Introduction: Four Maxims for Research on Land-Use Controls

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William A. Fischel

The Lincoln Institute of Land Policy sponsored a meeting of the Committee on Taxation, Resources, and Economic Development (TRED) in October 6–7, 1989, at which each of the articles in this issue was presented. The conference presentations resulted from a call for papers for a special issue of Land Economics *and from invitations to others by Michelle White and myself, who put together the TRED program with the assistance of Ben Chinitz and the Lincoln Institute staff. All of the articles have been subject to rigorous review by referees and formal discussants at the TRED meeting, and all benefitted from open discussion by TRED members and others who attended the meeting.*[1]

The papers in this issue are good representatives of current economic research on land-use controls. My introductory comments on them are intended to provide guidance for others who contemplate research in this area. There are four main points.

1. Locally established land-use regulations (zoning) must be viewed as a flexible and decentralized network of restrictions, not a single-valued constraint on all building activity.

2. Zoning confers both benefits and costs that are capitalized as increases or decreases in property values.

3. Zoning is the product of economically rational political activity.

4. We do not know much about the efficiency of zoning, but aggregate community land values may be the key to measuring it.

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I. ZONING IS A FLEXIBLE NETWORK OF RESTRICTIONS

The occasion for making my first point is the review by Michael Pogodzinski and Tim Sass of formal economic models of zoning, most of which have been published in the last fifteen years. Their review shows that the typical method by which economists have examined zoning is analogous to the analysis of taxation. A model of location of housing and other activities is developed and its equilibrium conditions are established. A land-use constraint is then added to the model, and the equilibrium conditions are again derived and compared to the prezoning world. For models in which welfare implications are derived, the initial assumptions are conclusive. The nonzoning benchmark model may be more or less efficient than the zoning model, depending on whether spillover effects are assumed to be internalized by market transactions or by government actions.

Advances in this paradigmatic model have introduced fiscal effects, interjurisdictional spillovers, and locational complexities such as suburban employment centers. Pogodzinski and Sass's chief criticism of these models is that none takes into account all of the important factors, so that one gets at best a partial view of the effects

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Comments from James Holway, Nicolaus Tideman, and Michelle White are gratefully acknowledged.

[1]I wish to acknowledge the assistance of people who refereed papers submitted for this issue. They are Jan Brueckner, Daniel Chall, Buddy Dillman, Jim Follain, Rick Freeman, Tony Gomez-Ibanez, Bob Healy, Vernon Henderson, Daphne Kenyon, Sumner LaCroix, Helen Ladd, Peter Mieszkowski, Ed Mills, Dick Netzer, Bill Oakland, Wallace Oates, Janet Pack, Bill Wheaton, Jim White, Michelle White, and Peter Zorn. If you are going to edit a special issue of a journal, it pays to have plenty of smart and generous friends.

and efficiency of land-use controls. My complaint at this juncture is more elementary.

A disproportionate number of theoretical articles view zoning as a single-valued constraint that can be examined in isolation from other constraints. For example, minimum lot size might be compared to building height restrictions or simply to the absence of any constraint. The appeal of this view is undeniable, as it permits a comparative statics approach to zoning analogous to theoretical models of taxation. The problem is that nowhere in the United States (and probably abroad) is a jurisdiction limited to a fixed configuration of regulatory devices.

Redundancy is the rule in zoning ordinances. Minimum lot size, maximum building height, minimum floor area, and exclusive residential use may be simultaneously established in the same zone. If one rule is struck down as unreasonable by a judge, others may be substituted in its place. For example, courts almost always hold it unreasonable for a community to establish, for fiscal reasons, a minimum dollar value on new homes. But they do not prevent the community from adopting minimum floor area, use restrictions, lot size, and lot coverage ratios that have much the same effect. In case this does not provide enough fiscal protection, the community can in many states exact cash in advance from builders of projects that might inconvenience local residents.

Zoning law is also forgiving of community mistakes. If a builder discovers a zoned site on which to erect a profitable but locally unwanted development, the community can call for a moratorium on development to give it time to change its laws. No one has a vested right in a particular zoning ordinance. The pervasive pattern of discretionary zoning change is evident in the empirical papers in this issue, especially the Chicago-area suburbs examined by Daniel McMillen and John McDonald.

My critique does not imply that the theoretical models that employ tax-like constraints are a waste of time. With a properly framed, generalized constraint, many are useful to show the indirect consequences of locally generated zoning policies. The most admirable of this genre are those that model metropolitan location with several income classes, of which Stephen Sheppard (1988) is a recent example. Yet another group of models holds greater promise. These explore the consequences of the view that zoning is a network of regulations that have become akin to a collective property right. Paradigms of this approach are work by Vernon Henderson (1980) and by Dennis Epple, Thomas Romer, and Radu Filimon (1988). It will hardly surprise the reader that the theoretical articles in this issue by Jan Brueckner and by David Mills have likewise eschewed the model of zoning as a narrowly conceived constraint.

II. BENEFITS AND COSTS OF ZONING ARE CAPITALIZED

My second point is that zoning has both benefits and costs that are capitalized in property values. That these propositions should be controversial requires some explanation for the uninitiated. A line of articles that began with John Crecine, Otto Davis, and John Jackson (1967) raised empirical questions about whether zoning and the external effects that zoning was supposed to control had a significant effect on urban property markets. These articles found that there was little evidence to support either proposition for samples in such places as Pittsburgh, Rochester, Vancouver, and New Haven. (For a review of them, see Fischel 1990.)

I will in this space point out only one of the sins of these studies: All were drawn from cities that have had zoning for a long time. If zoning works reasonably well in these cities, then external effects *should* be hard to detect. And if zoning has the flexibility and rationality that I argue for in sections I and III of this essay, it should also be hard to find large land-value differentials by zoning category, since large differences would imply that potential gains from trade are being foregone by rational agents. (The exception occurs when an owner of a noxious use makes a lump-sum payment to compensate the neighbors. Later buyers of

nearby residential property will purchase at a discount reflecting the nuisance, even though the spillover is internalized. Most compensatory payments are made as annual in-kind benefits, however, so that the residential property is increased to its former value by the prospect of an indefinite flow of benefits [Fischel 1985, chaps. 4 and 11].)

Despite this and other vulnerabilities revealed by Ronald Lafferty and H. E. Frech (1978) and Ronald Grieson and James White (1989), the zoning-does-not-matter story is still given wide credence. It is with some trepidation that I point out that the empirical papers included in this issue find that zoning is detectable in property values. The trepidation arises because there is a logical difficulty with the editor's position, and because he is conscious of that most insidious of econometric biases, editorial selection.

Of editorial selection, I admit that I did turn down an article that suggested that a regional growth control scheme had no significant effect. All I can say is that independent referees sympathetic to the author's outlook and methodology concurred that the conclusion was not adequately supported by the evidence. On the other hand, I have included (with enthusiastic referee support) the article by David Henneberry and Richard Barrows, which suggests that exclusive agricultural zoning may actually increase farmland values, a proposition that I have derided in previous writings.

The logical difficulty with my criticism of the Crecine, Davis, and Jackson position is this: If zoning is flexible and rational, how can the papers in this issue find that zoning restrictions are capitalized in property values? The answer is that zoning is most flexible and rational in land-use disputes between political equals. (In the legal literature, which unfortunately has no representation in this issue, Carol Rose [1983] has been a leading proponent of this view.) Indeed, this is the explanation that Henneberry and Barrows give for finding that agricultural zoning in rural townships in Wisconsin may raise land values: Most of the voters were landowning farmers who contemplate both the benefits and burdens of restrictions. When the zoning issue involves politically dominant insiders (existing homeowners) against underrepresented outsiders (developers and their clients), the resolution tends to favor homeowners at the expense of developers, at least in suburban jurisdictions. In suburban development controversies, there is distinct locus of benefit (existing housing) and burden (undeveloped land) that can be identified by capitalization studies. The log-rolling politics of central cities, from which the zoning-does-not-matter studies usually take their samples, give developers more political clout.

Henry Pollakowski and Susan Wachter examine the growth management program of Montgomery County, Maryland (Washington, D.C.'s northern suburb). Unlike most other big cities, Washington's suburbs are governed by a few large county governments. The sample in their paper is thus potentially an example of monopoly or closed-city zoning. Pollakowski and Wachter find that conventional zoning characteristics and the county's annual ceiling on housing construction, which is differentially applied within the seventeen planning areas of the county, increase the price of existing housing. This confirms the results of several earlier studies with an excellent sample of repeat housing sales.

The housing price increase detected by Pollakowski and Wachter is, for the owners of existing homes, a benefit. It is also a social benefit insofar as the higher price reflects amenity improvements rather than monopoly scarcity. The costs are chiefly borne by owners of undeveloped land subject to the restrictions. In a competitive model, these reductions would be a measure of the welfare costs of the restriction, insofar as prospective buyers are denied at least that measure of consumer surplus. (See Jan Brueckner's paper in this issue, discussed in section IV.)

Pollakowski and Wachter also find that more stringent development restrictions in some of the county's planning areas slightly, but significantly, increased the price of housing in adjacent planning areas. This suggests a monopoly-like spillover ef-

fect. If one area's restrictions created only localized amenities, adjacent areas would not be affected unless the amenities spilled over the border, which seems unlikely. Pollakowski and Wachter's results confirm the importance of looking at extraterritorial effects in both theoretical and empirical work.

The distinct locus of zoning burdens is undeveloped land, whose value formed the dependent variable for a study of floodplain regulations in nine small U.S. cities by James Holway and Raymond Burby. Nearly all zoning in the U.S. is done by local governments, which are created by the states. The federal flood insurance program, however, has zoning-like requirements to mitigate the damage done to structures that are liable to be flooded. Holway and Burby find that vacant parcels subject to the Federal requirements are less valuable than other parcels, even when local zoning (which also was significant) and objective measures of flood hazard are taken into account.

The floodplain regulations' negative effect on land values no doubt dismays the landowners, but it cannot be used to conclude that the regulations are efficient or inefficient. To do that, we would need to compare the benefits of greater-than-market protection provided by the regulations. Downstream owners, for example, may be protected by the regulations provided upstream. And if the regulations forestall demands for costly dams to reduce flood hazards, that saving would have to be calculated, too.

III. ZONING IS PRODUCED BY RATIONAL POLITICS

The two articles by Daniel McMillen and John McDonald and by Jeffrey Rubin, Joseph Seneca, and Janet Stotsky illustrate the possibility of rational zoning authorities. Rather than taking the zoning laws as given, McMillen and McDonald ask whether the types of regulations they observe can be predicted from a model. They find that the layout of the transportation system in a sample of Chicago's suburbs had a systematic effect on the type of zoning subsequently adopted over a twenty-year period. They infer that market forces arising from proximity to roads, railroads, airports, and business districts had a significant impact in the initial zoning by the county and the subsequent rezonings by the municipalities.

McMillen and McDonald show that zoning itself must be treated as an endogenous factor. The suburban governments adopted zoning that reduced the conflicts between residential and nonresidential uses. Rather than ban commercial uses, which are often fiscally profitable, authorities zoned them into areas near railroad tracks and other nonresidential uses where they would do little harm to residential neighborhoods. Had McMillen and McDonald sought to test their sample for external effects by the same methods as the zoning-does-not-matter studies (discussed in section II), they would have found little evidence of spillovers. The reason is not that spillover effects are trivial; the reason is that local governments internalized them with zoning.

Rubin, Seneca, and Stotsky examine one aspect of the outcome of the New Jersey Supreme Court's famous *Mount Laurel* decision of 1983. Frustrated by the ineffectiveness of its 1975 attempt to eliminate zoning barriers to low income housing, the court set up a quota system that ordered every municipality to build such housing. The court's order induced the state legislature to enact the Fair Housing Act of 1985, which gave communities several options with which to comply with their judicially imposed obligation. Among the options were (a) the density bonus, in which developers subsidize low income housing in exchange for zoning laws to allow more profitable densities for market rate housing; and (b) the regional contribution agreement, which permits communities to subsidize construction of low income units in other municipalities (typically older cities) that were eager to have them.

Rubin, Seneca, and Stotsky develop and estimate a model that indicates that the choices the communities made were generally consistent with rational, cost-minimizing objectives. For example, suburbs with

lower population densities were more likely to choose (a), the density bonus. The authors attribute this to the lower levels of congestion in low density communities, but in my experience, every community in New Jersey thinks it has too much congestion. More plausible to me is that the low income housing may be more easily separated from existing residences in low density communities, thus reducing neighborhood resistance.

The lesson from McMillen and McDonald and from Rubin, Seneca, and Stotsky is that local governments are economically rational about their land-use choices. The pattern of zoning that we observe is the result of an optimizing process. The pattern's deficiencies may result from inequitable entitlements, antisocial preferences, intermunicipal spillovers, and constraints on exchanging development rights, but the deficiencies do not result from a failure of municipal governments to behave as rational agents for their political constituents.

The New Jersey Supreme Court understands municipal rationality better than most other courts. Its decision in *Mount Laurel* pierced the veil of planning rhetoric and exposed the parochial interests that zoning serves. After years of litigation, however, a gulf still yawns between the court's sweeping goal of breaking down exclusionary zoning and the meager integration of low and high income housing in New Jersey's suburbs. In acceding to the Fair Housing Act, whose aforementioned option (b) especially undermines this goal by permitting affluent suburbs to discharge their housing obligation in other communities, the court seems to be agreeing with other state courts. They have ritually applauded *Mount Laurel*'s purposes but shrunk from its broad remedies. Perhaps the fundamentals of this issue need to be reconsidered.

IV. TOTAL LAND VALUES ARE THE KEY TO EFFICIENCY

We know that zoning confers benefits on some and costs on others, but few studies have systematically tried to weigh them. (A tantalizing exception is an unpublished, but much-cited, paper by George Peterson [1974], who calculated that Boston suburban zoning was on balance inefficient.) Local governments are numerous, reasonably autonomous, and notoriously self-interested. If zoning is indeed controlled by a rational political process, why should this more-or-less competitive model not make zoning efficient?

Jan Brueckner provides a theoretically rigorous approach for evaluating whether regulations that propose to regulate the rate of growth are efficient. Such communitywide growth controls have been popular for many years in California and other fast-growing places. The planning literature often implies that these regulations are different from zoning, but I cannot find a functional difference, and growth controls employ methods and rationales that emerge from the same legal entitlements that zoning gives communities.

Brueckner focuses on aggregate land values, not housing prices. Aggregate land values are the primary means by which the preferences of both insiders (existing resident-voters) and outsiders (who must bid for the undeveloped land) can both be considered. The efficiency criterion is thus a Kaldor-Hicks test: Could the gainers (owners of already-developed properties) potentially compensate the losers (owners of the restricted land) and still be better off? Brueckner's model is theoretically satisfying, because growth controls can either increase or decrease aggregate land values, depending on their stringency. Most existing studies focus on either undeveloped land values or existing home values, which represent only part of the land base.

Brueckner's method is, however, empirically daunting. The hazards include availability of land-value data, the assumption of an open city (fine for small suburbs; doubtful for metropolitan areas), and the problem that growth controls may be anticipated by landowners, so that the supposed precontrol land values are contaminated by capitalization of the controls themselves. That the last problem is significant is suggested by John Yinger et al.'s (1988) study of property assessment reform in Massachusetts. What looked like an ideal sample for test-

ing tax capitalization gave significantly less than full capitalization because many buyers of property apparently saw the reform coming (1988, 124).

As previously mentioned, the article by Henneberry and Barrows suggests that zoning may have some efficiency-promoting properties. They examined the response of farmland values in rural Wisconsin townships to adoption of exclusive agricultural zoning. Their finding is contrary to other studies of new zoning restrictions on undeveloped land: Some values went up rather than down. One benefit of exclusive zones for farmland owners is that they have assurance that incompatible urban developments will not develop nearby. This and a tax benefit apparently offset the loss of development rights for large and remote farmland parcels.

Does this mean that farmland zoning is efficient on this account? There is reason to be cautious about extrapolation from their sample. Not all parcels gained, and no aggregate land value test, as suggested by Brueckner, was undertaken by Henneberry and Barrows. Moreover, they point out that the owners of the land in most of these rural townships also constituted a political majority. Unlike the developing suburbs, in which farmland preservation may be an expedient exclusionary device, rural governments are more like a cooperative that owns a large tract and wants to manage it in the best interests of its members. Extension of such a paradigm to urban areas is precluded by the one-person, one-vote rule.

David Mills wrote the only paper in this issue explicitly motivated by the extensive law-and-economics literature on land-use controls. Like Brueckner, Mills asks about the long-run efficiency of land-use controls. He is interested in how legal rules affect the mix of residential and nuisance-creating nonresidential development. He explores the issue of whether the entitlement to develop potentially offensive nonresidential uses is best given to residents or owners of undeveloped property. In either case, potential gains from trade could be exploited by bargaining to achieve efficiency, as the Coase theorem proposes.

Mills argues that transaction costs caused by strategic bargaining make it more reasonable to vest collective control in existing residents (as is current practice), rather than to vest it in individual landowners. His twist on this conclusion, which was articulated in the legal literature by Robert Ellickson (1973), is to show that it holds as well in a dynamic model in which the timing of development is critical.

Mills goes on to point to a potential efficiency problem that occurs in the dynamic context. He employs a game theory model from the industrial organization literature and finds that the efficiency of assigning development rights to the community is sometimes dubious. The key to this counterintuitive finding is his assumption that nonresidential development is "lumpy"; it cannot be done in small increments. This gives landowners an incentive to time their projects strategically. In some simulations, Mills finds that retarding nonresidential development by vesting control in the community is less efficient than promoting it by vesting land-use rights in landowners. A critical empirical issue is whether nonresidential development actually is lumpy so as to give rise to these problems. One can think of examples where it is (nuclear power plants) and those where it is not (neighborhood retail stores).

Nicolaus Tideman develops a proposal to unify the objectives of land-use controls with local taxation of all land value. The conversion of the property tax to a land-value tax has been the objective of the movement fathered by Henry George in 1879. While the theoretical virtues of a land tax have received renewed attention in recent years, little has been written about how its implementation would jibe with a system of land-use controls. Devices such as development exactions, contract zoning, and impact fees are ad hoc techniques that partly integrate community revenue with land-use controls, but the techniques have been criticized as being unfair and inefficient in their application. Tideman shows how a systematic program of land taxation could remedy these defects.

The novelty of his proposal is a competi-

tive, private land assessment system that provides financial incentives for independent assessors to correctly value land for taxation of 100 percent of the rent. Tideman argues that the information needed to take into account beneficial and costly spillover effects would be generated by his system's estimates of annual land rents. This information is currently generated by the sale value of land. Being next to a nuisance reduces a parcel's sale value. Under a 100 percent tax on the rental value, however, the sale value of land would be zero. Thus, there is a need for a substitute source of information about value, and Tideman shows that his assessment proposal would generate the same information.

Tideman acknowledges that Georgist land taxation and internalization of external effects are logically independent of one another. People who expect a land tax to be a solution to the valuation problem would be disappointed. Under either full-value land taxation or the current system, willingness to pay for spillover benefits and costs must be estimated from a market of some type.

There is an advantage to Tideman's system, however. With virtually all of the land's rental value going to the community, its incentive to exclude valuable uses of land inefficiently is reduced. (Likewise, a community inclined to accept too many noxious uses would find its aggregate land tax revenue reduced, but that is typically not the problem in our environmentally sensitive era.) A locally assessed tax that collects all of the rent of land effectively makes the community the proprietor of all its land. While community proprietorship may cause agency problems for individual properties (how to decide the most profitable use), a high land tax could be a solution to the not-in-my-backyard syndrome that plagues sponsors of socially necessary, but locally unwanted, land uses. As Brueckner's model shows, aggregate land-value maximization provides a key to efficiency. Tideman would simply make the community the residual claimant of rents rather than an agent for the landowners who now claim the rents.

Tideman's article raises a final issue. Several law-and-economics authors (cited in the Mills paper) have argued that zoning rights should be tradeable. Tradeability makes the community the proprietor of its regulations. I have found that lawyers, planners, and even many economists recoil from the notion that the community should simply sell regulations that it values less than the cash developers will offer. Why is there such aversion to trade in a society in which commerce is the norm?

The answer lies less in the supposed inequities of such a system—the poor would probably gain from tradeable land-use rights—than in the profound ambivalence that Americans have about the role of government and private property. Both Tideman's proposal and the idea of selling zoning make us uneasy because they break down the traditional barrier between private and public. There is no more logical objection to collecting all the rent of land in taxes than to the idea that communities ought to be able to sell development rights to the highest bidder. The exploration of American ambivalence about public and private property should be on the agenda of economists. It may not be merely a matter of tastes.

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