



# Market structure, countervailing power and price discrimination: The case of airports

Jonathan Haskel<sup>a,b,c</sup>, Alberto Iozzi<sup>d</sup>, Tommaso Valletti<sup>a,b,d,\*</sup>

<sup>a</sup> Imperial College London, Business School, South Kensington Campus, London SW7 2AZ, United Kingdom

<sup>b</sup> CEPR, 77 Bastwick Street, London EC1V 3PZ, United Kingdom

<sup>c</sup> IZA, Schaumburg-Lippe-Strasse 5-9, 53113 Bonn, Germany

<sup>d</sup> Università di Roma "Tor Vergata", Dip. di Economia e Finanza, Via Columbia 2, 00133 Roma, Italy

## ARTICLE INFO

### Article history:

Received 10 November 2011

Revised 20 August 2012

Available online 26 September 2012

### JEL classification:

D43

L13

L93

R48

### Keywords:

Airports

Airlines

Landing fees

Countervailing power

## ABSTRACT

A number of interesting policy questions have arisen regarding airport landing fees. For example, what is the impact of joint ownership of airports? Does airline countervailing power stop airports raising fees? Should airports be prohibited, as an EU directive intends, from charging differential input prices to airlines? We set out a model of upstream airports and downstream airlines with varying countervailing power and pricing structures. Our major findings are: (a) an increase in upstream concentration or in the degree of differentiation between airports always increases the landing fee; (b) the effect of countervailing power, via an increase in downstream concentration, lowers landing fees, but typically does not pass through to consumers; (c) with Cournot competition, uniform landing fees are always higher than discriminatory fees.

© 2012 Elsevier Inc. All rights reserved.

## 1. Introduction

The airline market has provided fertile territory for huge numbers of theoretical and empirical papers in economics. Perhaps one reason is that its institutional features span so many interesting phenomena: competition, regulation, networks, auctions, unionized labor markets, the environment, consumer transport choice, etc. But relative to that considerable weight of work there is relatively little on what would seem a rather important complementary input, namely airports.<sup>1</sup>

Perhaps until twenty years ago, it might be argued that the study of airports was not particularly rewarding either by itself

or as something that might inform the study of airline competition. Most airports were public sector owned and regulation or specific agreements held landing fees to non-profit levels. The vast majority of airports held plenty of spare capacity and their location was a historical accident; new entry was almost unheard of. Competition between airports was a fanciful notion regarded as impossible.

The position today looks very different. First, *market structure*. Low cost airlines have brought new, often non-central airports, into effective competition. Even in large cities, competition has emerged between (non-congested) airports: privately-owned rival airports have engaged in documented bidding wars over lower landing fees in cities like Moscow, Belfast, Melbourne, Orlando, Miami and London. Competition has grown even in relatively congested airports where network externalities are important: 33% of London Heathrow passengers only change planes there, leading Heathrow to publicly claim that it competes with hub airports in Paris, Frankfurt and even Dubai. Second, *privatization*. Fifty-five countries have partially or totally privatized their airports (IATA, 2007). Third, *regulation*. There are currently a series of major regulatory changes proposed to airports. In the UK, the Competition Commission in 2009 ruled that BAA, the joint owner of most major UK airports (London Heathrow, London Gatwick, London Stansted, Glasgow, Edinburgh, Southampton and Aberdeen), should be

\* Corresponding author at: Imperial College London, Business School, South Kensington Campns, London SW7 2AZ, United Kingdom.

E-mail addresses: [j.haskel@imperial.ac.uk](mailto:j.haskel@imperial.ac.uk) (J. Haskel), [alberto.iozzi@uniroma2.it](mailto:alberto.iozzi@uniroma2.it) (A. Iozzi), [t.valletti@imperial.ac.uk](mailto:t.valletti@imperial.ac.uk) (T. Valletti).

<sup>1</sup> The major exception is the analysis of slot auctions to allocate crowded space at airports. That literature does not deal with modeling of landing fees that we look at here. We neglect slot auctions in the work below, for in practice, many European airports have slot allocation via grandfather rights, that is, slots are allocated according to whether airlines operated that slot last period. Oum and Fu (2008) survey recent literature on airport competition and regulation, touching on a number of issues including single and dual till.

broken up. The EU Airport Charges Directive (2009/12/EC) imposes a host of regulations for large airports, including “non-discrimination”, i.e., an airport must offer the same input charge to all airlines. Other regulatory changes in train include examinations of single and dual till regulation whereby retailing revenue at airports is returned to airlines or airports respectively. Fourth, *congestion*. Airports have increasingly become more congested, raising additional problems in short-run landing fee pricing but also long-run capacity expansion (Borenstein and Rose, 2007). New runways have been vetoed in London but the new runway at Frankfurt was completed in 2011.

These changes open a number of interesting questions. We cannot study all of them in one paper. This paper sets out a framework that can help in answering answer at least some of the following policy-relevant questions: (a) What is the effect on landing fees of ownership structure up and downstream? For example, should the jointly owned UK airports be split up? (b) Would countervailing power from airlines ever be enough to stop airports charging high landing fees so that even a geographically isolated airport does not need regulation? (c) As airports get more congested, does that alter the nature of the relationship between airports and airlines? (d) Should input price discrimination be allowed by airports?

These questions are recognized to be crucial in policy debates regarding the regulatory choices for airports, yet to the best of our knowledge none of them have been answered using a formal model. As we shall see, some of the answers to these questions are exactly those one would expect, but some are remarkably different, providing a strong motivation to our analysis.

We also think the paper is of broader interest. First, one ingredient of our model is countervailing power, an issue that is common in cases where more or less concentrated intermediate suppliers and final sellers face each other (e.g., farmers and supermarkets, health insurance companies and hospitals). Second, it turns out that some of the (rather few) existing models in this area have used particular demand functions that do not fully satisfy some requirements such as negative cross-price elasticities of demand. We work with a novel demand system that has not been used before and thus show how we avoid some of the implicit assumptions made in other cases. Thus an innovative contribution of the paper is a new demand system and associated results.

We study a vertical industry in which upstream suppliers (airports) provide an essential input (landing rights) to downstream firms (airlines) at a linear price (the per-passenger landing fee). We model various degrees of concentration in the up- and downstream market structure and of substitutability of demand. Upstream, we assume two airports, who have varying derived-demand substitutability between them. The airports may be jointly owned, or be independently owned, to control for upstream concentration. Downstream, we assume up to four products (routes) with varying demand substitutability among them. The flights can be operated by four separate airlines, or by two multiple product airlines that fly from both airports. In this way, we can also investigate the effects of changes in downstream concentration. We also look at different modes of competition downstream. We analyze both cases of airlines competing in quantities and prices, taking these, respectively, as illustrations of more or less congestion of the airport systems; see discussion below. In the last section of the paper, we also consider the effects of a ban on discriminatory landing fees.

Our modeling choices attempt to capture the essential features of the industry under analysis.<sup>2</sup> Some airport systems are under the

same ownership (London before the UK CC decision, but also Paris, New York and Rome) while some other face competitors; in some cases locally (Moscow), in some other cases from remote airports (major international hubs). Competition between airports is also related to the offer of overlapping routes by airlines and to the willingness to travel between alternative airports by consumers, both found to be rather high in recent studies (OFT, 2007). As to the landing fee, it is composed of different elements, most of which vary linearly with the number of passengers. The possibility of discrimination between airlines flying from the same airport is explicitly forbidden in Europe by the recent 2011 EU Airport Charges Directive (Competition Commission, 2009, para 6.15) and Section 41 of the 1986 Airports Act in the UK (CAA, 2006).

### 1.1. Model findings

We cast our findings in terms of equilibrium landing fees ( $\ell$ ), although we also consider the effects on final prices, consumer surplus and profits.

1. *Upstream market power raises  $\ell$ .* Under a wide range of market structures, downstream market games and contract structures,  $\ell$  is higher with common ownership of airports or less substitutability between them. We also find an invariance result when the upstream market is under common ownership: the landing fee is always set at the monopoly level, irrespective of the nature of downstream competition. This result no longer holds true once airports are competing against each other, in which case up- and downstream competition reinforce each other.<sup>3</sup>
2. *Downstream market power (countervailing market power) generally lowers  $\ell$ .* A concentrated airline can fly its other route from the other airport if the landing fee charged by one airport is too high (fragmented airlines flying one route each have no such option). This tends to lower  $\ell$ .
3. *Downstream market power generally increases final prices.* Whilst the effect above sets out what happens to  $\ell$ , it is of interest to find out what happens to final consumer prices. As seen immediately above, an increase in airline countervailing power generally lowers  $\ell$ . But one might ask: does that reduction in  $\ell$  “pass through” to a reduction in final prices to the passengers? The answer is negative since the negative effect of increases in concentration downstream is never fully offset.
4. *Bargaining over discriminatory landing fees typically lowers  $\ell$  compared to uniform landing fees.* This finding, which is true in general for Cournot competition among airlines, is due to the fact that an airline is a tougher negotiator with the airport when any discount obtained does not have to be shared with its rivals.

### 1.2. Related work

As pointed out above, the bulk of the academic literature in this area is not focused on how landing fees emerge from the airport/airline interaction. It is however very rich, looking at airline competition, employee compensation, slot congestion, noise, etc., much of which is summarized in Borenstein and Rose (2007) and Winston (2009) for example.

The literature on congestion pricing and airport capacity financing abounds, especially with atomistic airlines. More relevant for our purposes, some papers consider airlines with some degree of market power, as we do. In the widely cited paper by Brueckner (2002), an airport sets congestion fees with either competitive or monopolistic airlines, but there is no competition with other

<sup>2</sup> For further details of the institutional background informing our assumptions see Appendix C.

<sup>3</sup> Oum et al. (2008) study the effects of ownership on airports' cost efficiency. They find that competition typically improves efficiency, but it plays no role when airports in cities with multiple airports are owned and operated by a single airport operator.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات