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The impact of airline differentiation on marginal cost pricing at UK airports

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ABSTRACT

Airport pricing is a central issue in international transport policies, which tend to support pricing schemes based on marginal operating costs. This paper aims to provide empirical evidence in support of increased differentiation in airport charges on the basis of marginal passenger costs being sensitive to the type of airline, i.e. full-service, low-cost, and charter. To that end, both long- and short-run multi-output cost functions are estimated over an unbalanced pool database of 29 UK airports observed between 1995 and 2009. The passenger output is hedonically-adjusted in order to introduce the desired level of disaggregation while also keeping a parsimonious specification. Results show that low-cost passengers impose significantly lower costs to airport infrastructure than those from either full-service or charter airlines. A full schedule of marginal and average incremental cost estimates for the combined passenger categories is provided for all sample airports. Taking into account the existence of returns to scale and economies of capacity, this provides a useful guide for optimal pricing of aeronautical infrastructure under either single- or dual-till regulations.

1. Introduction

Airport pricing is a central issue in international transport policies (e.g. EC, 2001), which tend to support first-best pricing schemes based on marginal costs (MC) where the user pays exactly for the resources employed. According to the economic theory, MC prices would lead to optimal usage of airport infrastructure as well as to valid investment signals in the long run. These benefits, however, while being sought after by governments and regulators on the grounds of public welfare, do not tend to find much support from other industry agents. Airlines, for example, typically ask for lower, subsidized charges (e.g. landing, security, handling, etc.) arguing that they indirectly generate business for the airport in terms of non-aeronautical revenues (e.g. parking, retail, catering, etc.). Airports, especially those privatized, are also wary of MC pricing, since it does not lead to cost recovery of aeronautical infrastructure under the likely existence of returns to scale. These opposing views have led to a highly regulated environment. Thus, it is not uncommon that aeronautical charges for major airports are subject to the oversight of a public regulator, who needs to balance the public interest with the need for profitability or self-sustainability of a (possibly) corporatized operator. This fact, in combination with the increased importance of non-aviation activities in the airport business, has led to the adoption of two main price regulation approaches: (i) single-till, where prices are set to cover total costs and cross-subsidization between aeronautical and non-aeronautical activities is possible, and (ii) dual-till, where prices are related to specific costs without cross-subsidization (Lu and Pagliari, 2004). An additional distinction can be made by considering the long- or short-run nature of the regulatory cost base, which, will roughly depend on the level of congestion and the need to generate income to fund a capacity expansion (CAA, 2001a).

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If the airport's aeronautical cost structures do not allow for MC pricing without incurring in losses, the operator may seek to charge second-best break-even prices. Under such circumstances, economic theory suggests that Ramsey prices[1] are the preferred option in terms of social welfare (See e.g. Morrison, 1982). In practice, however, average cost pricing has been the preferred pricing method in the airport industry during the last decades (Rendeiro, 1997). In a multi-output environment, this translates into average incremental costs (AIC) being used as benchmarks for second-best "subsidy-free" prices (Graniere, 1996).

All these economic principles are observed, to a great degree, in the price regulation process of several major airports by the UK's Civil Aviation Authority (CAA). In these cases, airport-specific price caps per passenger are typically set for a five-year period and then reviewed after a public consultation (See, e.g. UK CAA, 2007). These single-till price caps, and more specifically, their annual rate of change (*RPI-X*),[2] are set to incentivize capital investment and increase productivity. To that end, CAA calculations are largely cost-related, implicitly drawing on familiar concepts such as MC or AIC (UK CAA, 2001a). Illustratively, British Airport Authority (BAA)'s stated policy for air traffic services in the Southeast of England is to set charges on the basis of long-run MCs (cited in Starkie (2008)). However, its own research showed that the charges were actually well below MCs and the loss was cross-subsidized by the profit generated from the commercial revenues where prices are raised well above costs (Starkie, 2008).

In spite of that, there has been a growing concern among certain airlines (e.g. Easyjet, Bmi) that CAA regulated prices do not accurately reflect the differences in service quality offered by different terminal buildings within the same airport (UK CAA, 2007: p. 188). Moreover, low-cost carriers (LCCs) frequently argue that they do not need complicated infrastructure such as baggage-handling system,[3] airbridges, or seat reservation IT programs at check-in desks,[4] and hence, they should not have to pay for facilities which they do not want to use (Competition Commission, 2002: p. 262). On top of that, LCCs also claim that they impose lower costs on airport operations than full service and charter airlines as they generally have faster turn-around times.

LCCs' aggressive pursuit of lower airport charges is explained by their particular business model, in which cost minimization is paramount. Having pushed all other costs to minimal levels, airport charges are targeted for further reduction (Doganis, 2002). These typically represent roughly 10% of the cost base under the traditional airline model, but it amounts to a much higher share for LCCs as a result of frequent landing and taking-offs (Competition Commission, 2002). Airport costs in some cases represent 70% of ticket prices and LCCs claim that their margins are tight and have to rely on volume to generate a return (UK CAA, 2003c). In Europe, LCCs are putting pressure on airports to reduce charges and/or to provide commercial incentives by threatening to fly elsewhere if these demands are not met (Lei and Papatheodorou, 2010). Given the fact that LCCs now account for approximately 50% of intra-European passengers (Starkie, 2012), their demands cannot be ignored by airport authorities and regulators.

Under the aforementioned MC principle, it is clear that airline operations that require lower infrastructure usage should also face reduced prices (Gillen and Forsyth, 2010). In that regard, for the charges to remain cost-related, cheaper (i.e. less-quality) infrastructure should be less expensive for the airlines; high utilization and effective use of airport facilities should also be rewarded. While under such circumstances LCCs may have a point in demanding lower airport charges, the fact is that in a recent report it was found that average charges vary according to airline type, and LCCs actually pay the lowest charges at UK airports (Competition Commission, 2009). The cost-basis of said price differentiation policies, however, remains to be empirically determined.

With this background, and using the UK airport industry as a case study, this paper aims to provide new empirical evidence in support of airline-based differentiation in airport charges. The working hypothesis is that marginal passenger costs are sensitive to the type of airline (i.e. full-service, charter, and low-cost) as they may significantly differ in their use of airport infrastructure. Results are expected to lead to relevant policy and managerial conclusions regarding price discrimination in the airport industry. In order to cover the basic regulatory approaches explained above, both long- and short-run multi-output cost functions are estimated over an unbalanced pool database of 29 UK airports observed between 1995 and 2009. The passenger output is hedonically-adjusted in order to introduce the desired level of disaggregation while keeping a parsimonious specification. A full schedule of MC and AIC estimates for the combined passenger categories will be provided for all sample airports.

The rest of this paper is organized as follows: Section 2 provides a literature survey on the estimation of airport marginal costs. Section 3 describes the UK airport sample and data sources while Section 4 introduces the cost frontier methodology. This is followed by Section 5 which analyzes the resulting marginal cost estimates and their impact on optimal airport pricing in the UK. Finally, Section 6 summarizes the main findings.

2. Literature review

Although many past studies have addressed the issue of airport pricing, only a few of them have focused on the monetary valuation of airport MCs, featuring a variety of estimation methods and databases that make difficult to compare their

[1] These allow for MC mark-ups that are inversely proportional to the different users' demand elasticities.
[2] Price caps are allowed to grow with inflation (Retail Price Index) less a productivity incentive (*X*).
[3] Note that LCCs do not generally operate connecting flights.
[4] Most LCCs do not allocate seats before passengers board the aircraft.