

## ARE LOCAL PROPERTY TAXES REGRESSIVE, PROGRESSIVE, OR WHAT?

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*Local property taxes are commonly regarded as regressive, but the two dominant (and competing) views of the property tax would disagree. Under the capital-tax view, the national element of the tax is a tax on real estate capital, which makes it somewhat inefficient but progressive, given the distribution of ownership of real property. Under the benefit view, the local component of the property tax is not really a tax but a fee for service. We describe evidence that the capital-tax view applies in relatively undeveloped areas, while the benefit view is more relevant in developed urban areas.*

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### I. INTRODUCTION

Our understanding of the incidence of local property taxes is in a sad state. Despite a series of books and papers stretching over a period of nearly 50 years, there is nothing approaching a consensus on this issue. We have, in fact, two disparate theories that have quite different implications for how we should think about local property taxation. They have sharply different policy implications. From one perspective, the so-called “benefit view,” local property taxes are seen as simply the payment that households make for the bundle of local public services that they have chosen to consume. In these terms, it is not even clear that the concept of incidence is meaningful. A second perspective, known in the literature as the “capital-tax view” (or earlier as the “new view”) makes use of a Harberger-type, general-equilibrium approach with the finding that local property taxes are largely shifted onto owners of capital throughout the economy. From this perspective, local property taxation is taken to be progressive in its incidence.

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To make matters even worse, when it comes to the actual measurement of the incidence of the tax and the formulation of policy, both of these theories of the economic incidence of the tax are ignored. Instead, empirical studies simply take the statutory incidence of the tax as their point of reference (e.g., Minnesota Taxpayers Association, 2012). They calculate the household's actual tax payment as a fraction of its income, from which they typically find the tax to be somewhat regressive. A key issue in these studies is the nature of the denominator in this fraction. It is generally agreed that some measure of permanent income (or some average of income over several years) needs to be used to avoid the sensitivity of the measure to transient fluctuations in a household's income. Based on these measures of statutory incidence, many states have introduced programs of circuit breakers to provide tax relief where taxes reach a sufficiently large fraction of income (Bowman et al., 2009). In short, there is much controversy at a theoretical level about the incidence of the tax, but empirical work generally ignores the basic theory and relies primarily on statutory (rather than the economic) incidence of the tax.

Our objective in this paper is to provide a critical review of the work on this issue and a more coherent perspective on the incidence of local property taxes. We do not offer new data or estimates of the incidence of local property taxes. Instead, we want to address the question of how we should think about the incidence of the tax. We begin with some background, consisting of a very brief review of the old or traditional view of the incidence of local property taxes. We then proceed in two subsequent sections to a reconsideration of the two competing modern theories of the incidence of local property taxation: the capital-tax view and the benefit view. There have been some (only partially successful) attempts to produce hybrid models that draw on elements from both theories. After discussing this work, we will suggest a way of integrating the two views (or theories) that draws on some recent work, arguing that each view has its primary relevance to a specific setting for local jurisdictions. We shall try to develop the implications of this broader perspective for estimating the incidence of local property taxes.

## II. AN HISTORICAL NOTE: THE "OLD" VIEW OF THE INCIDENCE OF LOCAL PROPERTY TAXES

To put our treatment in context, it is helpful to review briefly what we might call the "the old view" of property tax incidence, for it still has some relevance to ongoing empirical work. Netzer (1966), in his comprehensive volume, *Economics of the Property Tax*, provided a good description of this view in Chapter Two, "Who Pays the Property Tax?" Relying basically on a partial-equilibrium approach, the old view essentially divided the tax into two parts: one applicable to the land and the other applicable to the improvements (or structures) on the land. "Since the supply of land is, for all practical purposes, perfectly inelastic ...," the part of the tax falling on the land must "... rest on the owners of the sites at the time the tax is initially levied or increased" (Netzer, 1966, p. 33). The present discounted value of the stream of present and future tax liabilities will, in short, be capitalized into land values. In contrast, since the supply of capital to

the construction industry is relatively elastic, the part of the tax falling on improvements "... can be expected to be shifted forward to final consumers of business services and occupants of housing" (Netzer, 1966, p. 36).<sup>1</sup>

The implications of this view for the incidence of the tax are straightforward. It suggests that homeowners will basically bear the burden of the tax on their property. They own the land and hence directly bear that portion of the tax, and the part of the tax on improvements is shifted onto them. Thus, for owners, statutory and economic incidence should largely coincide. For the case of rental dwellings, the part of the tax applicable to the land will fall on the owner of the property, while the part of the tax on the improvements will be shifted forward to the occupant.

The old view, however, has two serious shortcomings. The first is its basically partial-equilibrium character, and the second is its failure to recognize the special role of the property tax as a local tax. The more recent theories (or "views") of the property tax have their source in addressing these two issues. In the next two sections, we will review each of these two theories and their implications for the incidence of local property taxes.

### III. THE PROPERTY TAX AS A LOCAL TAX: THE CAPITAL-TAX VIEW

#### A. The Basic Theory

The capital-tax view of local property taxation has its source in the seminal paper by Mieszkowski (1972). Making use of a Harberger-style, general equilibrium model, Mieszkowski assumed the property tax to be a levy on reproducible capital. In a setting where capital is perfectly mobile across jurisdictions and where local jurisdictions are price takers in a national capital market, an increase in a locality's property tax results in an increase in the gross price of capital equal to the amount of the tax such that the net return to capital is everywhere equalized. The Mieszkowski analysis produces two key results. First, the average level of property taxation across all jurisdictions is equivalent to a tax on the national stock of capital. Since the national capital stock is taken to be fixed, this part of the tax falls wholly on owners of the capital stock. Second, to the extent that tax rates in local jurisdictions vary around the average rate, there are "excise tax effects" such that the burden of these differentials falls largely on immobile factors in these jurisdictions. Since Mieszkowski assumed labor to be immobile, the burden (in some cases negative, where tax rates are below the national average) of these excise tax effects falls largely on wages and land rent in their respective jurisdictions.<sup>2</sup>

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<sup>1</sup> There was some recognition that property taxes might, in part, be shifted backwards onto the owners of resources engaged in producing the taxed commodities (Rolph and Break, 1961).

<sup>2</sup> In jurisdictions with above-average tax rates, the excise tax effects will increase the burden of the tax on immobile factors, as the reduction in the local capital stock will depress returns to local labor and land. In contrast, low-tax jurisdictions will experience an inflow of capital, resulting in negative excise tax effects — that is, an increase in local wages and land rents.

The positive and negative excise tax effects on the owners of capital across jurisdictions tend to cancel out in the aggregate. Since the ownership of capital is presumably disproportionately skewed toward high-income households, the property tax from the perspective of the capital-tax view is taken to have a progressive pattern of incidence.

It is also noteworthy that the capital-tax view has quite different implications for the efficiency of local property-tax finance than does the benefit view. In a Tiebout model (or Tiebout-Hamilton model, which is described and discussed in more detail below), households sort themselves out according to their demands for local public services in a setting where they face tax-prices that accurately reflect the marginal cost of providing these services. The result is an efficient pattern of consumption of local public services. In contrast, local property taxation under the capital-tax view is distorting. Property tax differentials across jurisdictions result in a misallocation of the capital stock, as capital tends to migrate to low-tax jurisdictions. Moreover, as Zodrow and Mieszkowski (1986a) show, the tendency for increases in local tax rates to drive out capital provides an incentive for local officials to underprovide local public outputs. However, since our concern in this paper is with the incidence issue, we shall largely ignore the range of efficiency concerns that have received considerable attention in this literature.

## B. Development of the Capital-Tax View

Since the seminal Mieszkowski essay, there have been a series of important papers that have extended the capital-tax view in important ways.<sup>3</sup> Most importantly, these papers have introduced household mobility in a setting in which the level of local public outputs enters directly into household utility functions; these expanded models thus allow for mobile households who are “shopping” for local public goods. In addition, several of the models allow for the endogenous determination of the level of local services. The models typically adopt the standard assumption that local officials choose local public outputs so as to maximize the value of local property.<sup>4</sup> Another standard feature is a production function for housing that exhibits constant returns to scale and employs capital and land as inputs. Thus, in this expanded literature on the capital-tax view, household location decisions depend on local fiscal variables. The critical distinction between these models and those embodying the benefit view is the absence of any zoning restrictions. These “hybrid models” thus represent a kind of benefit-tax world without zoning.

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<sup>3</sup> For an excellent summary of the evolution of the capital-tax view and of the debate over these two views of local property taxation, see Zodrow (2001). The important early papers in this literature include (among others) Zodrow and Mieszkowski (1986b), Hoyt (1991), Krellove (1993), and Wilson (2003).

<sup>4</sup> In an early paper, Sonstelie and Portney (1978) showed that setting local public outputs so as to maximize local property values results in an efficient level of local services (i.e., it satisfies the Samuelson condition that the sum of the marginal benefits equals the marginal cost). Such an objective for local public policy seems quite plausible, and, as a result, this specification is a fairly standard one in models involving the local public sector.

In this setting, the incidence of local property taxes falls upon capital and land in proportion to their income shares in the housing production function. Since the share of capital is much larger relative to the share of land, the tax, from this perspective, is taken to be basically a tax on the owners of the national capital stock. There remain the excise tax effects associated with local tax differentials, but (as mentioned) these cancel out in the aggregate.

In a valuable empirical study, Gravelle (2007) examined the tax rates implied by the capital-tax view. She estimates that the national effective rate of tax on capital in the United States associated with property taxation is on the order of 1.49 to 1.65 percent, where the variation depends on certain assumptions concerning imputation of various shares of the tax. She also looks at the excise tax effects across states, where she estimates the excise tax and subsidy elements attributable to state tax-rate differentials. Interestingly, she finds that the excise tax effects have little impact on the progressivity of the tax and that "... under the new view of property tax incidence it is fair to conclude that the property tax should be viewed simply as a tax on capital income" (Gravelle, 2007, p. 97).

### C. Some Observations on the Capital-Tax View

Attempts to distinguish between the benefit and capital-tax views through empirical testing have proved difficult. Advocates of the benefit view have cited the pervasive findings of the capitalization of fiscal differentials (both tax and expenditure differentials) across jurisdictions as evidence that households shop among localities and are willing to pay more to live in jurisdictions with lower taxes and/or higher levels of local public outputs. However, as Zodrow (2001, 2007) has stressed, interjurisdictional capitalization is consistent with both the benefit and capital-tax views. Once we introduce into the model mobile households who care about local services and taxes, it is inevitable that the fiscal advantages and disadvantages of a particular jurisdiction will be reflected in the price of local residences.<sup>5</sup>

On another matter, it is striking that in view of the long-run nature of the analysis under the capital-tax approach, the national capital stock is taken to be fixed in magnitude. This, in fact, seems directly inconsistent with the thrust of the argument. According to the capital-tax view, the property tax discourages capital formation. Thus we should expect that property taxes would have a (perhaps quite significant) effect on the aggregate stock of capital by reducing saving over the longer term (or perhaps diverting some saving to foreign shores). The treatment of the capital-tax view needs to be extended to take into account the long-run impact on capital formation. This would, in principle at least, appear to reduce the degree of its progressivity.

In addition, it would be useful to have some sense of just how progressive the property tax is from the perspective of the capital-tax view. After finding the property tax to be

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<sup>5</sup> More recently, Zodrow (2014) has argued that intrajurisdictional capitalization (as well as interjurisdictional capitalization) is consistent with both the benefit and capital-tax views.

largely a general tax on capital, the literature typically stops with the observation that since the ownership of capital is presumably distributed disproportionately in favor of higher income groups, the tax must be progressive in its incidence. It would be useful to pin this down more carefully. It appears that the capital stock in the United States is very roughly divided about equally between residential structures, on the one hand, and business structures, equipment, and inventories on the other. The conventional wisdom seems to be that the income elasticity of demand for housing (using some kind of measure of permanent income) is around unity (Rosen and Gayer, 2008). This would suggest that the part of the property tax that falls on residential capital (at least on owner-occupied residences) should be roughly proportional to income. The tax on rental dwellings is taken to be shifted forward onto renters (in order to maintain the net return on investment in rental units on par with that of other investments). The ownership of business capital is presumably much more skewed in the direction of higher-income households. There is thus a strong presumption that this part of the tax burden would be progressive in its incidence. It would be very useful to pull together estimates of these various components of the tax to get a better sense of just how progressive the tax is under the capital-tax view.

#### **IV. THE BENEFIT VIEW OF THE PROPERTY TAX**

##### **A. The Benefit Perspective**

In the benefit view, property-tax payments are simply fees for services provided by the unit of government that levies the tax. Property taxes are wholly analogous to member fees set by homeowner associations, and the comparison offers some useful parallels (Ellickson, 1982; Heikkila, 1996; Rogers, 2010). A private homeowner association provides (usually by contracting with third parties) various local public services for its members. It may provide a security service that acts as a gatekeeper (often literally). The association pays groundskeepers to maintain the common areas. It often has communal recreation areas such as tennis courts and swimming pools, though some of these may require that even members pay some portion of their cost via user fees.

It is worth emphasizing that association fees do not necessarily depend on individual usage. Strollers on the paths are not charged per view of the landscaping. The common areas are, within the association's perimeter, nearly pure public goods, and opinions about their utility can differ. The differences are settled by the association's governing board, which is normally elected by a process set up by the founding developer in the "covenants, conditions, and restrictions" (CC&Rs) that homebuyers must agree to when purchasing their property.

The annual dues payment by members of the association are surely "benefit taxes" even though they may not exactly line up with each homeowner's preferences. The key to this claim is that membership in the association is limited by the existing members,

at least after the developer has handed over the keys (Reichman, 1976). Purchase of existing dwelling units by outsiders requires them to agree to the association bylaws, which means acceptance of current service levels. A buyer who does not like evergreen trees will still have to accept them as part of the landscape in Evergreen Acres and will have to pay for their upkeep unless he or she can persuade the association board to plant something else. The new buyer may begrudge the part of the dues that pay for the evergreens, but we would still call this payment a benefit tax. If additional dwelling units are built, associations can also expand their membership, usually by a process set in the original CC&Rs, and additional members may have to pay an upfront fee along with ongoing association dues. Thus, even if association costs have risen over time, new members can be induced to pay them.

How much are property taxes like homeowner fees? A key condition is that the unit of government that levies the property tax must be able to restrict access to public benefits financed by it. The way municipal membership restriction is normally done is by a set of regulations called zoning (Fischel, 2015). The use of the term “zoning” here includes police-power regulations (whose burdens are not compensable) such as subdivision and environmental regulations and, more broadly, local decisions about the location of public infrastructure such as roads, water mains, and sewers. Communities with zoning and its necessarily-related powers can limit the type of land use (for example, residential versus industrial), its intensity (three story versus ten story), its access to services (highway cuts and sewerage), and numerous aspects of a building’s configuration, such as placement on the lot and number of bathrooms. For larger projects, the community can also negotiate for side payments both in cash and in kind (providing land for a school, for example) to make it acceptable to the existing, enfranchised residents on whose behalf authorities act. A community that is faced with a development proposal that actually conforms to the current zoning but which is opposed by a significant number of community residents can usually alter its zoning so that the proposed project will be substantially modified if not actually excluded. Once a new development is built, however, zoning cannot be used to expel it against its owner’s will without compensation. A pre-existing use that no longer conforms to a changed (or new) zoning law is normally “grandfathered” so that it can remain, though it often is limited from expanding its size or activities.

How can we evaluate the distributional impacts — progressivity or regressivity — of a system of property taxation when zoning operates as described here? We begin by assuming that there are many different communities and that the property tax is their mainstay for revenue, as is normally assumed in the Tiebout (1956) model (Oates, 1969; Hamilton, 1975). The question of tax incidence seems to have no relevance in such a system. Access to a local public beach (on the ocean or a lake) is purchased in the same way as a backyard swimming pool. You have to buy or rent property in the town to get regular beach access; regulations ensure that the beach is not (in the eyes of local authorities) overused; and the property-tax payments from residents and businesses pay to maintain the beach. Even in states where beaches are not owned by municipalities, access to parking for the beach is usually limited by the municipal authorities. Saying

that the property-tax payments in that town are “regressive” or “progressive” is no more meaningful than saying that the cost of purchasing a house with a backyard swimming pool is regressive or progressive.

Some owners or renters may complain about the rising cost of maintaining the beach, but that is no different from a renter or owner who finds that the cost of the backyard pool no longer seems worth it. If the rising cost is due to increased demand for beaches or pools, both parties can solve their problem by moving to another community, or (if they are owners) they can console themselves by noting that when they do decide to move, potential buyers of their home will value the beach or pool and thus add to their wealth. If the rising cost of the beach is due not to increased demand but higher costs of maintenance, the owners will suffer capital losses. Again, that is no different from having a private pool for which the cost of maintenance has increased because of unexpected and adverse changes in, for example, legal liability rules.

A related variation on the benefit view asks whether commercial and industrial and other nonresidential (herein called just commercial) property can be included in the benefit view. The answer provided by Fischel (1975) is yes. Footloose firms shop for permission to locate in pre-established residential communities. Residents in suburban communities consider firms to have varying degrees of undesirable neighborhood effects, so the firms must offer side-payments to gain entry. The main form of compensation in suburban areas comes through the property tax system, since firms generally pay more in taxes than they receive in services. In rural or in central city areas, the job-producing benefits of firms may be an additional side payment.

Some firms may offer side payments (jobs or a lower tax-price) whose value greatly exceeds the disamenity effects, and competition among communities can often result in the winning community offering fiscal and perhaps regulatory concessions to persuade the firm to locate there. This possibility does not alter the fact that property taxes paid by firms in this model are benefit taxes. The “benefit” obtained is permission to locate in the community. The key to this condition is the same as for that in the residential model of the benefit-tax view: The set of communities must be able to withhold permission to locate and dictate the terms for location of firms. This condition is largely uncontested in the literature (Altshuler, Gómez-Ibáñez, and Howitt, 1993). Unlike the “open suburbs” movement, which has sought to constrain the ability of suburban municipalities to limit housing types, severe limitations on commercial development by municipal zoning have long been accepted (Kolnick, 2008). Indeed, much of the literature decries the difficulty of locating commercial development that has problematic spillovers, such as municipal waste facilities (Portney, 1991). Empirical findings that are consistent with Fischel’s model include Fox (1978), Erickson and Wasylenko (1980), McHone (1986), and Evenson and Wheaton (2003).

## **B. The Special Case of Public Education**

The benefit-tax aspect of property taxation has usually been couched in terms of local school spending. Nationally, almost two-thirds of property-tax payments are used to fund public education. About half of state and local spending on education is from property

taxes and, for almost all school districts, the property tax is the only source of general revenue that they can directly assess. The property tax has become such a symbol of localism in school districts that the U.S. Census presumptively assigns all property tax revenues to local school districts even in states where (as presently discussed) local fiscal control has been displaced by court decisions and subsequent legislation. Stocker and Maguire (2005, p. 89), in the *Encyclopedia of Taxation and Tax Policy*, state, “Although rarely referred to as ‘earmarking,’ clearly all revenue received by school districts is dedicated to education purposes.”

The American public may agree that such quotidian public services as sidewalks, parks, and fire protection, or nonessential services such as beaches can be thought of along the same dimensions as the price of housing and swimming pools, but many believe that access to public education should not depend on willingness to pay for it via the housing market (Coons, Clune, and Sugarman, 1970). This belief has been the basis for many successful school-finance suits, beginning in California in 1971 with *Serrano v. Priest*. Public education is asserted to be a state (rather than local or national) responsibility. The state’s delegation of education finance to local school districts is said to undermine the egalitarian function of public education. Local property taxes are suspect because rich enclaves can provide for higher quality schools at a lower rate of tax. Schooling is turned into a local public good (as in the beach example above) whose fiscal underpinnings — local property taxes — are said to be regressive as compared with a uniform statewide tax that would finance education equally in all districts.

Because this critique mixes several claims, it is worth examining them systematically. Consider a model of local governments in which households sort themselves into communities according to their demand for local schooling. Demand for local school spending is directly proportional to (permanent) household income. Housing is the only taxable property, and housing consumption is also a monotonic function of income. As a result, the high-income community gets better schools (to the extent that higher spending improves quality) than the low-income community. Depending on the income elasticity of demand for schooling and housing, property tax rates in the high-income school district could be lower or higher than in the low-income district. Economists in the Tiebout tradition would call this outcome efficient (Hamilton, 1975), but for critics of the property tax, this system results in a regressive combination of taxes and schools.

This outcome, however, is not the result of reliance on the property tax. Reliance on local income taxes, or on any tax base that is exclusive to each district, would give the same inequality (Stull and Stull, 1991). The charge of regressiveness is a charge against any system that has a local autonomous tax base that can be used to fund education or any other “merit good” that should be provided equally, without regard for location. The claim that the property tax is regressive because it is a mainstay of local school districts is no more than a case of guilt by association.

A frequent claim against the property tax is that it is especially inequitable because tax rates may be lower in high-wealth communities than in low-wealth communities. A community with a tax base of \$500,000 per pupil can set a lower rate of tax (say, 2 percent) and generate \$10,000 in spending per pupil, while a district with \$200,000 per pupil would require a rate of 5 percent to get the same amount of spending. The property

tax appears regressive in the sense that the low-wealth community pays a higher rate to get the same expenditure, and this higher rate discourages the poorer community from spending more. But this again is a consequence of income stratification among communities, not property taxation. If the high wealth community were to use an income tax, and housing expenditure were proportional to income, differences in local income taxes would be exactly the same as property taxes.

The benefit tax feature of the property tax is compromised by school-finance reforms that have come from the state courts (Hoxby, 2001). Consider an extreme (but not unique) case, California's school-finance formula, which was adopted in 1978 in response to the second *Serrano v. Priest* decision in 1976, and which still governs the allocation of school funds in the state. A district that had the capacity to generate additional property tax revenues to supplement its state funds would lose those funds on a dollar-for-dollar basis (Friedman and Wiseman, 1978). At the margin, then, the local property tax could not be raised to spend more on schools. As a result, the school property tax for almost all California districts of more than trivial size was converted into a true real-estate capital tax (Fischel, 1989). The property tax is "earmarked" for schools, but few districts can actually raise their own taxes in order to spend more on their own schools.

The California legislation was upset by Proposition 13 in 1978, but the much-reduced property tax rates and revenues are nonetheless still allocated to education according to the *Serrano*-required formula. Thus most of the property taxes that continue to be collected in California, which in 2000 constituted about a third of school spending, cannot be regarded as benefit taxes (Brunner and Sonstelie, 2006). The demise of the benefit tax side in California means that for about 12 percent of the nation's population (and real estate), the "capital tax" view obtains.

Court-engendered school finance reform has spread to other states. At least 45 states have had litigation, and many have had multiple decisions (Ryan and Saunders, 2004). Even when litigation has not been successful, many states have been induced to adopt an equalizing formula to settle or avoid litigation. The difficulty for the present task is that decisions and settlements vary considerably among the states, and reforms themselves are often transient. It is safe to say, however, that the benefit-view of the property tax surely applies less than it did four decades ago in public education (Connolly, Brunori, and Bell, 2010). Rueben and Murray (2008) demonstrate that the amount of variation in school expenditures among districts is now largely accounted for by differences in average state expenditures (e.g., Connecticut versus Alabama) rather than differences among school districts of the same state. (They also demonstrate that racial disparities in spending within states have almost entirely disappeared.) Local-government capitalization studies still consistently find that improved school quality raises local home values, but this is probably accounted for by peer effects and test results rather than local spending variations (Brunner, 2014). The connection between local property-tax financing and spending has been disrupted, if not broken, by the school finance litigation movement and related legislation.

## V. THE INCIDENCE OF LOCAL PROPERTY TAXES: TOWARD A SYNTHESIS?

There thus exist two quite different visions of how local property taxation works with sharply contrasting implications for the incidence of the tax. What is especially troubling is that both views clearly possess elements of truth. There is plenty of evidence, for example, that supports the vision of households that “shop” among jurisdictions, seeking (among other things) higher quality schools and improved public safety, in a setting where local zoning regulations provide extensive controls over the characteristics of the jurisdiction. The extent to which zoning practices approach the view of zoning embodied in the benefit view of local property taxation is open to debate. Virtually all land in urban areas is subject to zoning (the almost-unique exception is Houston, Texas), as is most small-town land. There is, however, considerable geographical variation in how restrictive zoning is (Gyourko, Summers, and Saiz, 2008), and we take advantage of that presently.

At the same time, the capital-tax view provides important insights into how the tax affects household behavior. To take a very homely example, it is easy to envision an owner who decides not to undertake a desired extension of his or her house because of the increased property taxes that will accompany the higher assessed value of the property. In this way, the tax reduces the demand for housing and the capital-intensity of local land use.

Where does this leave us? We appear to have what some see as two irreconcilable perspectives on local property taxation. Perhaps, however, we can push a bit farther than this. In particular, the relevant view of local property taxation may vary systematically with respect to local conditions — in particular, with respect to the elasticity of the supply of local housing. In an intriguing and illuminating empirical study, Lutz (2015) has explored the local response to a positive fiscal shock in the state of New Hampshire. As a result of a major reform of school finance that resulted in large and widely varying state grants to fund reductions in local property taxes, Lutz found that the local response to the tax reductions was quite different in those New Hampshire communities encompassed by the Boston urban area and those outside the urban periphery. In the former, that is, within the suburban ring, Lutz found a price response: tax differentials were largely capitalized into the values of the existing housing stock. In contrast, in more rural areas, the response was in quantity terms: an increase in housing investment. Moreover, Lutz found this same pattern of response in a national sample. Tax differentials appear to generate price responses in dense, built-up urban areas where the housing supply is less elastic and quantity responses in more rural areas with a more elastic supply of housing. In addition to these results, Lutz found for his New Hampshire sample that increased development was associated with an expansion of land-use regulation, a finding that suggests that the extent of local zoning ordinances may be an endogenous variable that is responsive to the level of local development.

These findings have some intriguing implications for our analysis. They suggest that the benefit view of local property taxation may be more applicable to largely built-up

urban areas, while the capital-tax view may provide a better description of the workings of the tax outside the urban sector. As a first approach, we might take the benefit view as a working model for thinking about property tax incidence for jurisdictions within urbanized areas in the United States. In contrast, the capital-tax view seems more applicable to jurisdictions outside the suburban ring, where there is more potential for the movement of capital in the form of new housing investment.

The “Urbanized Area” (UA) is an official U.S. Census term. Because Metropolitan Statistical Areas (MSAs) encompass entire counties (except in New England, where town boundaries are used), most of the land area of MSAs tends to be rural. The UA counts only that land area within an MSA that is developed at urban or suburban densities. The minimum density for a UA is about 1,000 persons per square mile, or, at the usual suburban configuration of two-thirds of developed land devoted to housing and 2.5 persons per household, about one housing unit per acre. It is not especially high density; the closer-in suburbs typically have three times this density. Land in the UA must also be contiguous to all other UA land and the central city of the MSA, so not all built-up land within an MSA is counted in the UA. In the 2000 census, the fraction of the U.S. population living in all UAs (50,000 or more) was 70 percent, and another 10 percent lived in “urban clusters” of 5,000 people or more within “Micropolitan Areas” of at least 10,000 in population.

This brings us to our inductive strategy. The 23 “full capitalization” communities that Lutz located were all located on the northern fringes (in New Hampshire) of the Boston UA. Indeed, the overlay of the 2000 UAs (whose boundaries were based on GIS data rather than political boundaries) in southeastern New Hampshire is nearly congruent with the political boundaries of the full-capitalization towns. It seems reasonable to infer that other UAs would also meet the conditions that would make local communities more likely (and able) to regulate growth. If the Lutz results may be projected to the rest of the nation, this indicates that the vast majority (70 to 80 percent) of the U.S. population would be candidates for the benefit view of property taxes.

This baseline view is supported by other studies that indicate that the Tiebout model seems to be less applicable in rural than in urban areas (Gramlich and Rubinfeld, 1982). As Lutz also indicates, an evolutionary story about zoning is at work here. Rural areas often start with no land use regulations. Rural governments are usually attentive to owners of developable land, often long-resident farmers (Hahn, 1970; Pendall, Wolanski, and McGovern, 2002). Even after farmers become a minority of the population, local political culture persists, and zoning regulations generally accommodate most low-density growth (Rudel, 1989). More stringent regulations are often adopted after development pressures galvanize local sentiment to resist later development with a moratorium on growth or permanent large-lot (3 acres or more) zoning (von Hoffman, 2006; Schmidt, 2008). By this account, even the currently permissive rural communities, where a change in the local return on housing capital can affect the rate of development (as Lutz showed), will eventually adopt supply restrictions and development conditions that move the property tax toward the benefit-tax category. Developers in these fringe communities must now meet specified conditions that assure that new housing will not

be a fiscal burden on existing residents. Property tax revenues in this situation will tend to be matched to benefits received.

It is important to understand that Lutz's paper is not simply another capitalization-of-the-property-tax study. As we have discussed and as Zodrow (2001) and others have pointed out, the capitalization of property tax differences can be consistent with both the benefit view and a modified version of the capital-tax view. What makes Lutz's study unusual is his inference that capitalization occurs as a result of different zoning policies. The property tax reduction that communities got as a result of New Hampshire school finance reform was entirely gratis and unanticipated. (One of the authors, Fischel, was a consultant for the state on the case; the state prevailed at trial.) The fact that some communities responded differently because of zoning and related land-use policies distinguishes Lutz's interpretation of the capital tax from any that we are aware of. Indeed, Mieszkowski and Zodrow (1989) have stated that under "perfect zoning" — meaning a binding constraint on structural decisions — and other Tiebout-model conditions, the benefit view is supported.

We must point out that Lutz only infers that zoning is what makes the difference between the communities that capitalized the tax reduction and those that experienced a rapid expansion of the housing stock. He did not conduct the test that Zodrow (2001 p. 147) sets of "a detailed property-by-property study to determine the extent to which the combination of various zoning requirements in a jurisdiction, including variances and re-zonings in response to homeowner requests, results in binding constraints on its housing stock." We are not prepared to undertake such a study, whose detail would surpass that of any previous study of other legal institutions. (Chapter 4 of Fischel (2015) discusses the Standard State Zoning Enabling Act, which authorizes — but does not require — communities to adopt such constraints.) We would point instead to the many studies that find that changes in zoning laws are capitalized into property values (Fischel, 1990). We would also add that the communities on the fringe of the Boston UA are not in any realistic sense "filled up," so that it is not natural restrictions (e.g., topographical limitations) rather than zoning that form the constraint that Lutz detected. One housing unit per acre is low density, and plenty of builders would be eager to undertake infill development in such communities. Their inability to do so is more likely caused by local laws than by market based or physical constraints.

Such a "dual" approach to the analysis of property-tax incidence (as suggested by the Lutz study) has real appeal in that it provides a way to reconcile the benefit and capital-tax views. At the same time, however, it would seem to complicate the actual procedures for estimating the incidence of the tax. It suggests that, in the urban portion of the nation, local property taxes are basically a kind of user fee where households pay for services received. In contrast, outside urban areas, the tax functions more like a traditional tax that results in tax-avoidance behavior with a consequent shifting of the tax onto owners of capital. We thus face the challenge of developing a framework in which to pull together these two disparate perspectives so as to generate some actual estimates of the incidence of the tax.

We might have a further reservation in that the suggested composite view (as we have presented it) relies so heavily on a single empirical study, although there are studies that point to the growing importance of land-use regulation on urban housing markets (Glaeser and Ward, 2009). However, it is worth noting that our composite view summarizes to a significant extent what really has been the prevailing view of the tax for a long time. The Tiebout model and the associated benefit view have long been taken by scholars in local public finance to provide a description of the workings of the local public sector in metropolitan areas, where individuals may work in the center city but have a wide choice of suburban municipalities in which to reside. As one of us stated long ago, “The mobility model may thus provide a reasonable approximation to behavior within metropolitan areas ... However, the case for the mobility model is much weaker in a regional context” (Oates, 1977, p. 9).

We would also make a distinction between initial construction decisions, which within urban areas are usually subject to local zoning scrutiny, and decisions to expand and upgrade existing housing. Even in communities where construction of housing has been subject to close zoning regulation, many subsequent investment decisions escape public review. In such instances, building owners may make decisions about depreciation and maintenance that are potentially affected by local taxes. An owner who allows his or her building to fall into disrepair is usually not told to fix the porch or paint the garage by local authorities except in the extreme case in which it runs afoul of nuisance or habitability laws. In contrast, a homeowner may sometimes be able to add a bedroom or another story to the house and still be within the local zoning “envelope” and thus not trigger any public review. Both of these decisions may be affected by the prospect of higher or lower property taxes, and as such they can be the source of localized deadweight loss in the spirit of the capital-tax view. There may be other constraints that make building owners attentive to the external effects of such decisions, such as private covenants, community associations, and neighborhood social sanctions. It should be clear, however, that few zoning ordinances would permit major changes in use (e.g., residential to commercial) or dimension (two-story to five-story) without often-intrusive public review.

A sense of the importance of unzoned decisions may be inferred from studies of housing maintenance and depreciation. A careful study by Harding, Rosenthal, and Sirmans (2007) found that annual net depreciation rates were on the order of 2 percent of the value of housing capital (that is, not including land). Within a given year, then, opportunities for homeowners to “shirk” from maintenance and improvement investments because of property tax issues seems relatively small. But over a period of years, of course, such impacts may accumulate. In communities with a mature housing stock, such as central cities and older suburbs, the capital-tax view would seem to be more relevant. But even here, large-scale replacement of buildings that have depreciated is usually subject to local land-use laws and discretionary review.

A further issue relates to commercial and industrial property (called here just “commercial” property). As was reviewed in the previous section on the benefit view, the mobility of commercial property is similar to that of residential property. Because residents usually have little direct interest in such property, commercial develop-

ers have to persuade local governments that the disamenity costs of commercial development are outweighed by their fiscal benefits (and in some cases employment and convenience benefits). The net tax revenue (net of extra local expenditures caused by the business) is regarded as a side-payment for permission to locate in the community.

Support for this view comes largely from studies of suburban location decisions (Fox, 1981; Newman and Sullivan, 1988). New commercial development in rural areas is, like housing development in those areas, often lightly regulated. As such, decisions by developers of commercial property are more likely to be affected by local property taxes; this suggests the relevance of the capital-tax model. It should be noted, however, that in rural areas the scale of development might affect which model to use. Small commercial developments — a local store or small machine shop — are often proposed, owned, and operated by local residents as adjuncts to their residential property, much like a family farm. They may escape much public review for that reason and because spillover effects are mitigated by the greater distance between neighbors. In this case, decisions to undertake them are more likely to incorporate the deterrent effects of property-tax liability. However, larger scale commercial developments — a Walmart or an automobile plant — are almost surely limited at the margin by land-use regulations in which the local authorities (or state authorities acting on their behalf) pay some attention to the additional local services that the development requires. Here again the benefit view appears relevant.

Our discussion in this section thus suggests a broader perspective on the incidence of local property taxation that encompasses elements of both the benefit and capital-tax views. The remaining and challenging task is to take this perspective as a point of departure for developing a set of procedures (an algorithm) for the actual estimation of the incidence of the tax. The fairly broad applicability of the benefit view suggests to us that local property taxes can be seen, to a significant extent, simply as discretionary payments for local public services. At the same time, there are clearly circumstances where the tax discourages housing and industrial investment with some shifting of the tax burden onto owners of capital.

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## DISCLOSURES

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