

# Efficient Urban Renewal Without Takings: Two Solutions to the Land Assembly Problem

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Abstract:

When urban renewal projects require that smaller parcels be assembled into a single large one, owners who hold out for higher prices may either prevent or significantly delay socially efficient redevelopment. Local governments seeking private redevelopment currently have only the choice between either hoping that private bargaining will lead to efficient land assembly or taking the properties of these owners under eminent domain. We describe two mechanisms that solve the holdout problem and lead to efficiency in land assembly without resorting to governmental takings.

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## **1. Introduction**

Many urban development projects require a developer to assemble a number of contiguous small parcels that are owned by different persons into a larger parcel. Such a project is socially worthwhile if its social net benefit exceeds the sum of the values of the individual properties. The owners may only be willing to sell their properties at prices that together exceed the project's net benefit, in which case the project should not be implemented. But even owners who would be willing to sell their properties at acceptable prices in the absence of the project have an incentive to inflate their valuations, to capture a share of the project's benefits. If the sum of their inflated valuations exceeds the project's net benefits, then the developer may forego a socially worthwhile project. This situation is commonly known as "the holdout problem."

Communities often encounter the holdout problem in connection with private redevelopment projects that are jeopardized by owners who refuse to sell their properties. Governments can ameliorate the holdout problem by taking the properties of those owners under eminent domain. But public takings may lead to the implementation of projects that should not be implemented because their net benefits are smaller than the sum of the owners' losses. Thus the holdout problem is only a part of the more general problem of land assembly: the problem of ensuring that parcels are assembled if—and only if—the project's net social benefit exceeds the values of the individual properties. In this paper, we examine two mechanisms that solve the land assembly problem.

Part of the difficulty of finding a solution to the problem of land assembly is the difficulty of determining whether an owner's refusal to sell constitutes a holdout that private bargaining cannot solve. How can one establish whether an owner is demanding an inflated price for his property? A property's market price is likely to be an imprecise approximation of the owner's

subjective valuation, because market prices reflect an owner's reservation price only when the owner is willing to sell. Thus even if comparable nearby properties have been sold recently, their selling prices do not indicate the owner's subjective attachment to his property. Nor do they provide information about the owner's subjective cost of moving at a time when he had not planned to sell his home. This makes it impossible to learn an owner's valuation of his property in any way other than asking him. Unless owners have an incentive to tell the truth, it is therefore impossible to determine whether owners refuse to sell their properties because they want to capture some of the developer's profits or because they simply value their properties highly.

An additional problem is the difficulty of identifying relevant refusals to sell. A developer who anticipates a costly holdout might not attempt to assemble the parcels, so that the possibility of refusing to sell does not even arise. Similarly, if the government can take private properties under eminent domain, then the mere threat of invoking eminent domain may induce owners to sell their properties if they fear that their compensation for taken properties would be below the developer's offer, thereby creating the appearance that the developer and owners were able to reach voluntary agreements. Conversely, invoking eminent domain precludes any agreement between the developer and the owners that they may otherwise have reached, thereby creating the impression of a holdout that bargaining could not resolve.

The lack of reliable estimates of the frequency and cost of holdouts makes it impossible to determine whether either private bargaining or government intervention minimizes the expected social cost of land assembly. The economics literature on land assembly has analyzed the motivation of owners to engage in strategic holding out, but has not offered compelling

bargaining solutions.<sup>1</sup> Grossman and Hart (1980) and Cohen (1991) recommend that developers maintain as much secrecy as possible about their projects, for example by using dummy buyers acting on the developer's behalf. However, O'Flaherty (1989) shows that when owners have rational expectations, games in which developers can as well as games in which developers cannot hide their true intentions may have equilibria that are equally socially undesirable. In addition, Miceli and Segerson (2001) point out that communities that seek to undertake urban renewal projects that require land assembly must generally make their intentions public and cannot hide the projects' locations from their citizens. In the context of reducing urban sprawl, Brueckner (1997) and McFarlane (1999) suggest that cities adopt policies that lower the cost of development in inner cities (for example, through subsidies or tax breaks) as well as policies that increase the cost of development at the urban fringe (for example, through zoning or development fees). But Turnbull (2005) offers the reminder that all government regulations, no matter how well intentioned, can have undesirable distortionary consequences.

Even though there are no reliable estimates of the frequency and cost of holdouts, the expected cost of relying on private bargaining is highest when holdouts are most likely to occur. Property owners are most likely to hold out when developers cannot assemble parcels secretly, when all parcels need to be assembled to implement the project, and when owners believe that the value of the assembled parcels is much higher than that of the unassembled properties. Urban renewal projects are the most likely land assembly projects to meet these criteria, which makes it most relevant to consider alternatives to private bargaining in this context.

The problem of land assembly for urban renewal has received much public attention in the wake of the 2005 US Supreme Court decision in *Kelo v. City of New London*, where the court

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<sup>1</sup> See Miceli and Sirmans (2004) and Benson (2006) for summaries.

ruled that the City of New London could take properties under eminent domain and sell them to a private developer as part of its urban renewal plan. The *Kelo* decision has led to a heated public debate about the appropriate extent of government power to take private property. There is ample evidence that many people feel uncomfortable when governments use their taking power to facilitate private urban redevelopment. Several states have enacted legislation that provides stronger protection for property owners against takings. The US House of Representatives passed the *Private Property Rights Protection Act of 2005*, which prohibits states and cities that receive federal funds for economic development projects from using their power of eminent domain for these projects. But while such legislation protects property owners, it does not resolve the holdout problem, and it makes it more difficult for cities in economic distress to redevelop.

The ongoing debate about eminent domain suggests that it is valuable to look for alternatives to government takings in urban renewal projects. A complete solution to the problem of land assembly must have two characteristics. First, it must ensure that developers can assemble the parcels if and only if the social net benefit of redevelopment exceeds the sum of the values of the individual properties. Because the property values are the owners' private knowledge, a solution to the problem of land assembly must ensure that owners have an incentive to reveal honestly the subjective valuations that their properties had for them before they knew of the developer's plan to assemble the parcels. In addition, it must also ensure that every owner whose property is part of a land assembly receive at least this subjective valuation as compensation for his loss.

In this paper, we describe two mechanisms that meet the first goal. The first mechanism is an application of the Clarke mechanism,<sup>2</sup> and the second is an application of the self-assessment mechanism described in Plassmann and Tideman (2007). Both mechanisms provide owners with the incentive to reveal honestly their subjective valuations of their properties and both lead to efficient land assembly. However, only the self-assessment mechanism meets the second goal of ensuring that every owner whose parcel is part of the land assembly receives full compensation for his loss.

We emphasize that neither mechanism is costless. The Clarke mechanism may impose unacceptably high costs on owners, while the attractiveness of the self-assessment mechanism depends on the government's ability to estimate accurately the probability that a developer is willing to acquire parcels at the stated reservation prices. However, takings under eminent domain are acceptable only if the government is able to estimate accurately and pay the owners' reservation prices, while the attractiveness of relying on private bargaining depends on one's estimate of the probability that a developer will ultimately be able to acquire the necessary parcels through bargaining if land assembly is socially optimal. The accuracy of each required estimate depends on the particular circumstances of the land assembly project, which makes it unlikely that any of these practices is always optimal. We do not want to suggest that either of the two mechanisms that we describe in this paper is necessarily superior to current practices. However, citizens who are aware of these mechanisms and reject them will have a better

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<sup>2</sup> See Clarke (1971, 1972). While the literature often refers to this mechanism as the Vickrey-Clarke-Groves mechanism in view of Vickrey (1961) and Groves (1973), we consider our label more appropriate because the relevance of Vickrey (1961) is limited to second-price auctions and the relevance of Groves (1973) is limited to incentives in teams. From neither of these papers is it apparent that a related novel application of the principle of marginal cost pricing applies to collective decisions.

understanding of why they are willing to bear the cost of either government takings or inaction with respect to urban renewal.

The remainder of this paper is organized as follows: in Section 2 we illustrate the problem of land assembly and formalize the general characteristics that a complete solution must possess. In Sections 3 and 4 we describe how the Clarke mechanism and the self-assessment mechanism can solve the problem of land assembly. We compare the use of government takings and of the self-assessment mechanism in urban renewal projects in Section 5, and conclude in Section 6.

## 2. THE PROBLEM OF LAND ASSEMBLY

Consider a developer who wants to implement a project that requires simultaneous redevelopment of  $n$  properties that have multiple owners. The developer values the combination of these properties at

$$L = N - C - D, \quad (1)$$

where  $N$  is the present value of the project's net benefits,  $C$  is the project's initial construction cost, and  $D$  is the cost of demolishing any existing structures. Thus the developer values the joint land area of the  $n$  parcels at  $L + D$ . It is socially optimal to implement the project if the land value of the assembled parcels minus the cost of demolishing existing structures exceeds the sum of the individual property values, that is, if

$$L > \sum_i V_i, \quad (2)$$

where  $V_i$  is the value of property  $i$ .

Determining whether it is optimal to implement the project requires a definition of a property's value. For the purpose of evaluating a redevelopment project, an attractive definition

of a property's monetary value is the opportunity cost of using the parcel for the project. This opportunity cost is the reservation price of the person who values the property highest in the absence of the project, who can be presumed to be its current owner. Thus the monetary value  $V_i$  of a piece of real estate is the lowest amount at which its owner would be willing to sell it voluntarily to someone who is not interested in assembling multiple parcels. The owner's reservation price and therefore the value of his property is likely to vary over time; it is higher when the owner regards moving as a nuisance, and it is lower when the owner intends to move and wants to sell his property.

Once an owner learns of a land assembly plan, he knows that the developer is almost certainly willing to pay more for the joint area than he would pay for the individual properties if they were to be left unassembled. The difference between the values of the assembled and unassembled parcels,  $L - \sum_i V_i$ , is the return to assembling the  $n$  properties. To capture part of the gain from assembling the parcels, owner  $i$  has an incentive to demand an amount  $S_i$  that exceeds his reservation price  $V_i$ .<sup>3</sup> The amount  $S_i$  is not his valuation of his property in isolation, but his valuation of his property as part of the area that the developer needs for the project.

We define any owner who demands an amount  $S_i > V_i$  as a holdout. As long as  $L > \sum_i S_i$ , holding out affects only the distribution of the gains from trade and does not lead to inefficient use of land. Holdouts are socially costly when  $\sum_i S_i > L > \sum_i V_i$ , because they force the developer to either abandon a worthwhile project or implement a less efficient version of the project, either on the subset of parcels than he can acquire or at a less desirable location.

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<sup>3</sup> Grossman and Hart (1980), Eckart (1985), Asami (1988), O'Flaherty (1994), and Menezes and Pitchford (2004) analyze the strategies that owners may follow.

While there is little disagreement that holdouts can be costly, there is considerable disagreement about whether holdouts have a social cost high enough to warrant government intervention. The main difficulty in assessing the social costs of holdouts is to determine when an owner's refusal to sell actually constitutes a holdout—that is, whether the owner is demanding a high price because he wants to capture part of the return to assembling the land or simply because he values his property highly. The owner is holding out in the former but not in the later case. A holdout can be identified unambiguously only when a developer and an owner agree on a selling price after the owner had initially demanded a higher price. In all other cases, one has only the owner's statement about his reservation price.

What does this imply for finding a solution to the land assembly problem? Land assembly will not be efficient if (a) owners can increase the amounts at which they are willing to sell their properties when they learn about the developer's intent to assemble the  $n$  properties, and (b) developers are motivated to implement inefficient projects because they do not need to pay the owners' full reservation prices  $V_i$ . Thus the key to solving the land assembly problem is to determine  $\sum_i V_i$ . Because the owners' reservation prices are their private information, this amounts to finding a way of giving each owner  $i$  the incentive to reveal  $V_i$  truthfully. Owners have an incentive to do so if (and only if) they bear the cost of under- as well as overstating  $V_i$ . Economists have devised two distinct mechanisms that make owners bear the cost of announcing an incorrect  $V_i$ , thereby providing owners with the incentive to reveal their reservation prices.<sup>4</sup>

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<sup>4</sup> Both mechanisms provide an owner with an incentive to reveal his reservation price as long as the owner's utility does not depend on the circumstances under which he must bear these costs (that is, if his utility is independent of the distribution of the situations that may or may not require him to pay, so that he does not suffer from feelings like disappointment aversion). See Horowitz (2006) for a discussion. Although owners who experience disappointment aversion may not reveal their true reservation prices, the difference is likely to be small, especially compared to the difference between the owner's reservation price and somebody else's estimate of this price. Thus this restriction is likely to be of minor importance in our case.

The Clarke mechanism relates this cost to the social net benefit of the developer's project,  $L$ , and determines each owner's payment for announcing  $V_i$  as a function of the statements of all owners as well as  $L$ . The self-assessment mechanism relates the cost of announcing  $V_i$  to the owner's expected loss if the developer assembles the parcels, and determines each owner's payment from his statement alone. In the following two sections, we explain how the two mechanisms solve the problem of land assembly.

It is worth mentioning that both mechanisms fail if an owner is not willing to sell his property for any finite amount of money, because both mechanisms would require such an owner to pay an infinite amount of money to express his infinite reservation price. But because the opportunity cost of refusing an infinite amount is infinity as well, it is likely that very few, if any, owners who live in areas that are targets for urban renewal projects would refuse to sell their properties at any price. Even owners who have no personal use for additional wealth may be willing to sell their properties at a price that permits them to eliminate poverty in their city or even their state. Furthermore, we view both mechanisms as potential alternatives to government takings, which is equally inappropriate if there is reason to believe that owners value their properties at infinite amounts.

### 3. EFFICIENT LAND ASSEMBLY UNDER THE CLARKE MECHANISM

Let  $L_i$  be an offer for owner  $i$ 's property. Because the property's value  $V_i$  equals the price at which the owner would voluntarily sell his property, the owner considers the opportunity to sell his property at  $L_i$  to be worth  $W_i = L_i - V_i$ . A negative  $W_i$  represents the owner's willingness to pay to avoid selling his property at  $L_i$ . Thus the sum of all owners' willingnesses to pay is positive if and only if the sum of the offers exceeds the sum of the owners' reservation prices, or

$$\sum_i W_i > 0 \Leftrightarrow \sum_i L_i > \sum_i V_i . \quad (3)$$

Assume that a developer approaches the government with an offer for the  $n$  parcels. The government estimates the relative values of the  $n$  properties and assigns each owner  $i$  a corresponding share  $L_i$  of the developer's offer as compensation. It then requires each owner  $i$  to state his willingness to pay to secure either the adoption ( $W_i > 0$ ) or the rejection ( $W_i < 0$ ) of the proposed development, given the compensation payment  $L_i$  that the owner will receive if the development takes place. If the total willingness to pay of those favoring the development exceeds the total willingness to pay of those opposing development (that is, if  $\sum_i W_i > 0$ ), then the developer pays to each owner the respective compensation that the government had specified, assembles the parcels, and implements the project. If  $\sum_i W_i < 0$ , then the project is rejected and the parcels remain unassembled.

To provide owners with an incentive to reveal their willingnesses to pay, each owner  $i$  whose announcement of  $W_i$  causes the sign of  $\sum_j W_j$  to be different from the sign of  $\sum_{j,j \neq i} W_j$  (a "pivotal" owner) must pay a Clarke tax equal to the absolute value of  $\sum_{j,j \neq i} W_j$ . For example, if  $\sum_{j,j \neq i} W_j < 0$  and  $\sum_j W_j > 0$ , then the project would have been rejected had owner  $i$  announced a willingness to pay below  $\left| \sum_{j,j \neq i} W_j \right|$ , but it is accepted because owner  $i$  has announced  $W_i > \left| \sum_{j,j \neq i} W_j \right|$ . Owner  $i$  therefore pays a Clarke tax equal to  $\left| \sum_{j,j \neq i} W_j \right|$ , which is the margin by which those in favor of rejecting the project would have won in owner  $i$ 's absence. Non-pivotal owners whose individual announcements do not alter the project's acceptance or rejection do not pay anything. It is straightforward to show (see, for example, Tideman and

Tullock, 1976) that an owner can only make himself worse off by announcing a value that differs from his true willingness to pay for the outcome he desires.

Equation (3) shows that the Clarke mechanism ensures that no inefficient project is implemented. If the developer's offer is a true measure of the project's net benefit  $L$ , then this mechanism also ensures that efficient projects are implemented. Thus the Clarke mechanism leads to efficiency in land assembly.

However, the application of the Clarke mechanism to land assembly does not deal adequately with the issue of fairness. If a project is approved, then owners receive the amounts  $L_i$  that the government had estimated initially (pivotal owners receive less because they must pay the Clarke tax), and those who announce  $W_i > 0$  receive at least their reservation prices while those who announce  $W_i < 0$  receive less than  $V_i$ .<sup>5</sup> If a project is rejected, then a pivotal owner's Clarke tax could be as high as the loss that he reported that he would suffer from the project.

In view of the costs of this haphazard redistribution, a city that wanted to use the Clarke mechanism would reasonably charge potential developers a fee for evaluating proposals by the Clarke mechanism, reflecting the expected value of these costs. The local government would also bargain with developers and seek offers from their competitors, to try to ensure that its citizens received the best possible offers for their property. To reflect the fact that losses are felt more intensely than gains, the local government might employ a rule that a project will be implemented only if the gains to those who gained were a multiple of the losses to those who lost. With such weighting, the Clarke tax on pivotal voters can be defined as "as much of the voter's vote as would have been required to create a (weighted) tie."

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<sup>5</sup> If the project is accepted, then only voters who announce  $W_i > 0$  can be pivotal voters. Because the Clarke tax cannot exceed  $W_i$ , a pivotal voter whose Clarke tax is  $W_i$  receives exactly his reservation price, while all non-pivotal voters who announce  $W_i > 0$  receive more than  $V_i$ .

It should be noted that this modified form of the Clarke mechanism does not fully solve the land assembly problem but rather converts the land assembly problem into a less challenging bargaining problem between developers and the local government. By permitting the government to represent the joint interest of all owners, the Clarke mechanism eliminates the need for potentially costly bargaining between developers and individual owners. However, the modified mechanism still leaves some costs. The combination of the fee for access to the agenda and the uncertain prospect of success will discourage some potential developers from making proposals whose implementation would have been socially desirable. If losses are weighted more heavily than gains, then the impossibility of assigning shares of compensation perfectly will lead to the rejection of some proposals that would have been accepted if compensation had been assigned more accurately. The haphazard redistribution that results from the mechanism will create unhappiness. Thus it is interesting to ask if there is a more attractive alternative.

#### 4. EFFICIENT AND FAIR LAND ASSEMBLY UNDER A MECHANISM OF SELF-ASSESSMENT

The Clarke mechanism does not ensure that all owners receive full compensation for their losses because owner  $i$ 's compensation does not equal his actual reservation price but rather the government's estimate  $L_i$  of his reservation price. In addition, pivotal owners must pay even if the parcels are not assembled because the Clarke mechanism achieves truth telling by charging every owner the social marginal cost of announcing his willingness to pay to either sell or avoid selling his property at  $L_i$ . The self-assessment mechanism avoids these shortcomings by basing each owner's compensation, as well as the payment that entices truth-telling, solely on the information that the owner reveals.

The self-assessment mechanism is based on the insight that an owner who faces a non-zero probability of losing his property has an incentive to fully insure his property against loss if the insurance premium equals his expected loss. Consider a government that requires every owner to state the price at which he would voluntarily sell his property. The government makes underassessment costly by requiring that the owner sell his property at the stated price (that is, the value at which he has “insured” his property). It makes overassessment costly by requiring that the owner pay a valuation tax on the price that he states (the “insurance premium”). The task is to harmonize both incentives in a way that makes the owner reveal the true  $V_i$ .

Let  $X_i$  be the amount that the owner of parcel  $i$  announces, and let  $p(X_i)$  be the probability that someone purchases the property at this price. It is reasonable to assume that this probability does not increase with  $X_i$  and probably falls with  $X_i$ , so we assume  $dp(X_i)/dX_i \leq 0$ . The owner pays a valuation tax  $t(X_i)$  on the amount  $X_i$  that he announces. If nobody purchases his property, then his return  $\pi_i$  is  $\pi_i = V_i - t(X_i)$ , while his return is  $\pi_i = X_i - t(X_i)$  if he has to sell his property at  $X_i$ . The owner receives utility  $U_i(\pi_i)$  from his property. We assume that his utility function is twice differentiable with  $U'_i(\pi_i) > 0$  and  $U''_i(\pi_i) < 0$ , which corresponds to the assumption that the owner is risk averse.<sup>6</sup> The owner then chooses  $X_i$  to maximize his expected utility,

$$E_i = [1 - p(X_i)]U_i(V_i - t(X_i)) + p(X_i)U_i(X_i - t(X_i)), \quad (4)$$

by solving his first order condition

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<sup>6</sup> If the probability that someone buys property  $i$  at  $X_i$  strictly falls as  $X_i$  increases (that is, if  $dp(X_i)/dX_i < 0$ ), then we can also admit risk neutral owners for whom  $U''_i(\pi_i) = 0$ . The self-assessment mechanism fails if owners are risk loving.

$$\begin{aligned} \frac{dE_i}{dX_i} = & \frac{dp(X_i)}{dX_i} (U_i(X_i - t(X_i)) - U_i(V_i - t(X_i))) \\ & - U_i'(V_i - t(X_i)) \frac{dt(X_i)}{dX_i} [1 - p(X_i)] + U_i'(X_i - t(X_i)) \left( 1 - \frac{dt(X_i)}{dX_i} \right) p(X_i) = 0. \end{aligned} \quad (5)$$

If the government sets the valuation tax rate equal to the probability that someone will buy the property at  $X_i$ , or  $dt(X_i)/dX_i = p(X_i)$ , then the owner maximizes his expected utility if and only if he announces  $X_i = V_i$ .<sup>7</sup> That is, the self-assessment mechanism is equivalent to a mandatory insurance mechanism under which the owner pays a premium equal to the expected loss.

A developer who wants to assemble multiple parcels can acquire them by simply paying to each owner the amount that the owner has announced previously. The mechanism solves the holdout problem because owners cannot revise their reservation prices when the developer makes his offer. Because the mechanism provides owners with the incentive to announce their true reservation prices  $V_i$  and because the developer will acquire the parcels only if  $L \geq \sum_i V_i$ , the mechanism also ensures that only worthwhile projects are implemented. Finally, because each owner receives his reservation price when the developer assembles the parcels, the mechanism ensures that owners are fully compensated for their lost properties.

Although we have motivated the self-assessment mechanism as an insurance mechanism, it does not amount to government provided insurance against land assembly because the government does not reimburse owners for their losses. The government can therefore alleviate the owners' tax burdens by returning the valuation tax revenue to the owners as "assessment compensation." It can do so without distorting incentives by randomly assigning each owner to one of two groups, and then dividing the tax proceeds from one group among the members of the

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<sup>7</sup> See Plassmann and Tideman (2007) for the straightforward proof. The working paper version of the paper is available at <http://www.binghamton.edu/econ/wp01/WP0101.pdf>.

other group in proportion to econometric estimates of the value of properties. The owners then do not bear any tax burden on average. Because an owner's valuation tax payment does not affect the assessment compensation that he receives, it does not distort his incentive to reveal his true reservation price.

An owner has an incentive to announce his true reservation price only if he believes that the valuation tax rate is in fact equal to the probability that someone will buy his property. Equation (5) indicates that he will report an amount above  $V_i$  if he believes that the probability is lower than the tax rate, or  $p(X_i) < dt(X_i)/dX_i$ , and vice versa. The government may not be able to estimate  $n$  different probabilities as well as the owners can, given that property owners are likely to have more accurate knowledge than the government of the conditions and salability of their properties. However, for the purpose of facilitating land assembly for private redevelopment, it is not necessary to require that everybody be able to purchase a property at the owner's revealed price, but only that developers who want to redevelop multiple properties be able to do so. Thus the government only needs to estimate the probability that someone seeks to acquire and redevelop multiple properties.<sup>8</sup> Because most owners are unlikely to have private information about how attractive their properties are for developers, they are more likely to agree with a government's honest estimate of the probability of redevelopment.<sup>9</sup>

Note that the self-assessment mechanism does not require that the government estimate this probability correctly, but only that owners believe that the government has estimated it

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<sup>8</sup> If the government anticipates multiple developers to assemble different groups of parcels (for example, different blocks), then it must estimate the probability of redevelopment for each group separately.

<sup>9</sup> It is still necessary to ensure that government officials have the incentives to estimate this probability correctly and to set the correct valuation tax rate. However, we investigate this mechanism as a possible alternative to takings under eminent domain, which raises similar questions regarding the incentives and motivation of government officials to act efficiently (see Tideman and Plassmann, 2005). An analysis of the public choice aspects of land assembly is beyond the scope of this paper.

correctly and has set the appropriate valuation tax rate. Nevertheless, the fact that the incentives of owners to tell the truth depend on their beliefs that the government has estimated the probability of land assembly correctly is a genuine limitation of the mechanism.

Like the Clarke mechanism and eminent domain, the self-assessment mechanism leads to unintended redistribution when the government is unable to measure private values perfectly. In the case of the self-assessment mechanism, this unintended redistribution arises because the government must refund the revenue from the valuation tax in a way that is independent of the amounts that individual owners pay. The lower the probability that someone wants to purchase properties at the self-assessed prices, the lower are the owners' valuation tax payments and the smaller are the unintended redistributive consequences. Thus requiring owners to sell their properties only to developers who intend to assemble multiple parcels has the advantage that it lowers the probability of a mandatory sale compared to the case when anyone is allowed to acquire properties at the self-assessed prices. To keep the degree of redistribution low, the self-assessment mechanism must be adopted at a time when the government identifies the need for urban renewal, but before the advent of a likely developer has increased the probability of land assembly by too much. If the government has already identified a developer who is likely to assemble the parcels, then the valuation tax payments and the resulting degree of redistribution may be so high that owners will object to using the self-assessment mechanism.

## 5. URBAN RENEWAL UNDER GOVERNMENT TAKINGS AND UNDER THE SELF-ASSESSMENT MECHANISM

Government takings resolve the holdout problem by negating the owners' rights to refuse to sell their properties at the prices offered. The estimates of property values that are used for eminent

domain purposes are generally imprecise, because they do not reflect the personal attachment of owners for their properties. This imprecision can lead to socially inefficient takings.

The public debate after the *Kelo* decision has shown that many people perceive the cost of takings under eminent domain to be very high. Because owners whose parcels are taken do not relinquish their properties voluntarily, many consider it a fundamental violation of private property rights for communities to take private properties and sell them to private developers who were unable to acquire these properties through voluntary transactions. This concern might not weigh so heavily if owners were fully compensated for their losses. But because compensation for takings is based on the government's estimates of the market values of the taken properties, owners with strong attachments to their properties receive inadequate compensation. It would be costly to require governments to routinely err on the side of the owners by awarding compensations that exceed the government's best guesses of what the taken properties are worth; such policies of overcompensating owners increase the cost of redevelopment and are likely to prevent the implementation of socially desirable projects.

The self-assessment mechanism resolves these difficulties by providing owners with the incentive to reveal the true values that their properties had for them before they knew of the proposed land assembly. Because developers can proceed with their projects only if they pay these revealed values, they will not implement projects with lower values. Unlike government takings, the self-assessment mechanism therefore ensures that urban renewal projects will only be implemented if they generate higher values than they destroy. The self-assessment mechanism also ensures that each owner receives the amount as compensation at which he would have voluntarily sold his property.

When a government relies on eminent domain, it does not need to act until it believes that a socially desirable land assembly is about to fail. Thus with eminent domain, the government incurs costs only when a developer complains about holdouts. At such a time, the government must estimate the social value of the developer's project and the values of the properties that the developer wants to assemble, decide whether taking the properties is socially desirable, and then possibly take them and pay compensation to the owners. It may also have to defend its taking decision in court, when owners sue the government because they consider their compensation inadequate.

The self-assessment mechanism, on the other hand, must be put in place before a developer has attempted to assemble any parcels. Thus the government incurs costs of estimating the probability of a land assembly and announcing it to the owners, as well as the cost of collecting the valuation tax and redistributing its proceeds among the owners. It needs to repeat this process periodically to permit owners to reassess their properties when their subjective valuations have changed. The self-assessment mechanism therefore imposes a continuing cost on the government. However, with the exception of estimating the probability of a land assembly, many local governments already undertake these tasks on an annual basis when they collect property taxes and permit owners to contest the values at which their properties are assessed for tax purposes. Thus the marginal cost of implementing the self-assessment mechanism in these communities is fairly small. In addition, the government does not incur any additional cost when a developer decides to assemble multiple parcels.

One might object to the self-assessment mechanism on the grounds that owners may have insufficient information to assess the values of their properties. But owners whose local governments assess all properties for property tax purposes can use these values as guidance, and

they can simply announce these values if they consider them adequate compensation. Governments already use assessed values to determine the compensation that owners will receive if their properties are taken, so this practice does not make owners any worse off under the self-assessment mechanism than they are when governments take their properties under eminent domain.<sup>10</sup> However, owners who are unwilling to sell their properties at these assessed prices can state their true reservation prices, thereby ensuring that they will receive compensation for their true losses, rather than an amount that someone else considers “reasonable.”

One might also object to the self-assessment mechanism because it requires owners to sell their properties against their will, which may be considered an unacceptable intrusion into private property rights. However, recall that we do not advocate the use of self-assessment for all land assembly projects, but only for urban redevelopment when the government is already prepared to intrude on private property rights by using eminent domain if it believes that a socially desirable land assembly will fail. In such cases, the self-assessment mechanism ensures that only efficient projects are implemented and that all owners receive full compensation for their losses, irrespective of the estimates and assessments of government officials.

## 5. CONCLUSION

Whether there is a problem of land assembly that requires a solution depends on one’s beliefs about the likelihood that private bargaining is unable to lead to efficient land assembly. The possibility that developers can either assemble parcels in secret or switch to alternate locations

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<sup>10</sup> Owners whose properties are taken often receive compensation that exceeds the assessed values of their properties. This practice is necessary because governments acknowledge that owners may value their properties above the assessed values. Because the self-assessment mechanism permits owners to state at how much more they value their properties, it would be unnecessary to pay an owner who accepts his assessed value more than this amount.

and the difficulty of distinguishing genuine holdouts from high reservation prices suggests that reliance on private bargaining may often be the best policy. However, the fact that government officials sometimes resort to the use of eminent domain indicates that they consider some urban renewal projects to be too valuable to risk the possibility that holdouts will jeopardize them. Of the two mechanisms that lead to efficient land assembly that we present in this paper, the self-assessment mechanism has a greater potential for being a socially attractive replacement for takings under eminent domain. Its existence shows that communities that want to encourage urban redevelopment have more than just a choice between two unpopular decisions—either forcing citizens off their properties by eminent domain or foregoing redevelopment when citizens hold out for too long.

The self-assessment mechanism does not lead to efficient and fair land assembly if owners believe that the government has estimated the probability of a land assembly incorrectly. But government takings under eminent domain do not lead to efficient and fair land assembly if the government estimates the property values incorrectly. Thus whether citizens prefer their government to use eminent domain or the self-assessment mechanism depends on whether they believe that their government is more likely to correctly estimate the values of all properties or to obtain a believable estimate of the probability of a land assembly. If they do not trust their government to do either with acceptable accuracy, then they must require that all land assembly projects be resolved through bargaining alone, and they must be prepared to bear the cost when holdouts prevent socially optimal redevelopment.

## References:

- Asami, Yasushi. 1988. "A Game-Theoretic Approach to the Division of Profits from Economic Land Development." *Regional Science and Urban Economics* **18**, 233-246.
- Benson, Bruce L. 2006. "Do Holdout Problems Justify Compulsory Right-of-Way Purchase and Public Provision of Roads?" In: Gabriel Roth (ed.) *Street Smart: Competition, Entrepreneurship, and the Future of Roads* (Oakland: The Independent Institute).
- Bruecker, Jan. 2000. "Urban Sprawl: Diagnosis and Remedies." *International Regional Science Review* **23**, 160-171.
- Clarke, Edward H. 1971. "Multipart Pricing of Public Goods." *Public Choice* **11**, 17-33.
- \_\_\_\_\_. 1972. "Multipart pricing of public goods, an example" in Selma Mushkin, ed. *Public Prices for Public Products*, Washington, D.C., The Urban Institute.
- Cohen, Lloyd. 1991. "Holdouts and Free Riders." *Journal of Legal Studies* **20**, 351-362.
- Eckart, Wolfgang. 1985. "On the Land Assembly Problem." *Journal of Urban Economics* **18**, 364-378.
- Grossmann, Sanford and Oliver Hart. 1980. "Takeover Bids, the Free-Rider Problem, and the Theory of Corporation." *Bell Journal of Economics* **11**, 42-64.
- Groves, Theodore. 1973. "Incentives in teams." *Econometrica* **41**:617-631.
- Groves, Theodore and Martin Loeb. 1975. "Incentives and Public Inputs." *Journal of Public Economics* **4**:3, 211-226.
- Horowitz, John. 2006. "The Becker-DeGroot-Marschak Mechanism is not Necessarily Incentive Compatible, Even for Non-random Roods." *Economics Letters* **93**, 6-11.
- McFarlane, Alastair. 1999. "Taxes, Fees, and Urban Development." *Journal of Urban Economics* **46**, 416-436.
- Menezes, Flavio and Rohan Pitchford. 2004. "The Land Assembly Problem Revisited." *Regional Science and Urban Economics* **34**, 155-162.

- Miceli, Thomas J. and Kathleen Segerson. 2000. "Takings." In: B. Bouckaert and G. De Geest (eds.) *Encyclopedia of Law and Economics*, Vol. IV, (Cheltenham: Edward Elgar), 328-357.
- Miceli, Thomas J. and C.F. Sirmans. 2004. "The Holdout Problem and Urban Sprawl." *University of Connecticut Department of Economics Working Paper 2004-38*.
- O'Flaherty, Brendan. 1989. "Land Assembly, Urban Renewal, and Beyond: A Subgame Perfect Approach" *Columbia University Discussion paper 439*.
- O'Flaherty, Brendan. 1994. "Land Assembly and Urban Renewal." *Regional Science and Urban Economics* **24**, 287-300.
- Plassmann, Florenz and Nicolaus Tideman. 2007. "The Economics of Self-Assessment." Forthcoming in *Public Finance Review*.
- Tideman, Nicolaus and Gordon Tullock. 1976. "A New and Superior Process for Making Social Choices." *Journal of Political Economy* **84**, 1145-1159.
- Tideman, Nicolaus and Florenz Plassmann. 2005. "Fair and Efficient Compensation for Taking Property under Uncertainty." *Journal of Public Economic Theory*, **7**:3, 471-495.
- Turnbull, Geoffrey. 2005. "The Investment Incentive Effect of Land Use Regulations." *Journal of Real Estate Finance and Economics* **31**:4, 357-395
- Vickrey, William. 1961. "Counterspeculation, Auctions, and Competitive Sealed Tenders." *Journal of Finance* **16**:1: 8-37.