Why Market Power Cannot be Controlled by Regulation of Core Prices Alone

by
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INTRODUCTION

Over the last thirty years, the airport industry faces two striking trends: (i), the growing importance of “concession revenues:” which include revenues from retailing, advertising, car rentals, car parking, and land rentals (e.g., Zhang and Zhang, 1997 and 2003, Forsyth, 2004, and Thompson, 2007) as compared to the traditional aeronautical revenues associated with runways, aircraft parking and terminals; and (ii) the growing importance of private airport ownership.⁴ Privatized airports are often subject to economic regulation for market power reasons. Such regulation has nevertheless focused on aeronautical services only, with airport concession services being generally left unregulated. The results derived in this paper indicate that this regulatory practice does not effectively control airport market power and is socially suboptimal.

More specifically, the present paper addresses the question of how prices for airport concession goods and services can affect traveling activities. Theory shows that the effect of concession revenues on private airport infrastructure pricing depends on whether the passenger quantity is independent, or a decreasing function of, airport concession prices. Independence may occur because buying the air tickets and car-rental services can be separated in time, which may lead to limited consumer foresight (e.g., Zhang and Zhang, 1997 and 2003).⁵ On the other hand, experienced travelers, e.g., business passengers, may well decide upon traveling based on the entire trip costs including expenditures for both the tickets and (for example) car-rentals, and a reduction in the car-rental price may therefore increase traveling activities of business passengers. The implications of these two scenarios for private airport pricing are significant. If traveling activities are independent of concession prices, concession businesses may unambiguously exert downward pressure on the private aeronautical charge (e.g., Zhang and Zhang, 1997). Starkie (2001) proposes complete abolition of private airport regulation because of this effect. However, the opposite may be true if an increase in prices for concession services reduces the amount of traveling. Czerny (2006) provides a numerical example, where the private aeronautical charge with airport concession services is higher than the private aeronautical charge in the absence of such services.⁶ He further shows that it can be welfare-optimal in the sense of Ramsey (1927) to

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⁴ One may argue that these two developments are related to, and may in effect reinforce, each other. As compared to public airports, privatized airports have a greater incentive to explore and expand concession revenues due, at least in part, to the fact that, as discussed in more detail in the paper, the concession activities are usually unregulated and hence are more profitable. On the other hand, the growing revenues generated from concession activities allow the privatization politically feasible and attractive (e.g. the government could reap a large, lump-sum amount of money when selling its airports to private hands, or receive continuous payments from the privatized airports as a landlord, or both).
⁵ Braccaglia, D’Alfonso and Nastasi (2014) discuss the role of airport e-commerce strategies for consumer foresight. Flores-Fillol et al. (2014) consider a unifying model that integrates the extreme cases with perfect consumer foresight and no consumer foresight.
⁶ See Yang and Zhang (2011), Czerny (2013), D’Alfonso et al. (2014) and Czerny and Zhang (2014) for analyses of airport concession services when airports are congested.
charge car-rental services at marginal costs and cover infrastructure costs only by revenues from aeronautical charges when airport subsidy payments are unavailable. Marginal cost pricing for car-rental prices may be difficult to implement by the regulation of infrastructure charges alone; thus, whether airport market power can be effectively controlled by the regulation of infrastructure charges alone depends crucially on whether travel activities are a function of concession prices or not.

LITERATURE REVIEW
Some empirical insights can be derived from the literature. Van Dender (2007) analyzes the effects of airline market structure on revenues that airports derive from airlines and passengers. In line with some of the literature mentioned above (e.g., Zhang and Zhang, 2003), he estimates a regression model where passenger quantities are used as an explanatory variable for average concession revenues, but abstracts away from the possibility that concession prices can explain passenger volumes. He finds that an increase in the passenger quantity reduces average concession revenues, which is consistent with the idea that a reduction in prices for concession goods and services can increase traveling activities. Choo (2014) finds that an increase in the share of revenues derived from concession businesses reduces the aeronautical charge. This is consistent with the basic idea that a reduction in aeronautical charges can lead to a reduction in aeronautical revenues. While these two studies concentrated on US airports, other studies analyzed European airports. Analysis of European airports is of special interest because airport privatization is common in Europe, while almost all US airports are under public ownership. Bel and Fageda (2010) find that airlines have to pay higher aeronautical charges at private and unregulated airports relative to other, i.e., public or private and regulated, airports. On the other hand, Bilotkach et al. (2012) find that aeronautical charges can be a decreasing function of private involvement in airport management. Since the consumption of concession services is not obligatory for the use of airport infrastructure, they can have the interpretation of add-ons to the primary good traveling (Czerny and Lindsey, 2014). Here, Brueckner et al. (2013) found that the price for primary goods, in his case airfares, can fall when the price for add-ons, in his case checking a bag, increases. This may indicate that an increase in the prices for concession goods can reduce the demand for traveling. All of these studies have not directly tested the relationship between passenger travelling and concession prices. This is understandable as such empirical testing is not part of the main objectives of those studies.

EMPIRICAL METHODOLOGY
In the light of this discussion, the main contribution of the present paper is to explicitly estimate the effect of airport car-rental prices on passenger quantities by treating the price for car-rental services as an endogenous variable. The study uses a sample of 199 large US airports with approximately 60,000 or more annual passengers in order to estimate the effect of car-rental prices on passenger demand. A major challenge is to identify a valid instrumental variable for car-rental prices. To qualify for such an instrumental variable, the variable must (i) have strong explanatory power with respect to car-rental prices, and (ii) be exogenous with respect to airport market size in terms of passenger quantities. We find that the presence of Alamo, a car rental firm in our sample, has indeed a strong negative effect on average car-rental prices over all car-rental companies and car categories. Based on a theoretical model of entry behavior in horizontally and vertically differentiated markets, we further find that an increase in the overall
market size can increase or decrease the individual incentives for market entry. We therefore assume that Alamo’s presence at airports is exogenous to airport size in terms of passenger quantities. Altogether, this qualifies the dummy variable for the presence of Alamo as an instrumental variable for car-rental prices. To explain passenger demand, we develop a base model with one endogenous explanatory variable, car-rental prices, and several exogenous variables which control for income, population size, airport competition and holiday destinations.

RESULTS
We find that an increase in the car-rental price has a significant negative effect on passenger demand. Furthermore, we find that the absolute effect of car-rental prices on passenger demands is small relative to the effect of ticket prices on passenger demands derived by previous studies. This is a sensible result given that only a share of the passengers arriving at an airport rent a car. To test for causality, we further consider average airport infrastructure revenue as another endogenous explanatory variable for passenger demand. In line with public ownership structure of US airports, we find that the average infrastructure revenues are determined largely by unit infrastructure costs, while unit infrastructure costs are not a significant predictor for car-rental prices. This leads to the conclusion that the increase in passenger demand associated with a reduction in the car-rental prices may not be caused by corresponding reductions in aeronautical charges. This finding does not proof but is consistent with the idea that car-rental prices are causal for changes in passenger demands. Until this point, the analysis abstracts away from airport congestion. In a final step, we show that, for this reason, our regression results provide conservative estimates of the effect of car-rental prices on passenger demand.

REFERENCES


