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Curb parking pricing for local residents: An exploration in New York City based on willingness to pay

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ABSTRACT

This paper investigates the feasibility of charging residents for on-street parking in dense urban neighborhoods as a way to clear parking supply and demand. We elicited residents' willingness to pay (WTP) for a hypothetical parking permit program in New York City using a payment card approach, and estimate the key determinants through a Double Hurdle model. A little more than half of respondents (52.5%) are willing to pay for an average \$408 per year, even though the revenue is not specified to be returned back to the neighborhoods. Pricing becomes more acceptable in neighborhoods where the major parking problem is shortage and crowding caused mainly by local residents instead of parking intrusion by non-residents. The WTP value varies by resident car ownership and home parking types. The results suggest that curb parking pricing for local residents might be both economically and politically feasible in certain dense urban neighborhoods.

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1. Introduction

In this paper, we discuss the possibility of charging residents for on-street parking in dense urban neighborhoods as a way to clear parking supply and demand. In contrast to much of the literature, we focus on residential street parking as opposed to metered parking on commercial streets in central business districts (CBD). Residential street parking resembles a classical “tragedy of the commons” (Hardin, 1968), where people tend to over-consume a free, open-access, but rivalrous property without considering the effect on each other and society as a whole. The oft-cited problems include but are not limited to cruising for parking (Shoup, 2006), parking intrusion by non-residents (Millard-Ball, 2002), and increasing auto dependency and traffic congestion (McDonnell et al., 2011). One solution offered by policymakers is to introduce a system of residential permit programs (RPP), a scheme that is designed to enclose the street parking commons for local residents. Many RPPs charge nominal (often less than \$10 a year) or no fee for a permit, and can be easily abused by local residents. This can result in the under-utilization of street parking in one neighborhood and over-crowded street parking in an adjacent one; this lack of coordination has been defined as the tragedy of the anti-commons (Heller, 1998; Epstein,

2002). Recent policy development has focused on introducing market mechanisms into this parking market, most notably the parking benefit district (PBD) concept by Shoup (1995). PBDs allow selling parking permits to non-residents (or installation of meters on neighborhood streets) at a presumably market price and returning the revenue back to the neighborhood. They do not necessarily change the arrangement of street parking for residents. This paper expands the PBD concept to all residents, charging them market prices for curb parking, as such, it is a more expansive idea than present iterations.

Is it feasible at all to charge residents market prices for curb parking? This idea might amount to “a thought crime” to some residents and “crazy” to some officials.² Many residents get used to free parking on neighborhood streets and some even view curbside parking in front of residence their own property (Epstein, 2002). Current regulations such as resident-only permits or various complaint-based time constraints (24 or 72 h maximum) tend to reinforce such a perception, (Guo and Xu, 2013). Given that street parking is often the most contentious local issue in an urban neighborhood (Epstein, 2002), the idea could be the “third rail” to many politicians. However, we believe that charging residents for curb parking might be economically and politically feasible, especially in a dense urban neighborhood where (1) residents with a high time value are willing to pay a high price to reduce the

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E-mail addresses: zg11@nyu.edu (Z. Guo), simon.mcdonnell@mail.cuny.edu (S. McDonnell).¹ Tel.: +1 646 758 7894.² Shoup's comment is for curb parking in general so certainly applicable to residential street parking <http://www.cato-unbound.org/2011/04/13/donald-shoup/who-should-pay-for-parking/>.

parking congestion caused primarily by local residents and (2) some sort of revenue hypothecation occurs—resident may be more open to a scheme if the revenues are returned back to the neighborhood (e.g. for street improvements, beautification etc). As Shoup (1995) put it explicitly:

“In densely populated neighborhoods, even residents would presumably have to pay for parking to clear the market for the relatively few curb spaces, but the resulting revenue spent on better public services for the neighborhood could make these payments politically acceptable, especially if residents without cars outnumbered those with cars.” (End note 13).

This paper tests the feasibility of charging residents market prices for curb parking by eliciting their willingness to pay (WTP) for a hypothetical parking permit program. If the majority of residents in a neighborhood are willing to pay a non-trivial price for the program, then pricing curb parking might be politically feasible (at least in a referendum format). This assumption is conditional on the fact that the stated price tag is not seriously “distorted” by strategic overbidding (e.g., from non-car residents). Particularly, we are interested in the following research questions:

1. Are local residents willing to pay for street parking at all? And if “yes”, by how much?
2. Which types of neighborhoods or parking problems are suitable for curb parking pricing?
3. Who are the potential proponents?

In order to answer these questions, we carefully designed a hypothetical RPP program in survey questionnaires, and used a payment card contingent valuation method combined with a Double Hurdle model. The paper is laid out as follows: the Section 2 summarizes the problems and solutions to the street parking commons. Section 3 proposes the method and research design. Section 4 introduces the New York City case study and data. Section 5 presents the results and Section 6 discusses policy implications and concludes the research.

2. Background

The reform of curb parking has generally focused on the use of metered spaces in commercial and downtown districts; recently witnessed in San Francisco and Los Angeles. However, metered spaces often account for only a small portion of the street parking market. For example, in London, metered parking accounts for less than 2% of the approximately 3 million street parking spaces (TfL, 1999). In New York City, there were an estimated 81,875 metered and “Muni” parking spaces as of 2010, roughly 1.9–0.4% of the street parking stock (Kazi, 2011). However, because there is no accurate assessment of how many on-street parking spaces there are in the city, this is, at best, a rough estimate. In both cities, the vast majority of on-street parking spaces are on un-priced residential streets with freedom of access and subject to few regulations. Overall, residential on-street parking can account for up to a third of the entire parking stock in large and dense metropolitan areas (TfL, 1999) and park up to about 40% of the private vehicle stock (BNTS, 2009). Any parking reform that does not account for on-street parking in residential areas will be, at best, incomplete.

2.1. Tragedy of the street parking commons

This “tragedy” is often more prominent in dense urban settings where parking is generally in short supply, both due to the alternative uses for land and increased demand for parking. The two most cited problems are parking cruise and parking intrusion (Shoup, 2005). The former refers to the fact that residents without

their own guaranteed supply of parking (e.g. off-street) may prefer to search for a free on-street parking space instead of renting out or buying an off-street parking space. The latter refers to the spillover impacts of parking by non-residents on neighborhood streets that are close to certain attractions and amenities (e.g. stadiums, schools, shopping opportunities, job centers, or train stations etc). Both problems have been well documented, and are not further discussed in this paper. Rather we emphasize two additional but less-examined effects from free curb parking: worsened auto dependency in terms of subsidized car ownership and usage, and enlarged social inequality between car owners and non-car owners and between those with and without off-street parking.

Free on-street parking can potentially reduce the cost of car ownership and, ultimately, increase car ownership, use and dependency. Such an effect is worrisome particularly in a dense urban setting where transit is often more convenient, parking is costly, traffic congestion is severe, and the opportunity costs of that space are higher. The limited empirical evidence is supportive. For example, Guo (2013a) found that free and available on-street parking increased private car ownership by 8.8% for households with off-street parking in the New York City region. In other words, one out of 11 cars purchased by these households can be attributed to the free access to on-street parking. It is likely that the effect on households with only on-street parking should be even bigger. The story of Danielle Steel, a romance novelist who parks all her 26 cars on streets in a dense neighborhood in downtown San Francisco, also reinforces this point anecdotally (Gordon, 2002). Conversely, free street parking may reduce “turn-over” of spaces as householders, who are only able to exert usership rights over a parking space, “hoard” that space because of the fear of losing it (Guo, 2013b). Although such a “fear” may practically discourage car usage, it also makes cars less useful despite the initial private investments and curb parking, the precious public resource, less efficient.

Many argue that free residential street parking is also socially unfair, particularly in a dense urban setting where car ownership is not ubiquitous and parking supply varies by residence even on the same street. In these areas, parking spaces on residential streets represent a valuable public asset, which is paid by all residents but allocated free of charge only to car owners who tend to have a higher income (McDonnell et al, 2011). What is more, the opportunity cost of this space is what could otherwise occupy that space, e.g. extended sidewalks, pocket parks, bike lanes etc, available to everybody.

Even within car owners, the parking common is also potentially unfair between those with and without off-street parking. There are two possible reasons. First, off-street and on-street parking is a zero-sum game—in order to gain access to off-street parking storage areas, curbs have to be cut, which removes one or two street parking spaces from the public commons. Those with off-street parking will benefit but at the cost of those who rely on on-street parking. Note that households with off-street parking tend to have a higher income than those without (Guo and Xu, 2013).

Secondly, those with off-street parking still have the option to park on streets and use their off-street parking space for other purposes, for example, their garage for storage or driveway for rental. For those who rely completely on on-street parking, this can be unfair because they subsidize their neighbors’ off-street parking (due to the off-street parking mandate) but the neighbors still competes with them for the “subsidized” on-street parking. Furthermore, those with off-street parking might be able to “cash out” the parking subsidy through increased housing values (as a result of increased floor space for living if they use garage for storage) or lease revenue, while those with only on-street parking cannot. Such inequality could be sharply juxtaposed side by side in

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