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Can buyer "mobility" reduce aggregation failures in land-assembly?

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ABSTRACT

In this paper we examine whether site-development competition can be used to facilitate land assembly, *in the absence of contingent contracts*. In particular, we attempt to determine (1) whether competition can be induced among prospective sellers, (2) whether or not competition increases aggregation rates, and (3) what effects competition has on the distribution of surplus among the bargaining parties. We also study the incidence with which a buyer (endogenously) chooses to deal with a single "large parcel" owner vs. multiple "small parcel" owners. To do so, we make use of a laboratory experiment where all the relevant information about the project is common knowledge and landowner valuations are private information. Our results show that competition more than doubles aggregation rates, with aggregation rates of approximately 40% in the baseline, and at least 84% in the competitive treatments. We also find that developers have a strong preference to make transactions with landowners who have consolidated land holdings, doing so in 24/27 successful aggregations, providing empirical evidence that there is a link between the transactions cost associated with land-assembly and suburbanization, as suggested by Miceli and Sirmans (2007).

1. Introduction

Developers are often faced with consolidating disaggregated (and contiguous) parcels of land before real estate development begins. During the assembly process, landowners may behave strategically, such that Pareto improving developments are not completed (Munch, 1976; Posner, 1992; Miceli and Segerson, 2007; Miceli, 2011).[1]

While certain developers may be able to use ingenious methods to circumvent project failure, for instance, using a web of fronts, shell companies, and sub-holding companies, this is not always practical.[2] In some cases, the development process occurs in the public domain, transmitting relevant details of the project to the targets of the development. Some projects must go through public hearings to acquire the necessary permits, or partially use public funds, making the details of the project public information (Kelly, 2006). Public information allows individuals to adjust their bargaining behavior in order to maximize their potential monetary gain, and likely exacerbates project failure.

To mitigate the likelihood of project failure, scholars have suggested the use of contingent contracts or eminent domain.[3] Both of these mechanisms have drawbacks. Experimental evidence has demonstrated that contingent contracts tend to shift surplus from the developer to property owners, such that, in expectation, the developer is just as well off using non-contingent contracts with high rates of project failure (Collins and Isaac, 2012). On the other hand, eminent domain may lead to excessive takings, as it reduces the price of public development (Epstein, 2001; Benson, 2005). In this paper, we explore another mechanism that may facilitate land assembly, site-development competition.

Making use of laboratory experiments, we examine how competition (among sellers) affects the likelihood of successful aggregation for a Pareto improving project *in the absence of contingent*

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[1] This problem has also been referred to, in a broader sense, as an "anti-commons" problem (Heller, 1998, Buchanan and Yoon, 2000). It is meant to represent instances where resources are underutilized thanks to the existence of multiple rights to exclude. This situation is diametrically opposed to the more commonly known "tragedy of the commons" (Hardin, 1968).

[2] A well-known example of such ingenuity is the assembly of land via shell corporations by Disney near Orlando, FL (Emerson, 2009).

[3] Evidence for the benefits of contingent contracts has primarily come from the experimental literature. See for instance Swope et al. (2011), Collins and Isaac (2012), and Zillante et al. (2014). On the potentially correcting attributes of eminent domain use, see Seidenfeld (2008), Miceli (2011), Miceli and Segerson (2007), and Miceli and Sirmans (2007). On the potential inefficiencies of eminent domains, see Seidenfeld (2008), López and Clark (2013) and Miceli et al. (2008). For a discussion of the abuses associated with eminent domain, see Benson (2005, 2008).

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contracts.[4] Site-development competition is induced by varying the number of units needed by the buyer, relative to a given stock of available units.[5] In particular, we attempt to determine (1) whether a competitive environment can be induced among prospective sellers, (2) how effective competition can be at increasing aggregation rates, and (3) what effects competition has on the distribution of surplus among the bargaining parties.[6] We also study the incidence with which a buyer (endogenously) chooses to deal with a single "large parcel" owner vs. multiple "small parcel" owners. This investigation is done in an environment where all the relevant information about the project is common knowledge, while landowner values are private information.

Our main findings suggest that site-development competition drastically increases the rate at which land is successfully aggregated. In our competitive treatments, the aggregate completion rate is always above 84%, relative to a baseline aggregation rate of approximately 40%. Reducing the number of units required by one is sufficient to observe the sharp increase in successful aggregations, as it eliminates the monopoly power held by the last seller and increases the number of possible successful combinations in a combinatorial fashion. This sharp increase in aggregation is not driven by timing effects. Additionally, competition increases the surplus retained by the buyer in expectation. In our competitive treatments, the buyer maintained at least 50% of the expected surplus, whereas in the baseline, the buyer retained less than 10%. This difference is driven by the differences in the aggregation rates between treatments. Conditional on aggregation, the retained surplus is similar between treatments. Given the high rate of aggregation and retained surplus in the competitive treatments, these results suggest that developers would likely prefer environments where they have multiple development options. Finally, when buyers are free to endogenously negotiate with pre-aggregated tracts or disaggregated parcels, they overwhelmingly make transactions (24/27 successful aggregations) to acquire the pre-aggregated tracts. This finding supports previous theoretical research by Miceli and Sirmans (2007), who combine a simple sequential aggregation game, highlighting the role of strategic delay, with results from the monocentric city model to predict that development will be biased toward the urban fringe. In our framework, there are no delay costs, however, we still demonstrate that there is a strong preference to transact with larger landowners. Thus, the transactions costs associated with multiple simultaneous negotiations alone may be sufficient to bias development toward the periphery.

We believe that these results are highly policy relevant as cities seek to redevelop the urban core and seek to limit the externalities associated with urban sprawl. Our findings highlight several policy instruments that may be useful to mitigate the strategic incentives of landowners. First, our main result, that competition increases aggregation success, suggests that cities should seek to make more parcels available for development. In the short run, cities could reduce the costs of re-zoning parcels, which will increase the number of potential properties suitable for commercial and industrial development.[7] In the long run, cities could relax land use constraints. Or, even if they did not want to go this far, cities could attempt to create more contiguous zones, which may eliminate the need for developers to incur the transactions costs of re-zoning fragmented parcels with different zoning levels.[8] To mitigate the development bias toward the outskirts of town, cities may consider, (i) the elimination or relaxation maximum lot size requirements, which may artificially increase the number of properties that must be aggregated for development (ii) consolidate adjacent foreclosed properties and make them available for future development. This policy measure has been followed in several metropolitan areas through the formation of nonprofit land banks. However, key to facilitating development, these land banks must be able to easily re-zone the assembled tracts, as their inability to do so may limit their long term success.[9]

2. Overview and relevant literature

Problems associated with land aggregation have been studied both theoretically[10] and experimentally.[11,12] The experimental literature has provided important insights as to how the order of bargaining, type of contract, delay costs, number of sellers, and information affect project completion rates. Two of the most "robust" results found in this literature are that (i) project failure is consistently observed across experiments and (ii) the use of contingent contracts alleviates the problem. This paper investigates how competition among development sites may reduce project failure within different environments in the absence of contingent contracts.

Previous studies have investigated how competition among property owners affects behavior. Our study is perhaps closest to Cadigan et al. (2011), Parente and Winn (2012), and Winn and McCarter (2014). Cadigan et al. (2011) study how increasing the number of required parcels affect proposals. They find that on average, increasing the number of required parcels tends to adversely affect the probability of successful aggregation, since transaction and strategic bargaining costs increase with the number of sellers. In one treatment they investigate the role that competition has on successful aggregation, whereby a buyer must acquire two of three available parcels. They found that competition led to increased aggregation rates and also increased the speed with which agreements occurred. Competition also tended to shift surplus from the sellers to the buyer.

A second closely related paper by Parente and Winn (2012) studies the impact that the bargaining institution (i.e.

[4] One concern with the use of a laboratory experiments is the external validity of the findings given that the design relies on undergraduate subjects making decisions over relatively small stakes. This criticism has been discussed at length in the experimental economics literature. Seminal in this discussion are Hong and Plott (1982) and Smith (1982).

[5] Site-development competition should be distinguished from other "types" of competition; for example, competition among sellers to be the last seller, which would likely lead to failed aggregation. In this paper competition should be understood as the availability of multiple, or alternative, ways to achieve assembly (i.e. multiple sites for development).

[6] Kominers and Weyl (2012) have theoretically discussed the role that competition may have in overcoming project failure. Miceli et al. (2008), Kominers and Weyl (2010) and Tanaka (2007) explore alternative mechanisms and schemes for improving the likelihood of successful aggregation. Seidenfeld (2008) has discussed limitations of commonly suggested techniques that tackle the problems faced in land assembly (e.g. secret purchases, options contracts).

[7] In our discussion, we limit the policy discussion to zoning, however, in general, it may include the cost and time delay associated with permitting, the cost of using local legal environment, or other land use restrictions discussed in Gyourko et al. (2008). Reducing these restrictions should facilitate development, for example, Suzuki (2013) demonstrates how more restrictive land use regulations increase the cost of commercial development in the hotel industry in Texas, leading to a reduction of entry in the market.

[8] Other authors, such as McConnell and Walls (2009); McConnell et al. (2006) discuss the use of transferable development rights (TDRs) from the periphery to the urban core.

[9] http://www.cuyahogalandbank.org/faq.php#zoningcodecompliance.

[10] See Strange (1995), Menezes and Pitchford (2004a, 2004b), Miceli and Segerson (2007, 2012), Miceli et al. (2008), Miceli and Sirmans (2007), Shavell (2010), Miceli (2011), Sridhar and Mandyam (2013), and López & Clark (2013).

[11] See Cadigan et al. (2009, 2011), Collins and Isaac (2012), Swope et al. (2011, 2014), Shupp et al. (2013), Parente and Winn (2012), and Kitchens and Roomets (2014).

[12] Only but a handful of papers have studied strategic bargaining in land assembly using field data. See Brooks and Lutz (2013), Cunningham (2013), and Kitchens (2014).