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What makes the difference between a low-cost carrier airport and a low-cost carrier base?

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ABSTRACT

The liberalization of the European air transport market has enabled airlines to expand their networks substantially throughout the continent. In particular, low-cost carriers (LCCs) did so by rapidly expanding their number of bases in countries all over Europe. This paper sheds light on the variables that are related to the base likelihood of Ryanair, easyJet and Wizz Air, using several logistic regression models on a rich dataset with 385 European airports. The analysis shows that population is positively related to base likelihood. This relation is substantially stronger for easyJet bases. In addition, Ryanair base likelihood is positively linked with the number of hotel beds near the airport. EasyJet bases do not show such a relationship. Ryanair and especially Wizz Air bases are located in less wealthy regions, while easyJet bases are located in slightly richer regions. In addition, an obvious positive relationship between base likelihood and the number of airport operating hours is shown. The level of labour costs is related negatively to base likelihood. Airport competition turns out not be related to base likelihood. Finally, Ryanair's bases are often only served by LCCs, while easyJet target airports that have a mixed airline portfolio.

1. Introduction

After the liberalization of the European air transport market, most of the former flag carriers continued to operate a strongly concentrated network by using their respective national airports as central hubs. The option of developing foreign hubs in the liberalized European market was realized through airline alliances, mergers, and take-overs. This enabled these groups to integrate their networks in multiple hub systems in Europe, such as Air France with KLM, Lufthansa with Austrian, Swiss and Brussels Airlines, and British Airways with Iberia.

In contrast with these network carriers, Burghouwt and de Wit (2015) observed that low-cost carriers (LCCs) have developed a different type of decentralized networks to adequately cover the liberalized market, namely through multiple starburst networks of point-to-point routes from/to a rapidly increasing number of LCC bases.

In these decentralized point-to-point networks, LCCs have gained a substantial market share in the European market. Between 2005 and 2014, the share of LCCs in European aviation has increased from 20% to approximately 45% (Khan, 2014). Their success is roughly based on fare unbundling, high aircraft utilization, low labour costs, maximized ancillary revenues, increasing bargaining power against aircraft manufacturers and airports, single-class cabins, and online bookings (Button and Ison, 2008). Still, the majority of LCC startups has gone bankrupt or has been taken over. This mainly concerned the smaller startups, the ones that lack the first mover advantage or the ones that deviate from the LCC business model on crucial characteristics (Budd et al., 2014).

The observed increase in market share corresponds with the rapid expansion of the largest LCC networks throughout Europe. This network expansion went hand in hand with a growing number of LCC bases all over Europe, where aircraft and crews are stationed overnight.

If an airport becomes a base for a dominant LCC, the pressure on the airport's aeronautical revenues increases and, in turn, such an airport is forced to seek compensation in non-aeronautical revenues from the increasing passenger volumes (Francis et al., 2003). At any rate, today quite a few mainly secondary European airports highly depend on a single LCC (Laurino and Beria, 2014). In a saturating intra-European LCC market (de Wit and Zuidberg, 2012) and the subsequent shift of Ryanair from secondary to more primary airports (anna.aero, 2015; de Wit and Zuidberg, 2016), such dependence might be worrisome if an airport loses its base status and can no longer recuperate its capacity investments. Additionally, Dziedzic and Warnock-Smith (2016) find that a growing number of secondary airports are losing a significant amount of LCC traffic and still only accommodate flights to less important

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destinations. For that reason, it is more relevant to better understand the (airport) characteristics than to foster an LCC base status.

After the exploration of the literature on the characteristics of LCC airports and LCC bases and the subsequent derivation of hypotheses, we proceed by delineating the number of airports and the way we detected LCC bases from this airport set. The resulting figures facilitate a short exploration of base developments in the three LCC networks. Thereafter, the chosen methodology and data collection are discussed. In the next step, the hypotheses are tested in different econometric models. The analysis produces conclusions and some managerial implications.

2. Literature review and hypotheses

First we discuss the literature on the characteristics of LCC networks with regard to routes and airports. Since LCC bases are a subset of LCC airports, the key question is which characteristics apply to both LCC airports and LCC bases and which additional characteristics will be exclusively attributable to LCC bases. The literature exploration produces a number of hypotheses that will be tested in the following sections.

2.1. Characteristics of airports chosen by LCCs

In her meta-analysis of 60 LCC-related research articles, Graham (2013) summarizes four choice factors that affect the LCCs' choice of airports. First, she observes that there exists agreement on the fundamental importance of the airport's operational requirements to fit in with the requirements of the LCC operating model, such as quick turnaround times, convenient slot times, and lack of congestion. A second airport choice factor for LCCs is the airport's willingness to provide or negotiate low aeronautical charges and other user costs. However, for this choice factor, Graham (2013) refers to some older sources, i.e. Francis et al. (2003) and Barrett (2004), dating from the period when the development of LCC networks was still in its infancy, resulting in a strong focus on smaller, secondary airports. More recently, Carballo-Cruz and Costa (2014) state that LCCs do not enjoy significant advantages in terms of airport charges at Porto Airport, while LCC activity has increased significantly at the airport in the last decade. Although the evidence is circumstantial (as were the earlier two sources), it is likely that the bigger the airport, the wider its airline portfolio, and the closer to its capacity, the smaller the bargaining power of the LCC will be. This seems more relevant if one also considers the increasing number of primary airports that are chosen today as new LCC bases. The third factor Graham (2013) identifies is sufficient potential demand in the airport's larger catchment area to enable regular frequencies with high load factors for an LCC. Fourthly, the degree of airport competition can strengthen the bargaining power of the airline in negotiating aeronautical charges (Gillen and Lall, 2004). Finally, the fifth airport choice factor concerns the degree of airline competition at the airport. Also, the degree of airline competition from neighbouring airports is likely to have an influence.

In turn, Graham (2013) observes that the relative importance of these characteristics has only been tested once by Warnock-Smith and Potter (2005) in a survey among eight LCCs. The most important airport characteristics are (1) demand volume for LCC services, (2) quick and efficient turnaround facilities, (3) convenient slot times, (4) good aeronautical discounts, and (5) positive forecasts for business and tourism. More recently, Dziedzic and Warnock-Smith (2016) have updated these results through a content analysis of interviews, press publications, and conference materials. The five most important factors resulting from that analysis are (1) airport costs/availability of discounts, (2) demand for LCC services/catchment area, (3) quick and efficient airport operations, (4) proximity of the primary city, and (5) free airport capacity/slot availability. Remarkably, airline and airport competition is only ranked seventh. One should, however, take into account that this analysis is based on media expressions, which might serve to fulfil a strategic goal. In that sense, it is not surprising to see low airport charges and efficient airport operations at the top of the list. After all, these factors are often the object of focus among LCC managers to persuade airports to accommodate LCC operations. In reality, an increasing focus on primary airports, as Dziedzic and Warnock-Smith (2016) also show, generally leads to higher average airport charges and less efficient airport operations. Anyhow, LCCs also persistently focus on low airport charges where possible. However, this does not automatically imply that LCCs today focus on the airports with the lowest possible airport charges.

2.2. LCCs' base characteristics

Although more specific literature on base airport choice of LCCs is missing in Graham's meta-analysis, more recently Klein et al. (2015) have explored the factors for foreign base choice by LCCs. They characterize foreign base choices as an internationalization strategy of LCCs focused on foreign direct investments with a long-term focus, resulting in withdrawal difficulties and lock-ins. The foreign base choice model therefore strongly focuses on the assumed risks of such foreign investments. However, little is known until now about the base-related sunk costs of an LCC and the switching costs of LCCs between bases. Malighetti et al. (2016) investigate the complete and partial base abandonments of domestic as well as foreign bases. They find that switching costs increase with the size of the base in terms of the number of stationed aircraft, whereas the proximity of an alternative airport – especially in case of mid-sized alternatives – makes a base drop or downsizing more likely. Furthermore, abandonments are negatively correlated with annual national market growth in terms of seats offered and the degree of base dominance by the LCC. Due to these observations, it is not evident ex ante whether the choice factors for a foreign base are fundamentally different from those of a domestic one.

In correspondence with our envisaged approach, Klein et al. (2015) find empirical support for the interrelation of foreign base-choice and foreign airport/route-choice decisions. As a consequence, they add an airport choice model to the base-choice modelling framework. Population and GDP per capita are used as airport choice factors to account for the potential demand of an airport's catchment area (Boguslaski et al., 2004). Klein et al. (2015) find a significant effect of catchment area size (population) but not on catchment area value (GDP per capita). This might be explained by the fact that LCCs in Europe rather focus on the number of potential customers than on wealth.

In addition, Klein et al. (2015) find a rather counterintuitive positive effect of airline competition on airport choice. This is explained by the fact that (long-run) market presence discloses information about market size, from which a potential new entrant can profit. On the route level, Boguslaski et al. (2004) and Oliveira (2008) provide empirical evidence for this theory. Klein et al. (2015) also find a negative effect of airport competition on airport choice, as this reduces the probability of the choice for a specific airport.

In the foreign base choice model, Klein et al. (2015) also find a positive relation between the probability of a foreign base status and the number of flights. This corresponds with the operational consequences of a base status. The minimum number of movements per stationed aircraft at least implies an early morning departure, a mid-day arrival and departure for the crew change, and at least a late arrival to station aircraft and crew during the night. Additional flights to and from the base are often executed during the morning and afternoon intervals, resulting in 6–8 aircraft movements per stationed aircraft. In addition, efficiency in handling and maintenance may require a minimum number of aircraft to be stationed at the base airport. This corresponds with the findings of Carballo-Cruz and Costa (2014) that an airport which acquires an LCC base status in the LCC network most likely

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