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Parking as a loss leader at shopping malls

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ABSTRACT

This paper investigates the pricing of malls in an environment where shoppers choose between a car and public transportation in getting to a suburban mall. The mall implicitly engages in mixed bundling; it sells goods bundled with parking to shoppers who come by car, and only goods to shoppers who come by public transportation. There are external costs of discomfort in public transportation due to crowdedness. Thus, shoppers using public transportation deter each other. The mall internalizes these external costs, much like a policy maker. To do so, it raises the sales price of the good and sets a parking fee less than parking's marginal cost. Hence, parking is always a loss leader. Surprisingly, this pricing scheme is not necessarily distortionary.

1. Introduction

Parking is costly to provide,[3] yet most shopping malls provide plentiful parking for free or with only nominal fees.[4] In a model of a suburban shopping mall, where shoppers can choose between a car and public transportation, we show that the equilibrium parking fee the mall chooses can be positive or zero, but it is always less than the marginal cost of providing a parking space. It is well known that retailers commonly price key goods for a holiday or specific season very low—possibly below costs—in order to attract customers. An established literature shows why such "loss-leader" practices can be profitable (see, e.g., Chen and Rey, 2012; DeGraba, 2006; Ellison, 2005; Hess and Gerstner, 1987; In and Wright, 2014; Lal and Matutes, 1994). We show that the mall always prices parking below its cost.

In our simple model, a monopolist shopping mall chooses the sales price for a good and the fee for the parking spaces it provides. Customers choose whether to visit the mall for shopping and then whether to use a car or public transportation. One of the defining properties of public transportation is discomfort costs associated with crowdedness,[5] which we incorporate into our model in a fashion similar to Kraus (1991) and de Palma et al. (2015). These costs are external in the sense

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[3] A typical mall allocates 4–6 parking spaces per 1000 square feet of gross leasable area, which translates into an area larger than the area it allocates for stores.

[4] In a survey of US malls by the International Council of Shopping Centers and Urban Land Institute (2003), 94% of the malls stated that they charge no fee for parking, and only 2% stated that they charge a fee for parking. The remaining 4% did not respond.

[5] As shown in Parry and Small (2009), comfort is one of the main factors affecting commuting preferences. Li and Hensher (2011), Haywood and Koning (2013), and Kroes et al. (2013) quantify such crowding costs in public transportation for various cities.

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that any additional passenger contributes to the discomfort of all others, and he does not care about others' discomfort; no one else will either. Then, each shopper using public transportation will deter each other and the mall suffers. What can the mall do to deal with this crowding-out effect? The best it can do is to have public transportation users internalize the discomfort externalities that they impose on each other. Otherwise, the mall would be shooting itself in the foot. By doing so, it converts external costs into a higher willingness to pay. Thus, it has incentives to internalize such congestion effects, much like a policy maker, even though it is a profit maximizer. The mall's motivation is the same as a private road operator in setting road tolls (see, e.g., de Palma and Lindsey, 2000; Verhoef et al., 1996), or a monopolist airline carrier in scheduling its flights (see, e.g., Brueckner, 2002).

How exactly can the mall cause shoppers to internalize discomfort costs? The only way is to raise the sales price of the good by the amount of external cost that each public transportation user generates, which will then induce the "right" number of public transportation riders to visit the mall. However, a shopper who travels to the mall by car is now penalized, even though he does not impose any externality on others (of course, cars create external costs of traffic congestion, but these costs are negligible for suburban malls). Then the mall should decrease the parking fee by the same amount. This means that the parking fee will be less than the marginal cost of providing a parking space. Thus, the mall's internalization of crowding externalities effectively encourages car usage. Consequently, parking is priced as a loss leader, thus at least some of the costs of parking are embedded in the sales price of the good offered at the mall. If the marginal cost of parking is sufficiently low, which is usually the case for suburban areas where land is cheap, then parking can even be free. Surprisingly, this pricing scheme is not necessarily distortionary; having parking as a loss leader can be welfare maximizing. Even more surprisingly, loss-leader pricing occurs even when there are passengers who use public transportation for reasons other than shopping at the mall and when the mall sells multiple goods.

Our base model is a suburban mall because we assume that cars do not create any significant traffic congestion around the mall. In reality, incoming and outgoing car traffic is an external cost to everyone including the mall's customers themselves. In an extension, in addition to the external costs of discomfort in public transportation, we allow for external traffic-congestion costs that cars impose on each other, which is more of a concern for urban malls. In such an environment, there is a horse race between externalities. Parking is still a loss leader if the marginal external cost of discomfort in public transportation is higher than the marginal external cost of traffic congestion that cars create. In another extension, we show that our result is robust for the private provision of transportation service to the mall. In yet another extension, we verify that the mall still internalizes the crowding costs if it offers transportation service on its own. We also provide two reduced-form models of competition between malls.

While there is a large literature on the economics of parking in general (see Arnott et al., 2011 and Inci, 2015, for reviews), there has been little focus on the topic of shopping mall parking. Hasker and Inci (2014) provide an independent answer to why shopping mall parking is so cheap. That paper points out that, since shopping is a search activity, free parking provides a type of insurance to shoppers for the risk that they take by visiting the mall and searching for a good. Hence, the mall embeds the parking costs in the sales price rather than charging a separate fee for parking. In our setting, the mall prices parking as a loss leader and embeds at least some of its costs in the sales price of the good so that shoppers internalize the crowding effect in public transportation. If the insurance mechanism worked out in Hasker and Inci (2014) is combined with the internalizing-the-congestion-externality mechanism we provide in this paper, this would produce even further downward pressure on shopping mall parking fees.

Part of the literature has shown that parking is an important factor in where people shop. Lindsey and West (1997) find that providing parking coupons, which favor suburban customers over customers based downtown, can be collectively profitable for downtown retailers, although it is not individually rational for each store to participate in such a program. Lindsey and West (1998) make an empirical assessment of such a price-discrimination scheme in Edmonton, Canada, showing that it helped downtown retailers attract customers away from suburban shopping malls. Van Ommeren et al. (2014) concentrate on the opposite price-discrimination policy of parking permits in shopping districts, which favors residents over nonresidents, the latter of whom usually visit downtown for shopping. They estimate that parking permits result in a yearly welfare loss of about 15% of parking supply costs, most of which is due to the decrease in nonresidents' consumer surplus.

By employing a stated-preference approach, Borgers and Vosters (2011) show that parking fees are extremely important in shoppers' preferences between two shopping mall alternatives. Hensher and King (2001) obtain a similar result for parking fees at shopping districts. In fact, one of the advantages of shopping malls against downtown shopping areas is their parking supply (Reimers, 2013). De Borger and Russo (2015) show that underpriced on-street parking in downtown areas is an outcome of lobbying by downtown merchants (who want lower on-street parking fees) and suburban malls (who want higher on-street parking fees). From survey data, Hu and Saleh (2005) find that many people would visit downtown more often to shop if parking was cheaper, easier, and more abundant.

In terms of mode choice and parking fees, Gillen (1977) finds that the impact of parking costs on mode choice is greater than that of car-running costs, and that this remains true even when income effects are taken into account. Van der Waerden et al. (2009) concentrate on the short-term implications of a transition from free parking to paid parking in a regional shopping mall in the Netherlands. They find that customers change their travel modes and shopping locations and decrease their visit frequencies and durations as well as expenditures. The impact of parking fees on total car usage is indeterminate. Glazer and Niskanen (1992) point out that time-based parking fees can increase total traffic by decreasing the duration of visits. Voith (1998) discusses the interplay between parking, transportation, and land use and also finds a non-monotonic