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Enthusiasm curbed: Home value implications of curbside parking rights

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ABSTRACT

While property rights assignment can be more politically acceptable than limiting access to public resources through higher costs, assigning property rights via residential permitting transfers the value of those resources to particular groups or individuals. This study quantifies the home value increase associated with transferring public parking spaces to residential permitting using spatially explicit difference-in-difference and triple-difference hedonic price models. Results suggest that homes within walking distance of a destination location—a large state university—increase in value by $31,000 after the introduction of residential parking policies that limit the ability of other citizens to commute and park near campus.

1. Introduction

Recent attempts to mitigate losses associated with open access externalities in a common pool resource setting have moved away from primary reliance upon centralized regulation towards the assignment of private property rights (Libecap, 2007). Such solutions are suggested as a way to improve incentives, productivity, and the provision of capital investment (Kim and Mahoney, 2005; Joseph, 2008; Gilmour et al., 2012; Ostrom, 2015). While researchers generally agree that open access resources without proper regulation will be over-consumed, thus leading to inefficient outcomes (Hardin, 1968; Maas et al., 2017), proposed solutions to open access issues are highly divergent (Wade, 1987; Libecap, 2007; Pires and Moreto, 2011). The natural solution to prevent overconsumption is to limit access, but there are many ways to accomplish this goal. Because increasing explicit costs to access public resources is politically unpopular (Citrin, 1979; Harrington et al., 2001),[1] mechanisms for limiting access often transfer rights to particular groups or individuals through quotas, permits, or long-term, low-cost leases. While these solutions may improve efficiency, limiting access in this way, through the assignment of property rights, imposes implicit costs on all those who do not receive access.

It is generally understood that distributional effects can arise from changes in property rights such that an unintended consequence of assigning property rights with the intention of solving open access market failures is the transfer of benefits from one group to another (Libecap, 1989; Matulich et al., 1996). One explanation for the prevalence of rights transfers over other curtailment policies is that such policies generally create concentrated benefits and diffuse costs—a recipe for political action (Wilson, 1984; Weingast et al., 1981). A second explanation may be that implicit costs are less noticeable than explicit costs to the average consumer or citizen. This paper assesses the impact of assigning property rights through urban land use planning, by estimating increases in home values associated with the introduction of residential parking permits. Specifically, we investigate how a city's decision to reassign public parking spaces to private residences near a destination location disproportionately increases the value of nearby homes.

While parking rights may be a minor contributor to overall wealth, our results show a significant increase in home values linked to residential parking permitting and are instructive for policy makers and researchers interested in how urban land-use planning decisions may affect residents' welfare, particularly in the context of increasing urbanization and wealth consolidation (see Saez and Zucman, 2016). Parking spaces in highly urbanized areas sell for tens of thousands of dollars, while cruising for parking results in increased accidents, higher levels of pollution, and considerable wasted productivity (Shoup, 2006; Chatman and Manville, 2014; Inci, 2015; Inci et al., 2017). As such, parking regulations is a serious driver of social welfare that deserve scientific inquiry.

Research into the economics of parking has covered a wide range of topics, including, "cruising for parking" (Shoup, 2006; Arnott and Inci, 2006), spatial competition (Arnott et al., 1991; Arnott, 2006), minimum and maximum parking requirements, on-street and garage parking price elasticities (Kobus et al., 2013), and congestion pricing (Lindsney and Verhoef, 2001; Arnott and Inci, 2006). A common theme among past analyses is that on-street parking suffers from the Tragedy

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[1] This phenomenon is easily observed in the current backlash over recent increases to entrance fees of National Parks (Clarke, 2017).

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of the Commons because it is provided too cheaply (Epstein, 2002). This market failure can be corrected by assigning property rights to these public spaces, either in the form of expensive, metered parking (which we think of as renting) or through permits that entitle certain individuals to park in certain locations (which we can think of as a permanent transfer). Reducing parking congestion through increased metering costs may improve efficiency—since only individuals with the highest willingness-to-pay will attempt to park in expensively metered locations—but this solution requires increasing explicit costs for transportation or parking (via tolls and meters), which is politically unpopular (Marsden, 2006; Russo, 2013). In reality, local governments' often use the second option, addressing parking shortages by discriminating between residents and non-residents, and assigning rights to parking based on this determination (Ommeren et al., 2011). Such property assignment policies may be politically acceptable, but they may also be less equitable than their fee-based counterparts, since they reallocate public goods (which have real value) to private individuals without compensation.

While restricting on-street parking access in destination locations through permitting may improve congestion (among other benefits), special attention must be paid to the wealth implications associated with such policies when they are introduced near destinations of interest (parks, downtown, college campuses, etc.) such that many residents lose valuable property rights. This issue is of particular relevance, given the recent trends of "urbanizing money," in which affluent, educated individuals are returning to urban centers (Couture and Handbury, 2017). To our knowledge, no study has quantified home value changes before and after the introduction of such parking regulations, and only a handful of studies have investigated the capitalization of parking rights into home values for any reason (Ommeren et al., 2011).

This paper quantifies the home value changes associated with privatizing public parking rights around a destination location (Colorado State University) using spatially explicit difference-in-difference and triple difference hedonic price models. In addition to the two primary models used, we conduct a series of robustness and ancillary tests to ensure the proper effect is identified. By analyzing home values before and after residential parking regulations were implemented, we quantify the wealth implications of such policies.

2. Institutional setting

While understanding the values associated with changes in property rights is broadly important, we use the specific case of Fort Collins, Colorado and its high parking demand destination location, Colorado State University (CSU). CSU has roughly 33,200 students and 6000 employees, which makes it the largest single destination for daily commuters in the Fort Collins area. Thus, finding parking in and around the university is a problem for drivers looking for parking and for homeowners dealing with increased congestion caused by increased "cruising". This problem is not unique to CSU; in fact, universities have a long history of parking and transportation problems (Shoup, 2008). Like other universities, parking spaces around CSU were a valuable commodity that were historically overcrowded, with drivers "cruising for parking" in excess of 15 min.[2] After decades of high population growth, the City of Fort Collins began to roll out neighborhood parking permits. In 2013 city council created a process by which neighborhoods petition and vote for resident parking policies—the program was put on hold in 2017 to evaluate possible unintended consequences of the policy change—by the middle of 2016, the majority of neighborhoods near CSU had residential permitted parking in place, with expectations that other nearby neighborhoods would soon have similar restrictions. Parking restrictions generally limited on-street parking to two hours, once daily, for all drivers except residents to the neighborhood. While this policy may benefit neighborhood residents, the ability of other individuals to commute and park in public spaces was severely limited.[3]

Concurrent with the introduction of parking permits by the city, CSU expanded its own parking facilities and the number of permits and metered spots open to students and staff. Unlike public parking, which is free, permits from the university cost upwards of $536 per year. Thus, students and employees of CSU who traditionally used public, on-street parking, were forced to buy permits, walk greater distance, or use public transit. Accordingly, CSU's revenue created through parking services increased from $3.28 million in 2013 to $4.97 million in 2017. Because some of this difference can be attributed to increased enrollment at the university, a better metric may be dollar of revenue per student, which also increased from $104 to $148 during this time.

While increased traffic congestion and limited parking is often cited as a problem (Shoup, 2006), there are no empirical estimates of the total net costs of cruising or other externalities. Moreover, there are economic indirect benefits that are created by free parking. Hasker and Inci suggest that other than money and credit cards, parking is probably the most important intermediate good in the modern economy (Hasker and Inci, 2014). Shopping malls have capitalized on this phenomenon for decades and often feature large swaths of paved free parking (Urban Land Institute, 1999).

While some of the negative externalities associated with on-street parking have been identified here and elsewhere, research weighing the total value of on-street parking, including both negative and positive, and direct and indirect benefits, is limited. Thus, the default solution, to fix over-crowded parking areas by increasing price or limiting access, may also be inefficient. While quantifying the total economic effect of parking policies is nearly impossible due to data limitations and identification issues, we find strong evidence that the policy investigated here led to a significant increase in the value of homes near CSU. Thus, the social net benefit of introducing or removing public parking spaces is debatable, but the distributional impacts of their associated value is definite. As such, we suggest that proper consideration be given to the home value implications associated with land-use policies. The methods of this analysis are presented in the next section.

3. Data and methodology

While economic externalities around parking have become a popular topic in urban and transportation economics, few studies have quantified the relative values associated with increased resident-based permit parking regulations. We conform to past literature and use a hedonic price model, which allows for spatial correlation in sale price and error (Anselin, 2013; Irwin et al., 2014). While fixed-effects models have also been used to control for spatial aspects of hedonic price models (Ommeren et al., 2011), there is little theoretical impetus for determining the areas that constitute the "fixed effect." Instead, we suggest that modeling spatial correlation directly is more defensible and captures similar spatial effects as fixed-effects models.

This paper uses hedonic difference-in-difference (DID) and difference-in-difference-in-differences approaches (DDD) to estimate the additional value added to homes within walking distance of campus before and after the introduction of residential parking restrictions. A DID approach[4] allows us to isolate the effect of parking policy while accounting for differences across housing groups before and after the policy was introduced, and has a history of successful application to spatially-explicit hedonic models (Diao et al., 2017). While the DID model controls for many confounding factors, it may be insufficient in

[2] This estimate was the most common response given during informal and anecdotal conversations.

[3] Although, the city has acknowledged a small ring effect, in which some commuters simply park further away and walk longer distances.

[4] See Cameron and Trivedi (2005) for a discussion of this methodology.