on transfer traffic, which favours bigger aircraft and better usage of the existing infrastructure, while the smaller airports may attract point-to-point flights. Nevertheless, this may be a subject to change if a third runway is built at LHR. This option is favoured by EasyJet, which has announced that it would launch routes to 69 destinations from the airport if it is extended (easyJet 2015).

5. Conclusions

This comparative study revealed that a few factors have changed with regards the most important airport requirements for LCCs. They continuously look for financial and demand-related opportunities and expect airports to facilitate quick and efficient operations. The LCC focus appears to be inward, as they pay minor attention to all the aspects which go beyond their core business (e.g. airport ground accessibility).

[5] The actual cost depends on aircraft engines and fuel prices. The cited cost is calculated based on the information in The Airline Monitor, which estimated the consumption of Boeing 737-800 to be 4.88 gallons/seat/hour and the hedging price of Ryanair for 2016 (£61/barrel).

Interestingly, significance of aspects such as *proximity to the primary city* and *airport potential to attract business passengers* indicates that LCCs may be increasingly interested in serving business traffic. Even though these particular factors were not prevalent at the time of the Warnock-Smith and Potter's study (2005), their high ranking in this study means that budget airlines are likely to use more primary airports in the future.

The network analysis showed that LCCs have increased their focus on primary airports. The major gateways may be attractive to budget carriers for the reasons identified through the content analysis, such as more convenient location in relation to the city, higher and more stable demand, lower charges or available airport capacity. Conversely, those primary airports which operate at their capacity limits or apply unaffordable charges for LCCs have not attracted budget airlines.

At secondary airports, LCCs usually operate low-frequency, international flights to secondary and regional airports abroad. Higher demand routes, i.e. to major European and domestic cities, are increasingly being served from primary airports. Some of those routes had been previously successfully operated at secondary airports. It was also found that there is a low level of route overlap between two airports serving the same city. Finally, some primary airports used by Norwegian may expect the carrier to launch long-haul flights in the future and perhaps create some form of hub-and-spoke system.

Due to these changes, many secondary airports have seen traffic decline, which has led in some cases to financial difficulties. Some, however, have been successful in maintaining or even attracting further LCC traffic. It is possible that factors such as airport ownership, level of market regulation, airport charges and an airport's location in relation to the city may inhibit LCCs from moving to the primary gateways. Therefore, while it is possible to state that secondary airports are generally losing ground in their competitive position for LCC traffic, no clear-cut judgment could be made with regard to the European market as a whole.

Further research in the area would involve the development of a set of in-depth case analyses of secondary and regional airport strategic reactions and responses to the overall trend in Europe towards LCC hybridisation and primary airport operations as found in this study. It would also be important to convert the results from indicative to generalizable results by including a larger proportion of European LCCs and case country secondary airports in the sample. The updated choice factor ranking shown in the paper can also act as a starting point for such investigations.

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Appendix A: Content analysis sources and list of quotations with resulting categorisation

Source	Quotation	Classification
Airliner World (2012), *Norwegian-first Europe, then the world*. April 2012	It appears that Norwegian is able to operate profitably despite the difficylt market conditions that have led to the demise of several carriers. When Spanair ceased operating at the end of January, Norwegian was quick to step in and fill the vacuum with new flights between Spain and Scandinavia. Í think there will be lots of opportunities in Europe in 2012 because there are too many airlines that have way too old fleets to be profitable with the oil prices of today", Kjos reflected.	**Airline competition**
Airports International (2013) *MAG and Ryanair Sign Ten-year Stansted Agreement. Last retrieved November 30,2015* http://www.airportsinternational.com/2013/09/mag-and-ryanair-sign-tenyear-stansted-agreement/14725	"The new long term agreement between Ryanair and MAG at Stansted shows that competition really does work, and it represents great news for both passengers and UK businesses"-	**Airport competition**
	This announcement, coupled with our £80m investment in the terminal, confirms that Ryanair shares our confidence, and shows how we are succeeding in transforming Stansted under new ownership	**Positive experience**
	"Ryanair is pleased to have agreed a new ten-year growth deal at London Stansted with MAG. This deal will see our Stansted traffic grow by over 50%, from 13.2m in 2012 to over 20m per annum in return for lower costs and more efficient facilities at Stansted. This agreement proves how UK airports can flourish when released from the dead hand of the BAA monopoly and is the first dramatic initiative by M.A.G to reverse seven years of decline, during which Stansted's traffic fell from 23.8m to 17.5m	**Airport costs/ Airport efficiency/ Airport Competition**
anna.aero (2012) Why is easyJet closing its Madrid base. Last retrieved November 30, 2015 from *http://www.anna.aero/2012/06/22/why-is-easyjet-closing-its-madrid-base/*	The challenges in Madrid are the doubling of airport charges, the current economic situation and the oversupply of airline seats in the market. Therefore, we are not in a position to deliver a return for our shareholders. We will get a better return for our shareholders by deploying those aircraft at other airports."	**Airport costs**
anna.aero (2014) New Ryanair's next three 'primary' airport bases discovered Last retrieved November 30, 2015 from http://www.anna.aero/2014/10/08/new-ryanairs-next-three-primary-airport-bases-discovered/	We concentrated on identifying the high-volume, high-yielding markets now increasingly important to New Ryanair, rather than the leisure and VFR-orientated and regional destinations the ultra-low cost carrier used to be famous for	**Business potential**
	For those airports scared of 'doing deals' with Ryanair, for fear of the EU coming knocking on their doors late at night, O'Brien is able to give some comfort: "The EU have [last week] confirmed the legitimacy and value of what Ryanair has to offer European families, business, tourism and the wider economy, while the Commission's findings also show that it is airlines such as Lufthansa and its subsidiaries who are finding it difficult to come to terms with the new realities"	**Discounts/ Subsidies**
	Equally, while in the past easyJet and Ryanair have tended to avoid head-to-head competition when it comes to opening bases, the New Ryanair's strategy of chasing business travellers will see operations	**Business potential**

	overlapping a lot more. The top three opportunities are interesting, more because they identify airports which were 'not' listed by O'Brien as potential 'primary' bases (...) London Gatwick is one of the airline's largest 'non-base' airports (...) but serves the London mega-market where it already has a presence at London Stansted (...) Likewise Paris Orly, is a market Ryanair has served for years at 'nearby' Beauvais, an old-school Ryanair airport which is a mere 81km north of the Eiffel Tower Our biggest challenge next year will be having enough aircraft to satisfy demand, not just from consumers, but from airports across Europe	**Proximity to the city** **Demand**
BIPA (2014) BIPA- Michael O'Leary (Address and Q&A). Last retrieved November 30, 2015 from https://www.youtube.com/watch?v=t0kFeda55yk	41:00 - MOL I think regional airports have an enormous role to play.(...) We are very happy to grow at the regional airports (…) but we will only do so when we get very low airport costs (…) the airports have to in effect (…) try to make out their money of the car parking and the airport shopping	**Airport non-aeronautical revenue** **Airport costs**
Bloomberg (2010). *Ryanair;s O'Leary plas shoft to major airports as growth* slows. Last retrieved November 30, 2015 from http://www.bloomberg.com/news/articles/2010-09-22/ryanair-s-o-leary-plans-shift-to-europe-s-major-airports-as-growth-slows	Ryanair Holdings Plc is looking at opening routes to all major European airports bar the top three as slowing growth prompts the region's top discount carrier to modify a strategy based on flying only to less-costly terminals. Flying to larger airports, while raising costs, would boost average ticket prices by luring more business travelers. Big-city airports are also keener to talk to Ryanair after the recession, Chief Executive Officer Michael O'Leary said Ryanair has avoided some of Europe's top airports, often routing passengers to terminals 25 miles or more from the cities they serve, such as Brussels Charleroi, Glasgow Prestwick and Milan Bergamo. O'Leary's plan, which heightens competition with British Airways Plc and EasyJet Plc, rules out only London Heathrow, Paris Charles de Gaulle and Frankfurt am Main as targets because of the need to turn planes around in 25 minutes As expansion slackens at Ryanair, whose flight to Hamburg-Luebeck lands 43 miles from the German city, the company will switch focus from slashing fares to a "value and service proposition" which will take more account of quality and customer satisfaction, O'Leary said (…)Flights to more central airports such as Barcelona El Prat, located six miles from the city, where Ryanair began flying this month, should also help boost ticket receipts Costlier airports are also becoming viable as Ryanair reduces its use of facilities such as check-in desks and baggage-handling machines in response to customers registering for flights electronically and carrying hand luggage, O'Leary said Among Ryanair's closest competitors, EasyJet (…) already operates to primary airports (…), while Air	**LCC dedicated facilities** **Airport potential to attract business passengers/Demand/Catchment area** **Proximity to city/Airport efficiency** **Proximity to city** **Airport costs** **Airline competition/**

	Berlin (…) has established a discount model that's been successful in attracting business passengers. Still, O'Leary says he isn't concerned about Ryanair's ability to win customers from carriers already well-established at the terminals it's targeting."Bigger airports are now realizing that EasyJet isn't growing and none of the flag carriers are growing, so they're now doing deals with us," the CEO said. "And we have such a price advantage over anyone else that we can move in on anyone's route and blow them out of it	**Airport potential to attract business passengers**
Buying Business Travel (2014). *The interview: Carolyn McCall, CEO easyJet.* Last retrieved November 30, 2015 from *http://buyingbusinesstravel.com/news/1822662interview-carolyn-mccall-ceo-easyjet*	"All our research confirms that business travellers want convenience, primary airports, speed – often they want to get there and back in a day, and don't want a 1.5 to two-hour transfer city centres There's been quite a lot of rumours that Easyjet would never fly from Heathrow, which is baffling, because we have 10 aircraft at Charles de Gaulle, we fly out of lots of hubs already, we're the number two airline at Schiphol," she said. "It all depends on cost, and Heathrow is an expensive airport	**Airport potential to attract business passengers/Proximity to city** **Airport costs**
Ch-aviation (2013) Norwegian establishes Tenerife Sur as fourth Spanish base. Last retrieved November 30, 2015 from http://www.ch-aviation.com/portal/news/22924-norwegian-establishes-tenerife-sur-as-fourth-spanish-base	"Our new base at Tenerife is established to meet the great demand for quality flights at a low fare between Europe and this beautiful island. We see a major passenger potential between Spain, Germany and UK. The great response to our routes between Spain and the Nordic also encourages us to increase frequencies to our existing route map," said Norwegian's CEO Bjørn Kjos. Tenerife will also act as a new crew base with additional flights to Germany planned in early 2014	**Demand/Catchment area**
Ch-aviation (2015) Ryanair would consider Paris CDG services for the right price. Last retrieved November 30, 2015 from http://ww.ch-aviation.com/portal/news/34571-ryanair-would-consider-paris-cdg-services-for-the-right-price	Ryanair Chief Commercial Officer David O'Brien told a press conference in Paris last week that the launch of any service would compliment, rather than compete, with its existing Paris Beauvais operations. "Serving Paris Charles de Gaulle? Why not. Paris Orly airport is full due to constraints in terms of slots, but not Charles de Gaulle," La Tribune quoted him as saying. "But, we have no immediate plans to serve Roissy, an airport that has the drawback of being expensive. At the moment, growth in Germany is still the priority for us	**Airport capacity** **Airport costs**
easyJet (2012) easyjet launches six new routes from Edinburgh in the airline's latest expansion plans. Last retrieved November 30, 2015 from *http://mediacentre.easyjet.com/stories/7158*	These new easyJet routes are also a major boost to our tourism sector(…)." Hugh Aitken, easyJet's Head of Scotland, added: "easyJet's new routes have been selected to boost both inbound and outbound business and leisure travellers. (…) I'm confident our new 2013 schedule will really appeal to people travelling to and from Scotland both on business and for leisure and will further bolster Edinburgh's world-famous appeal for tourists	**Airport potential to attract biz/leisure passengers**
easyJet (2013) easyJet is to offer free fast track security to attract business passengers. Last retrieved November 30, 2015 from *http://mediacentre.easyjet.com/stori*	Carolyn McCall, easyJet's CEO explained how easyJet is targeting business travellers: "Above all else business travellers want frequent, punctual flights to leading airports, with friendly service and at great fares. (…) By teaming up with our airport partners we	**Airport potential to attract business passengers**

es/7500	can now offer fast track security which enables time sensitive business travellers to reduce their journey time through the airport	
easyJet (2013) Richard Matthews, easyJet's Slot Strategy and Scheduling Manager during the easyJet conference Call 8.03.2013 http://corporate.easyjet.com/~/media/Files/E/Easyjet-Plc-V2/pdf/investors/results-centre/2013/slots-the-benefits-of-strategic-slot-management-8-March-2013-call-transcript.pdf	On the right hand side with the pie chart you can see looking at Gatwick, which is our main hub, I've got a breakdown there showing you the first three hours of the day and you can see here that we've got almost half of the slots in those three hours and it's really those three hours that drive the success for the rest of the day because without the slots between six and eight, it's not possible for you to have an aircraft that is then working its way backwards and forwards through Gatwick for the rest of the day. So it's key for us capitalise on any opportunities for slots in those hours	**Airport capacity/ Airport slots**
easyJet (2014). *Investor Day presentation* htttp://corporate.easyjet.com/~/media/Files/E/Easyjet-Plc-V2/pdf/investors/presentations/investor-day-presentation-18-09-2014.pdf	Large addressable market for easyJet (are) large, wealthy catchment areas which are under-supplied with LCC penetration Compelling network positions take time to develop. Slot allocation, timing of slots and airport capacity are constraints	**Catchement area** **Airport capacity/ Airport slots**
easyJet (2015) EasyJet response to the airports commission consultation. Last retrieved November 30, 2015 from *http://corporate.easyjet.com/~/media/Files/E/Easyjet-Plc-V2/pdf/about-easyjet/easyJet-response-to-the-airports-commission-consultation-jan2015.pdf*	We can say with great confidence that easyJet would operate from Heathrow if a new runway is built. Currently there simply are not the slots available at Heathrow for an easyJet operation to be viable More leisure passengers use Heathrow than Gatwick, and the Commission's evidence shows that a new runway at Heathrow will also bring the greatest benefits for consumers, due to the increased competition and choice for passengers Our focus is on making travel easy and affordable. Our strategy is to fly from primary airports. We operate across Europe's hub airports, with bases at many of them We note that the current main operational inefficiency at Heathrow is airborne holding, due to pressure on the arriving runway. Ground holding times for departures are not significantly different from Gatwick, with shorter queues at Heathrow in the morning and longer in the afternoon. A new runway would remove the airborne holding constraint at Heathrow and ensure that Heahtrow is not subject to excessive operational inefficiency We are confident that the combination of Heathrow's large catchment area and strong inbound would successfully support an easyJet operation Finally, we note that British Airways have begun flying to traditional holiday destinations from Heathrow, showing there is a market for a range of flights at the airport easyJet stated its operating principles: A turnaround time of 25 minutes by facilitationg pier served with walk-in-walk-out availability, preboarding zones; a check-in area that reflects the service standard	**Airport capacity/ Airport slots** **Airport potential to attract leisure passengers** **Proximity to city** **Airport efficiency** **Catchment area** **Airport potential to attract leisure passengers** **Airport efficiency/LCC dedicated**

	consistent across easyjet's network' an airport charging structure that encourages efficient use of assets at the airport; availability of sufficient code C stands	**facilities**
Evaint (2014). Keeping things moving on the apron. Interview with Bjørn Erik Barman-Jenssen, director of ground operation at Norwegian Air Shuttle, Last retrieved November 30, 2015 from http://evaint.com/our-publications/airline-ground-services/previous-issues/airline-ground-services-winter-2013-spring-2014/keeping-things-moving-on-the-apron	Certain airports in Norway have a minimum 20-minute turnaround time for the Boeing 737 and 800s. We can manage that in Norway as we have worked closely with the ground handlers to find the right procedures and set-ups. We have to be fast because the cost of a man-hour in Norway is extremely high. But when I travel out in Europe, they laugh and say they cannot do it in 20 minutes. I say, 'How come? We can do it in Norway, why not in....? Norwegian's forward-thinking approach also led Gatwick to introduce self-service bag tag printing. "BAA owned Gatwick up to 2009 and they said we couldn't do this, so we also invited them to Oslo and showed them our self-service set-up. As a result, we were the first ones to introduce bag tag printing and self-service bag drops at Gatwick. Now self-service bag drops have been installed in Alicante and Barcelona," Barman-Jenssen says "We do all this to reduce the number of staff needed. We take on board the initial cost of the investment and benefit from lower handling costs in the long run. About 75% of our handling costs come from the manpower needed, so if we can do without manpower we will keep prices at a reasonable level instead of them increasing as salaries rise,"	**Airport efficiency** **Airport efficiency** **Airport costs**
Flightglobal (2008) *Interview- Norwegian Chief Executive- Bjorn Kjos.* Last retrieved November 30, 2015 from https://www.flightglobal.com/news/articles/interview-norwegian-chief-executive-bjorn-kjos-320362/	In 2005 the carrier moved to take advantage of the growing travel requirements of the Polish labour market which followed the country's entry into the European Union. "What we saw were the labour movements across Europe, particularly in Poland, and in order to have access to that we had to have Polish costs and that's why we set up a Polish base. A lot of those Poles were flying into Scandinavia, and that was our main target."	**Demand**
Flightglobal (2012). *Interview: EasyJet chief executive Carolyn McCall. Last retrieved November 30, 2015 from* http://www.flightglobal.com/news/articles/interview-easyjet-chief-executive-carolyn-mccall-369719/	EasyJet has not been shy in acquiring rivals, buying Go from British Airways in 2002 and GB Airways in 2008, but further take-overs are "not really on the agenda", says McCall. She admits the airline did examine - "but not very seriously" - a possible acquisition of British Midland International from Lufthansa: "Heathrow is a very expensive and congested airport and it doesn't fit our business model. One of the key planks of our strategy is to grow RPS [revenue per seat] in a market where the trend is for a decline in RPS. An important way to do that is to get more business travellers," says McCall She says that EasyJet never wants to be seen as sophisticated and "never loses sight of the fact that 82% of our passengers are travelling on leisure"	**Airport costs/Airport capacity** **Airport potential to attract business passengers** **Airport potential to attract leisure passengers**

Flightlobal (2011) Ryanair stirs things up for the local carriers in Barcelona. Last retrieved November 30, 2015 from https://www.flightglobal.com/news/articles/ryanair-stirs-things-up-for-local-carriers-in-barcel-351095/	So why did Ryanair decide to set up camp at Barcelona's main airport? The key reasons, says the carrier's director of new route development Ken O'Toole, were that Barcelona offers a strong market for both inbound and outbound traffic, is relatively unseasonal, has had a significant amount of capacity added with the opening of a second terminal and airport charges are relatively low. "The opportunity in Barcelona we looked at on its own merits - the market potential coupled with a published cost structure which, while not cheap, is cheaper than other primary European airports," says O'Toole. "It is for those reasons that we could consider Barcelona a viable candidate for growth." Barcelona airport's marketing manager, Anita Gackowska, says the charges - which are regulated by law and set by Spanish airports operator Aena - are 47% below the European average and 35% below the world average. She is also keen to point out that no incentives were offered to Ryanair and the carrier receives no special treatment: "We give no incentives to anyone, full stop." Referring to its bases at Girona and Reus, O'Toole says another positive factor in entering Barcelona is that Ryanair was no stranger to the Catalonian market. "We were already the largest carrier in Catalonia so it's not like we were unknown going into this market	**Airport costs** **Airport capacity** **Positive experience** **Demand (potential)**
Keynote Interview with Michael O'Leary - World Low Cost Airlines Congress 2013 last retrieved November, 30, 2015 from https://www.youtube.com/watch?v=E1O4Xet5yGQ	All of the airlines, part P2P continue to lower fares, lower unit costs. Cost reduction will come at cost of expensive airports and taking out the necessary handling costs - 5:30 Polish domestic flight will be a huge opportunity to us, particularly in the market where the local incumbent, Wizz and LOT are not particularly strong- 16:30	**Airport costs** **Airline competition**
Northern Ireland Affairs Committee - An air transport strategy for Northern Ireland - Minutes of Evidence (2012). Kate Sherry, Deputy Director of Route Development, Ryanair, and Paul Simmons, UK Director, easyJet, gave evidence. Last retrieved November 30, 2015 from http://www.publications.parliament.uk/pa/cm201213/cmselect/cmniaf/76/120912b.htm	Ryanair's purpose is to remunerate our shareholders, but that overlaps with the public interest in tourism. The key ingredient for both of these aims is low airport costs, and reducing airport costs in Northern Ireland would provide a commercially attractive operating environment We are a flexible and efficient airline, so our 25-minute turnaround and our scheduling efficiency allow us to operate in airports with other airlines where we can operate off-peak We are able to operate, from this base network, many unique routes and, as I said, our low-fares offering is what stimulates the demand on many of these routes that are not operated or are of no interest to many other airlines. For that, however, the low costs are a necessity. Our efficient operations and our flexibility allow the airports to work with us at low costs. As you said, we develop the non-aeronautical offering in those airports as well I wanted to address comments made by BALPA that only one airport is necessary in Belfast, which we strongly disagree with. It is our opinion that Belfast is blessed with having two airports. It has genuine	**Airport costs** **Airport efficiency/ Airport capacity** **Airport costs** **Airport non-aeronautical reveue** **Airport competition**

	competition and does not need artificial regulation	
Norwegian (2012). *Norwegian opens new bases of operations at London Gatwick and Alicante.* Last retrieved November 30, 2015 from *http://media.norwegian.com/en/#/pressreleases/norwegian-opens-new-bases-of-operations-at-london-gatwick-and-alicante-806665*	"By establishing a new base in London, Norwegian will be positioned to meet the future competition on short-haul routes within Europe as well as long-haul routes globally. Growth and volumes are necessary to stay competitive in the airline industry," said CEO Bjørn Kjos of Norwegian The new base in England will also enable Norwegian to better meet the head-on competition from Asian and European carriers in the long-haul market (...). The airline sees a major passenger potential in London and surrounding areas	**Airline competition** **Catchment area/Demand**
Norwegian (2015). *Norwegian becomes Birningham's fastes growing airline with launch of two new routes.* Last retrieved September 30, 2015 from *http://media.norwegian.com/en/#/pressreleases/norwegian-becomes-birmingham-s-fastest-growing-airline-with-launch-of-two-new-routes-1244585*	Norwegian is already the 16th biggest airline at the airport (by passenger volumes) out of the 50 carriers who operate from Birmingham. Thomas Ramdahl, Commercial Director for Norwegian, said: "Norwegian's combination of low-cost, high-quality flights has proved a hit with West Midlands' holidaymakers and we are delighted that so many have chosen to fly with us	**Airport potential to attract leisure passengers**
Pasazer.com (2014) *Gosc pasazera: Michael O'Leary* [Polish]. Last retrieved November 30, 2015 *http://www.pasazer.com/news/23924/gosc,pasazera,michael,o,leary.html*	About Warsaw Modlin: People don't know that it's easy to get there. Normally, Ryanair's airports are located 1.5h from the city centre, today it took me 30 minutes [to get from there] No, please don't build a railway link to Warsaw Modlin. The train is a good thing, but its unnccessary if the airport is already well connected by buses About primary and secondary airports. Inevitably, we will be moving to the primary airports. There will be more and more such situations where we have two airports in one city But if something happens to LOT or Wizzair, and the management at Warsaw Chopin Airport is reasonable, then it will make sense for us [to move to the primary airport] The problem is not the cost, but the fact that you cannot perform 25 miuntes turnaround there [FRA,CDG,LHR] Until we reach 150 mppa we may have around 120 bases, more often in the big cities- Big catchment area Last year 27% of our passengers travelled on business, we haven't done anything for them until now. Now finally offer them fast track security control, elastic tickets and airport checki-in. AP Potential to attract business passenger	**Proximity to city** **Airport ground access** **Proximity to city/ Airport competition** **Airline competition** **Aiport efficiency** **Catchment area** **Airport potential to attract business passengers**
Skift (2014). Interview- Norwegian Air CEO says DOT approval delay	Skift: But the key to your business model is low fares, low costs, right?Kjos:The key factors in short haul is	**Airport**

is purely political. Last retrieved November 30, 2015 from http://skift.com/2014/11/25/interview-norwegian-air-ceo-says-dot-approval-delay-is-purely-political/	high efficiency. That means that you have to have short ground stops. You can't fly a hub and spoke system. You are flying a point to point system. High utilization, short turn around times	**efficiency**
Strickland, J. (2012). Interview with Carolyn McCall OBE, CEO, easyJet-Wold Travel Market (November 2012). Last retrieved November 30, 2015 from https://www.youtube.com/watch?v=K0mcEGnHDP4	We fly to the primary airports, not airports where people have to travel for two hours to get to the city, so that's a big difference in our model with Ryanair - 10:35 When we decide where to base aircraft, we take into acount a lot of factors which is about the market, Propensity to fly, the yields in the market (…) whereas Ryanair will often go into market when noone has ever heard of the airport - 11:10	**Proximity to city** **Catchment area**
ttgmedia (2014) *Interview: Kenny Jacobs on raising Ryanair's game. Last retrieved November 30, 2015 from* https://www.ttgmedia.com/news/news/interview-kenny-jacobs-on-raising-ryanairs-game	Ryanair's move into primary airports is taking the battle to the legacy airlines. It hopes to attract higher yielding passengers with a business-orientated timetable - for example, the new flights from Dublin to Brussels' main Zaventem airport, plus Madrid and Barcelona. AP potential to attract business passenger; Airline competition Half of Ryanair's new capacity will involve primary airports, but Jacobs insists this is not cannibalising its own market. At Zaventem, Ryanair stations four aircraft and says the airport's catchment extends into the Netherlands. This, he says, means that business for Ryanair's 14 aircraft at Brussels Charleroi is unaffected There are only three airports we won't consider - Heathrow, Frankfurt and Charles de Gaulle. It's the slots, the commercial deal we could get and the fact that you can't turn around an aircraft in 25 minutes. Every other airport is now a possibility Italy will also see more as Alitalia shrinks, despite Ryanair's already market-leading 30% share. Madrid will be expanded and Poland as a whole is a target. The eastern Mediterranean now brings five million Ryanair customers where there were none four years ago and Jacobs is keen on increasing this. If Ryanair's bid for Cyprus Airways fails, it will seek an operating licence there, tapping into demand from the Middle East and Russian markets for the island	**Proximity to city** **Airport competition/ Catchment area** **Airport capacity** **Airport slots** **Airport efficiency** **Airport costs** **Demand**
WLCCAC (2013). Keynote panel - World Low Cost Airlines Congress 2013 [Frode Foss, CFO Norwegian and Michael O'Leary, CEO Ryanair]. Last retrieved November 30, 2015 from https://www.youtube.com/watch?v=SKcnvBg-0Qg	[Frode Foss, CFO, Norwegian Air Shuttle] 9:50 We have a very competitive cost bases out of scand when we do expand and set up bases in Europe, the cost bases will be even better (…). These bases will be in even better competitive position to meet the price situation in Europe [MOL, 16:30] Our focus for the next years is to take out the airport costs, particularly the handling element which is very expensive	**Airport costs** **Airport costs**