

# Impact Fees and Housing Affordability

Vicki Been  
New York University, School of Law

## Abstract

*Approximately 60 percent of U.S. cities with more than 25,000 residents now impose impact fees to fund infrastructure needed to service new housing and other development (GAO, 2000). In 89 jurisdictions selected for study in California, the state in which impact fees are most heavily used, the average amount of fees imposed on single-family homes in new subdivisions in 1999 was \$19,552, with fees ranging from a low of \$6,783 to a high of \$47,742 (Landis et al., 2001). Although California jurisdictions impose fees higher—perhaps much higher—than those in other jurisdictions, impact fees are an increasingly important cost of development, especially in the fastest growing areas of the United States.*

*The increasing use of impact fees and the costs that they may add to the development process raises serious concerns about the effect using impact fees to fund infrastructure will have on the affordability of housing. This article explores this controversy. Part I reviews how impact fees work and the role they currently play in the provision of infrastructure and regulation of land use, and explores why impact fees have gained such prominence in recent years. Part I also surveys the empirical evidence about how and where these fees are being used, what the fees are used to finance, and the amount of the fees. Part II reviews the justifications for using impact fees to finance the provision of infrastructure and explores the dangers impact fees pose. Part IIIA examines the effect impact fees have on the price of housing, beginning with economic theory about who will bear the incidence of impact fees under different market conditions. Part IIIB then surveys the empirical literature that seeks to test these economic theories by quantifying how impact fees affect the price of housing, the price of land, and the supply of land and housing. Part IIIC concludes by suggesting further research required to identify more clearly the effect impact fees have on the market for housing.*

*Part IV turns to the effect impact fees may have on the affordability of housing for moderate-income households. This part also addresses the effect impact fees may have on the availability of housing to racial and ethnic minorities. Minorities disproportionately fall in the low- and moderate-income groups for whom housing affordability is especially critical, and traditionally have had their housing opportunities limited by racial discrimination in the housing, lending, and other related markets. Part IV suggests the additional research necessary to understand those issues. The article concludes by calling for research aimed at enabling policymakers to adopt sophisticated and careful impact fee programs that will improve the efficiency of land development without sacrificing housing affordability or opportunity.*

## I. Overview of Land Use Exactions and Impact Fees

### A. Nature of Exactions and Impact Fees

Land use “exactions” require that developers provide or pay for some public facility or other amenity as a condition for receiving permission for a land use that the local government could otherwise prohibit. Until the 1920s, local governments generally financed the extension of water, sewer, and other utilities to new development with either general revenues from property and other taxes, with indebtedness repaid with general revenues, or through a centuries-old practice of levying “special assessments” on real property to pay for public improvements, such as paved streets, that provide a direct and special benefit to the property (Been, 1991; see also Altshuler and Gómez-Ibáñez, 1993; Freilich and Bushek, 1995). Where infrastructure was financed through debt repaid by revenues from property (or other local) taxes, newcomers contributed to the financing of infrastructure that they used through payments on the indebtedness. Existing residents helped pay for infrastructure for newcomers, but that burden was offset, at least roughly, by the fact that existing residents used infrastructure financed in part by even earlier residents (Brueckner, 1997).

In the 1920s and 1930s, widespread bankruptcies and subsequent delinquencies on property tax or special assessment payments left many local governments unable to recoup the costs of public improvements. Communities then sought ways to shift the initial costs of improvements (and the risk of failure to recoup those costs) to the developer. The Standard State Zoning Enabling Act, published by the U.S. Department of Commerce in 1926 and quickly adopted by many states, authorized local governments to require developers to construct streets, water mains, and sewer lines (Weinstein, 1997). Many local communities did so by requiring onsite dedications, whereby the developer dedicated land in the subdivision on which the community could construct streets, sidewalks, utilities, and other such facilities. Alternatively, the local government required the developer to construct and dedicate these facilities to the community. Communities initially required dedications only for such basic facilities as streets and sidewalks, but they eventually demanded that developers dedicate land in the subdivisions for schools, fire and police stations, and parks or open space.

Because land or facilities in a subdivision were not always ideally suited to meet a particular need, local governments began to impose offsite dedications that required developers to dedicate land or facilities not located in the subdivision. Local governments also began to charge fees in lieu of dedication, giving developers the option of either dedicating land or facilities or contributing money to the community that it could then use to purchase land or construct public improvements.

Dedications and fees in lieu of dedication typically could be applied only to subdivisions, so many local governments began to implement broader impact fees that assess developers for the costs that developments will impose on the government’s capital budget for public services. Impact fees can be levied on apartment buildings or other residential dwellings that are not located in a subdivision as well as on office, commercial, and industrial developments.

Linkages are a hybrid of impact fees and offsite dedications. Linkage programs condition the approval of certain central city developments (usually commercial or office space) on the developer’s provision of facilities or services for which the development will either create a need or displace. These programs have been adopted in a variety of cities for such needs as affordable housing, mass transit facilities, and daycare services. Set-asides or inclusionary zoning programs are similar in concept to linkages but address specifically

the need for low- and moderate-income housing. They require a developer to either make a certain percentage of the units in a development available at prices affordable to residents with low and moderate incomes or pay in lieu of contributions to an affordable housing fund.

Some confusion exists with the terminology of exactions and impact fees. Although *exactions* is the umbrella term for all the various types of dedications, fees, and linkage programs, some people use the term to describe only the first generation devices: onsite and offsite dedications and fees in lieu of dedications. Impact fees were a second generation form of exaction. For clarity, this article uses the term *exactions* to include all the tools local governments have used to shift the burden of providing infrastructure to developers and uses more specific terms to distinguish between traditional dedications and later generation tools such as impact fees or linkage programs (Abbott et al., 2001; Altshuler and Gómez-Ibáñez, 1993; Blaesser and Kentopp, 1990).

## B. How and Where Impact Fees Are Being Used

The first national study of the use of impact fees was conducted in late 1984 and early 1985.<sup>1</sup> Gus Bauman and William Ethier (1987) surveyed 1,000 communities and found that almost 45 percent of the 220 respondents used impact fees. A more comprehensive national survey of a random sample of cities and counties, stratified by community population, conducted later in 1985 found that 58 percent of the cities and counties responding imposed some form of impact fee (Purdum and Frank, 1987). The Wharton Urban Decentralization Project survey of 900 communities across the United States in 1989 found that 37 percent of the jurisdictions levied impact fees (Gyourko, 1991). Another 1989 survey of city, county, and special district governments belonging to the Government Finance Officers Association found that 50 percent of the respondents imposed impact fees, and another 26 percent were considering adopting an impact fee program (Leithe, 1990).<sup>2</sup>

Over the past decade, the number of jurisdictions using impact fees probably grew, although differences in survey techniques and definitions of impact fees make historical comparisons difficult. A survey of cities with populations of 25,000 or more conducted by the General Accounting Office (GAO) in 2000 found that 59 percent of the cities responding used impact fees, as did 39 percent of the counties responding (GAO, 2000). But a survey of cities and counties with populations of more than 2,500 conducted in 2002 found that only 25 percent of the municipalities responding, and only 7 percent of the counties responding, were using impact fees (Lawhon, 2003). The lower rate of usage found by the two surveys is probably explained by the Lawhon survey's inclusion of very small jurisdictions in its sample.

Not only are more communities probably using impact fees, but local governments also are using fees for a much wider range of infrastructure. In 1985, fees were most commonly used for sewer and water lines, roads, and parks, with less than 5 percent of communities using fees for such things as solid waste facilities, police and fire stations, or low- and moderate-income housing (Purdum and Frank, 1987). By contrast, in Florida in 1991, 33 percent of the jurisdictions levying impact fees did so for water and sewer, 20 percent for parks and recreation facilities, 16 percent levied transportation fees, 11 percent levied fire and emergency medical service fees, and 7 percent levied fees for police and correctional services (Florida Advisory Council, 1991). A recent extensive analysis of 89 jurisdictions selected for case study in California showed that 99 percent imposed fees for school construction, 97 percent for sewer connections, 91 percent for water connections, 87 percent for parks, 80 percent for local traffic mitigation, 60 percent for storm drainage, 55 percent for fire service, and between 10 and 30 percent for impacts on watersheds or aquifers, regional traffic, police service, open space, and affordable housing (Landis et al., 2001).<sup>3</sup>

Not enough is known about the types of local governments that are adopting fees or the circumstances that motivate them to do so. Bauman and Ethier's paper (1987) revealed substantial differences between the various regions of the country: no New England communities used fees in 1984 and 1985, but 45 percent of communities in the western states and 82 percent of California communities used fees. Purdum and Frank (1987) confirmed the regional nature of fee usage, finding that in 1985, California, Florida, Virginia, Arizona, Nevada, Washington, Maryland, and Colorado were the heaviest users of impact fees.<sup>4</sup> Leithe's survey (1990) found jurisdictions in 36 different states using impact fees in 1989, with the most frequent use in California, Florida, Oregon, Texas, Pennsylvania, Colorado, Illinois, and Washington.<sup>5</sup> Lawhon's 2002 survey found that municipalities along the Pacific coast, in the mountain states and along the south Atlantic coast were the heaviest users.

Not surprisingly, communities undergoing the most growth, particularly those on the urban fringe, appear to be most likely to adopt fees.<sup>6</sup> Purdum and Frank's (1987) analysis of the proportion of communities using impact fees found that low-growth-rate communities use fees more than moderate-growth communities, but that high-growth communities are the biggest users.<sup>7</sup> Larger cities are more likely to adopt fees than smaller jurisdictions. Lawhon found that 37 percent of local governments with populations of more than 50,000 used fees, but only 22 percent of the jurisdictions with less than 10,000 residents did so (Lawhon, 2002).

The 1989 Wharton study of 900 communities found that among the jurisdictions that imposed fees, the mean fee for a 2,000-square-foot single-family home was \$2,902 (Gyourko, 1991).<sup>8</sup> A 2005 analysis of the fees charged by 245 selected jurisdictions across the country found that the average total of impact fees imposed upon a 2000 square-foot single-family house was \$7,669, although the average for the 206 jurisdictions outside California was \$5,361 (Mullen, 2005). The 2005 analysis must be used with caution, however, because the jurisdictions surveyed were not randomly sampled.

Several extensive studies document the amounts local governments in a particular state or region charge. In California, a research team from the University of California at Berkeley's Institute of Urban and Regional Development analyzed the impact fees imposed by 89 jurisdictions the research team selected for analysis because of their location, rate, and type of construction activity, and diversity of housing types (Landis et al., 2001). For single-family homes in a 25-unit subdivision, the average per unit cost of all impact fees levied was \$19,552, and ranged from a low of \$6,783 to a high of \$47,742. For a single-family house in infill areas, the average per unit fee was \$16,547, with a range between \$5,600 and \$48,478. For a 45-unit apartment project, the average per unit cost of all impact fees was \$13,268, and ranged from a low of \$2,840 to a high of \$41,328.<sup>9</sup> Some of the variation was attributable to regional differences, but huge variations also existed within regions (Landis et al., 2001).

In Florida, by contrast, the median of the total impact fees charged for a three-bedroom, two-bath, 1,500-square-foot single-family home was \$419 in 1991, with a range between \$6 and \$3,483 (Florida Advisory Council, 1991). Similarly, in Texas, a survey conducted in the early 1990s showed that the average impact fee charged was about \$1,000 for a single-family house (Clarke and Evans, 1999; Gilliland et al., 1992). In the Chicago metropolitan area, Baden and Coursey examined the impact fee practices of eight suburbs, and found that total fees assessed on a four-bedroom, single-family home on a quarter-acre lot ranged from \$2,224 to \$8,942 in 1997 dollars, with school and park fees accounting for the greatest share of the total fee (Baden and Coursey, 1999).

## II. The Promise and Perils of Impact Fees

### A. The Promise

The main reason municipalities impose impact fees on development is, of course, to shift to the developer, the owner of the land converted to development, or the consumers of the housing or other land use the costs of the public infrastructure that the development requires. The motive for that shift may be entirely self-regarding—the desire of existing residents to avoid paying for newcomers’ infrastructure—but the shift, nevertheless, may serve to promote greater efficiency. By forcing the developer and its customers to assume or share in the costs of infrastructure, impact fees may induce more efficient use of the infrastructure. Further, by requiring the developer and its customers to pay to mitigate the negative effects a development may have on a neighborhood, such as increased traffic congestion, noise, and environmental degradation, impact fees again may encourage efficiency by making the developer and its customers internalize the full costs of the harms that the development causes.

Impact fees also may serve to increase housing supply by enabling growth. In areas that are growing so rapidly that the government cannot provide public facilities fast enough, exactions enable growth that might otherwise be stalled by growth control measures. Moreover, impact fees may serve to reduce uncertainty about the risks of future growth, thereby enabling more growth by decreasing existing residents’ incentives to use growth control or management devices to avoid those risks. Each of these functions is explored in more detail below.

**Marginal cost versus average cost pricing.** Where public services are subject to congestion—that is, where the last units of service are more expensive to provide than the first—the cost of providing services to new residents may be higher than the cost of providing such services to existing residents. Unless new residents are asked to pay the higher marginal cost of the services they require, rather than the average cost of providing services to the entire community, they will not bear the full cost of their decision to move to the community (Snyder and Stegman, 1986).<sup>10</sup> Property taxes, which are based on the value of property, are unlikely to be closely correlated with the marginal costs the property would impose on infrastructure (Downing and McCaleb, 1987; Downing, 1973).<sup>11</sup> Impact fees can be designed, however, to more nearly approach marginal cost pricing (Blewett and Nelson, 1988).<sup>12</sup> Accordingly, Brueckner found that an impact fee scheme is more likely than a property-tax scheme to result in cities of optimal size (Brueckner, 2001, 1997, 1990; Speir and Stephenson, 2002).<sup>13</sup>

Even where the service is not subject to congestion, marginal cost pricing may induce greater efficiency because some types of uses (for example, projects located further from the central plant or projects built at a lower density than the community average) will cost more to service than the average use (Burchell and Listokin, 1995); Downing and McCaleb, 1987; Frank, 1989; Kasowski, 1993; Nelson and Duncan, 1988; Burchell et al., 1998).<sup>14</sup> Charging those uses more costly to service for the marginal cost the development imposes on the community will force those uses to take into account the costs of the leapfrog or lower-density character of the development (Holcombe, 2001; Netzer, 1988; Slack and Bird, 1991). Further, charging users for the marginal cost of providing services to a development will encourage developers to build in areas already serviced by underused infrastructure, such as infill areas, rather than on undeveloped agricultural “greenfield” land (Brueckner, 2001).

To encourage efficiency, however, impact fees must be structured as prices, meaning that they must fully reflect the costs of servicing the development and, accordingly, must be tailored to the particular characteristics of a development (its distance from existing streets or roads, for example, or whether its geography makes it difficult to serve with water and sewer mains) that affect the cost of service (Downing and McCaleb, 1987). If the fee is not structured this way, it may not approximate marginal cost any better than alternative forms of financing and therefore may not encourage more efficient development (Baden and Coursey, 1999; Gómez-Ibáñez, 1996). Sophisticated models for accurately pricing impact fees certainly exist (see, for example, Burchell et al., 1994), and consulting firms are available to provide expertise to local governments in setting fees. Not enough is known, however, about how local governments actually establish their fees to determine whether the use of those models or consulting expertise is widespread. Some empirical studies of impact fees have begun to explore whether fees vary in ways that would suggest marginal cost pricing, and these studies have found some evidence that fees are being tailored to maximize their impact on efficiency. The Landis et al. study (2001) in California, for example, found that subdivision homes are typically charged higher impact fees (and a larger number of fees) than are infill homes and apartment units. Similarly, single-family homes are charged higher school fees than apartment units. Further, a jurisdiction's density was negatively related to the amount of fees charged for sewer and water facilities, as one would expect.

The Government Finance Officers Association 1989 survey of jurisdictions that the researchers believed to have impact fee programs revealed that fees varied based on the type of development, the number of bedrooms or square footage in the project's units, the density of the project, and the services already available in the area in which the development was proposed (Leithe and Motavon, 1990). A 1989 survey of municipalities in British Columbia also showed that charges were differentiated by both the type of development proposed and the area of the municipality in which the project would be located (Slack, 1990).<sup>15</sup> Much more research needs to be performed to determine if local governments are using appropriate techniques to accurately price the marginal costs of new development and to develop easier to use models to help local government improve their pricing practices (Speir and Stephenson, 2002).

**Cost-internalization of harms.** For the market for housing (or other forms of development) to be efficient—to maximize overall social utility—standard economic theory holds that the price of housing must include all the benefits and costs that the development brings to or imposes on society. Many critics of the current land use regulatory system assert that it allows development projects to externalize some (or even many) of the costs of the development: taxpayers, neighbors, and future generations are said to bear part of the cleanup or mitigation of the environmental damage the development creates, for example. To the extent that development imposes harms on a community (in economic terms, to the extent the true social cost of development is greater than its private internalized costs), impact fees can serve as “prices” that the developer pays to the community for those harms or social costs (Fischel, 2001, 1995, 1985).

Several kinds of externalities can be internalized through impact fees. Most obviously, when a development causes harms such as water pollution that will be born in whole or in part by those outside the development, the problem is not one of marginal versus average cost pricing, but simply a matter of ensuring that the developer and its homebuyers bear the full costs of the decision to develop in a particular way. Similarly, when a development reduces the commons available to others, such as open space, clean air, or natural habitat, the developer will tend to provide too much of the housing or other product if the developer and its homebuyers are not asked to internalize the full costs of the development's use of the commons (Brueckner, 2001).

**Enabling growth.** Impact fees may enable growth where infrastructure constraints would otherwise make it impossible. When, for example, a development moratorium is in place until a jurisdiction can catch up with infrastructure demands or a jurisdiction has adopted either a staged growth plan or an adequate public facilities ordinance, impact fees may provide the capital necessary to hasten the local government’s provision of infrastructure necessary for development. Although there appear to be no empirical studies evaluating how often impact fees function to enable the provision of infrastructure necessary to allow development to proceed, anecdotal evidence suggests that fees have enabled growth in a variety of jurisdictions.

Similarly, if designed to approximate marginal cost pricing, impact fees may reassure existing homeowners that their property taxes will not increase (or the quality of the services they receive decline) as a result of growth. Gatzlaff and Smith (1993) showed that in an “information efficient” housing market—one in which prices accurately reflect the attributes and risk of various housing options—uncertainties about the effects of future growth will be capitalized into the price of housing. In such a market, if residents cannot accurately predict how much growth the community will have, what form it will take, where it will be located, or what impact it will have on surrounding neighborhoods, the resulting uncertainty about future tax levels and service quality will force housing prices down relative to housing prices in a jurisdiction that offers less uncertainty (all other things being equal). Residents, therefore, will try to minimize such uncertainty (and the resulting decrease in housing values) by controlling growth (Gyourko, 1991; Turnbull, 2003).

Impact fees, however, offer a more efficient alternative to reducing the risks of growth to the extent that they are properly designed to serve as marginal cost pricing (Blewett and Nelson, 1988). If they ensure that growth pays the marginal social costs it imposes, impact fees will force any growth that occurs to be efficient and thus limit the risk that existing residents will have to subsidize growth. All other things being equal, then, a jurisdiction using impact fees as a form of marginal cost pricing will present a lower risk of future increases in taxes or decreases in service quality, and accordingly enjoy higher property values than a jurisdiction in which the effects of growth are more uncertain. The reduced uncertainty that impact fees can provide existing homeowners, therefore, may enable growth in areas that would otherwise resort to growth control or growth management to minimize the risks posed by new growth.

The “growth enabling” potential of impact fees undoubtedly will be limited by residents’ distrust of the government’s ability and willingness to set impact fees at the marginal cost of development and to use impact fees to force internalization of the full range of costs new development may cause. Indeed, some opponents of sprawl recently cautioned that proponents of smart growth should not support the use of impact fees because such fees may “accommodat[e] development” without mitigating the actual impacts of the development (Rosenberg, 2003: 642). Nevertheless, impact fees may be of some help in enabling growth, at least at the margins. Where, for example, one community imposes no impact fees, and another imposes fees designed, even if imperfectly, to approximate marginal cost pricing, the use of impact fees may dissuade residents of the impact fee community from adopting growth controls as stringent as those of the no-fee community.

## **B. The Perils**

Along with the potential advantages of impact fees in ensuring efficient growth and in allowing efficient growth when communities might otherwise seek to prevent all growth, impact fees pose several real dangers (in addition to the effect on affordability that is the subject of this review).

**Driving up the price of housing to exclude low-income or minority consumers.** Jurisdictions may try to use “fiscal zoning” tools, including impact fees, to prevent newcomers (especially those with lower incomes) from purchasing sites with values below the community average. By forcing newcomers instead to buy high-value sites, jurisdictions ensure that newcomers will not take advantage of the jurisdiction’s services at less cost than existing residents must pay (Ellickson, 1977; Inman and Rubinfeld, 1979; Windsor, 1979). In addition, or instead, jurisdictions may use impact fees in an attempt to exclude people who do not share the same race, class, or other characteristics as the community’s existing (and preferred) demographic profile (Bullard et al., 1994; Massey and Denton, 1993; Yinger, 1995; Ford, 1994; Frug, 1996).

The evidence that growth control or growth management<sup>16</sup> tools in general are used for exclusionary purposes is mixed.<sup>17</sup> Considerable anecdotal support exists for the proposition that traditional growth control devices, such as large-lot zoning, often were and are adopted for the purpose of excluding the poor and racial minorities from exclusive suburban communities.<sup>18</sup> Evidence that growth management tools, such as urban growth boundaries, are adopted for exclusionary reasons, however, is sparse and mixed (Baldassare and Wilson, 1996; Nelson et al., 2002; Pendall 2000).

Evidence regarding whether impact fees in particular are used for exclusionary purposes is conflicting and thin. The Wharton 1989 survey found that jurisdictions did not consider impact fees to be the most effective devices to control growth (Gyourko, 1991), and anecdotal evidence suggests that jurisdictions that want to exclude or manage growth choose instead growth control techniques, such as growth caps or large-lot zoning, or growth management techniques, such as growth boundaries, that they believe will be more effective. The Government Finance Officers Association survey of jurisdictions believed to be using impact fees, for example, showed that outside Florida, which had a statewide growth management program in addition to local governments’ impact fee programs, nearly 40 percent of jurisdictions in other states that were using impact fees also had some other form of growth control or growth management program in place (Leithe, 1990). On the other hand, the Wharton study found that the amount of the fees a jurisdiction imposed was positively correlated with the jurisdiction’s beliefs about how effective fees were in excluding growth—the fees increased as the jurisdiction’s belief that the fees were effective in excluding growth increased. The amount of fees charged was negatively correlated, however, with the jurisdiction’s ratings of how effective *other* growth control devices were at excluding growth—fees increased as the jurisdiction’s ratings of how effective other growth control devices were decreased, and fees decreased as the jurisdiction’s ratings of the effectiveness of other growth control devices increased (Gyourko, 1991).

Additional evidence that impact fees may be used for exclusionary purposes lies in what little we know about the characteristics of jurisdictions imposing impact fees. As noted above, the last comprehensive nationwide survey of jurisdictions took place in the 1980s and provided limited data about the characteristics of jurisdictions that choose to impose fees (or choose to impose higher fees than the average jurisdiction). One of the studies indicated that low-growth-rate communities used fees more than moderate-growth communities, but that the predominant users were high-growth communities (Purdum and Frank, 1987). This result might suggest that the low-growth communities may have imposed fees to maintain their exclusive status. But there may be other explanations for the finding; because no multivariate analysis of the characteristics of the communities using fees was performed, it is difficult to interpret the result.<sup>19</sup>

More recently, Clarke and Evans (1999) surveyed 350 cities (a stratified sample based on population) regarding their use of impact fees and their capital spending. Based on the data acquired from the 23 percent of the cities that responded to the survey, Clarke and



Evans regressed the per capita capital spending of each city in 1995 against a dummy variable for whether the city imposed impact fees, and against various population and demographic characteristics of the cities. The authors found that the impact fee variable was negatively correlated with capital spending: cities that used impact fees spent \$175 less per capita in 1995 than cities that did not use impact fees, everything else (captured by the model) being equal. Clarke and Evans speculated that the negative correlation between the use of impact fees and capital spending per capita may have resulted from cities using impact fees as a no-growth policy. Perhaps, however, the jurisdictions using impact fees needed to spend less because their use of impact fees enabled them to adopt a more efficient capital facilities planning process or had resulted in savings in the construction or operation of facilities.

Further, impact fees appear to be most widely used in those areas of the country where suburbs are integrating most rapidly (Frey, 2001). That may mean either that fees are not being used for exclusionary purposes, or that some jurisdictions in the integrating regions are adopting fees to resist the changing demographics of the region. Again, so little is known about the characteristics of the jurisdictions using the fees that determining whether impact fees are tools for exclusion or are instead enabling growth in the areas that are relatively hospitable to the increasing suburbanization of racial and ethnic minorities is not possible.

**Transitional unfairness.** As discussed fully in Part IIIA, impact fees will be borne by the consumer of housing, the owner of undeveloped land, or the developer, depending on the relative elasticities of supply and demand for land and housing. If consumers of housing bear the cost of impact fees, the impact fee is equivalent to a prepaid (or upfront) property tax.<sup>20</sup> The consumer, however, also will pay the jurisdictions' annual property taxes. To the extent that those property taxes have been or continue to be used to finance infrastructure used by other residents of the community, several sources of potential unfairness arise. First, if property taxes were used in the past to pay for infrastructure needed to support new growth, then the infrastructure provided to existing residents would have been subsidized in part by prior generations of taxpayers, but that subsidy is being denied to new residents. That transition problem accompanies any change in tax structure (or any legal transition), of course, and has been extensively analyzed elsewhere (Shaviro, 2000; Kaplow, 1986; Levmore, 1999).

Second, if the property taxes new residents pay include a charge for the debt service on infrastructure already provided to existing residents or a levy for current or future capital expenditures that will benefit primarily existing residents, new residents are being asked to subsidize existing residents (Slack, 1990). Impact fee systems can be designed to avoid these subsidies, and some jurisdictions report that they credit new developments for the portion of property taxes the new residents will contribute to retire the indebtedness on already existing infrastructure (or to finance future infrastructure) that will not benefit new residents. To the extent that a jurisdiction does not grant such credits, the subsidization of existing residents by new residents is unjustified (and probably illegal).<sup>21</sup>

**Rent-seeking.** If the impact fees charged to new development are not sufficiently tailored to the costs the new development actually imposes and instead are charged on the basis of "what the market will bear," the fees will represent unfair rent-seeking by existing residents—of either new residents (who often will not be able to protect themselves in the jurisdiction's political process) or the owners of undeveloped land (Ellickson, 1977). The courts' nexus and proportionality tests are designed to prevent those types of unfairness but to the extent that these tests are not applied to impact fees or are not sufficiently enforced, some unfairness may remain.<sup>22</sup>

### III. Impact Fees and the Price of Housing

Both scholars and interest group advocates have raised a variety of concerns about whether impact fees will increase the price of housing and thereby decrease the affordability of new and existing housing for consumers. They also worry that increased prices resulting from impact fees may hinder efforts to better integrate communities and to distribute the benefits of homeownership more widely among all racial and ethnic groups in our society. Indeed, opponents of impact fees have asserted that these fees “add to the walls of segregation” and “ke[ep] out low-income citizens” (Braun, 2003: 264–65). Opponents of impact fees argue that apart from the direct effects impact fees may have on the price of housing, they have indirect exclusionary effects as well. For example, Baden and Coursey (1999) claim that:

If buyers of expensive homes are less sensitive to marginal increases in the price of their purchases (as predicted by economic theory), then developers have an incentive to build higher-priced houses. This...price[s] low-income people out of suburban neighborhoods. To the extent that income is correlated with race, impact fees may create barriers against the migration of minorities into the suburbs (Baden and Coursey, 1999: 45).

The potential effect impact fees may have on the availability of land, the supply of housing, the price of housing, and the consequent affordability of housing, however, is quite a complicated subject, about which surprisingly little is known. This part of the article addresses the potential effect impact fees may have on the supply and price of land and housing. Part IV then addresses the potential effect impact fees may have on what is traditionally meant by housing “affordability” and “opportunity”—the ability of moderate- and middle-income consumers to purchase their own home, and the opportunity for people of all races and ethnic groups to secure housing equally.

#### A. Theoretical Framework for Evaluating the Price Effect of Impact Fees

##### *Impact Fees and the Amenities They Provide*

As Ellickson (1977) recognized some 25 years ago, any analysis of the effect fees may have on the price of housing depends first on whether the land (or housing) on which the fee is imposed receives any incremental municipal services or amenities as a result of the payment.<sup>23</sup> Subsequent writers seemed to forget this important first step and usually treated impact fees as equivalent to an excise tax that produced no benefits to the housing consumer (Weitz, 1985). This omission prompted John Yinger (1998) to advance a corrective that some have called a “new view” of the allocative effects of impact fees.<sup>24</sup> Yinger started his analysis of the incidence of impact fees by assuming that impact fees will fund infrastructure that consumers value.<sup>25</sup> Although Yinger did not focus on this point, impact fees also may be of value to consumers if they finance infrastructure more cheaply than the property taxes, special assessments, or other taxes that the consumer would otherwise be assessed to pay for the infrastructure (Hodge and Cameron, 1989). Further, as noted above, if impact fees approximate marginal cost pricing, they may reduce the risk that a homeowner will be liable for taxes to fund infrastructure needed for later residents, and that risk reduction may be capitalized into the price of the house (Gatzlaff and Smith, 1993). If the infrastructure financed by the fee (or the avoidance of other taxes or the insurance policy against future rate increases) is valuable to the consumer, demand for housing serviced by that infrastructure (or financing package) will increase, and the price of the housing will increase accordingly. As long as the impact fee is efficient (funds infrastructure worth the cost of the fee, or reduces other tax liability or risk of tax liability by at least as much as the fee or risk premium), however, consumers will suffer no net

loss because they will receive in benefits a value equal to (or greater than) the cost of the infrastructure financed (or other taxes avoided) by the fee. Developers will receive the cost of the fee in higher sales prices, so they too will suffer no loss.

The landowner, however, may still bear some of the cost of the fee.<sup>26</sup> If the property tax rate remains stable after the impact fee is imposed, the benefit the consumer receives in infrastructure will trigger higher property tax payments (because the value of the house increased). Consumers accordingly will discount the amount they will pay for the value added by the infrastructure to account for the expected amount of the increased tax payment. Who pays that increase in taxes will depend on the same analysis one would use for property taxes in general—if the consumer can get similar housing with the amenity from a jurisdiction that has lower taxes, he or she will be unwilling to pay the increase in taxes. Assuming that the developer is operating in a competitive market so that he or she cannot reduce profits, the tax increase will be passed back to the landowner.

Because the increase in home values will result in higher property tax revenues, however, to keep all else equal, the jurisdiction should lower its tax rates. If the jurisdiction does lower tax rates, that reduction will be capitalized into a higher sales price for the housing, perhaps generating sufficient revenues to pay the impact fee without passing any of its cost back to the landowner. How much of the discount that would otherwise be passed back to the landowner will be offset by the capitalization of lower tax rates into the housing values depends on the relative number of houses benefiting from the amenity versus the number of taxpayers receiving the benefit of any reduction in property tax rate that results from the higher housing values occasioned by the amenity financed by the impact fee.

This argument draws on an analogy to the capitalization of property tax rates into house values.<sup>27</sup> In a competitive market, if a jurisdiction increases its property taxes but does not increase the quality or quantity of services it provides with property tax revenue, consumers will purchase housing in jurisdictions with lower property tax rates. Decreased demand then will reduce the price of housing in the taxing jurisdiction so that the total house price/property tax/service package will remain competitive with other jurisdictions. On the other hand, if a jurisdiction increases its property tax rate but also improves the quality or quantity of services it provides beyond that offered by competing jurisdictions, consumers who value those public services at least as much as their cost will continue to buy in the taxing jurisdiction, and housing prices will not fall. The overall house price/property tax package will increase in cost, but that increase will be offset by the value of the increase in public services available to homebuyers.

Similarly, when the amenity (or the reduction in property tax liability for infrastructure needed for new residents) is taken into account, impact fees will have a similar effect. If impact fee revenues are not used to provide amenities or services superior to those consumers can get by purchasing in jurisdictions with lower (or no) impact fees, consumers will reduce the amount they offer for housing so that the total housing price/impact fee/property tax/service package remains competitive with other jurisdictions. But if the impact fees provide infrastructure (or tax savings or risk reduction) that consumers value and cannot get elsewhere for the same housing price/property tax payment, consumers will be willing to pay more for the housing.<sup>28</sup> Prices will increase, but consumers will be no worse off because they are receiving additional value for the extra price they pay.

Indeed, consumers will be willing to pay more even for existing housing in the jurisdiction if that housing benefits from the amenities provided by the infrastructure (which would raise questions about the legality of the impact fee) or if that housing benefits from the reduction in property taxes resulting from the higher tax base attributable to the value added to the new houses by those amenities.<sup>29</sup> Under these circumstances, impact fees would result in a capital gain for existing residents.<sup>30</sup>

Legal restrictions on the use of exactions in the United States are intended, in part, to ensure that the consumer receives appropriate value for the infrastructure or services funded by the impact fee.<sup>31</sup> Nevertheless, several things can undermine the process just described. First, the infrastructure financed by the fee may not bring benefits in excess of costs. If the infrastructure is installed by the government in a low-quality or inefficient manner, is not actually desired by consumers, or primarily benefits existing homes, its value to the consumers of new housing may be less than its cost (Downing and McCaleb, 1987). In addition, the supposed savings in property taxes occasioned by the higher tax base resulting from the increased value of new homes may be spent on projects that do not benefit the owners of new homes—it even may be squandered—rather than being rebated to consumers or landowners.

Second, if substitute housing is available with a similar infrastructure/property tax rate package in the jurisdiction but without the fee, or if competing jurisdictions are providing substitute housing with a similar infrastructure/tax package without charging a fee, those consumers who are mobile will be unwilling to pay the full cost of the impact fee jurisdiction’s infrastructure/tax package. These consumers instead will buy elsewhere until the increase in prices for substitute housing attributable to increasing demand (assuming sufficient numbers of consumers are mobile) bring the market back into equilibrium.

*Incidence of Impact Fees That Do Not Provide Value Worth Their Costs or That Fund Amenities Available for Less in Other Jurisdictions*

When impact fees do not provide infrastructure or financing advantages worth their costs, or when competition from other jurisdictions allows consumers to obtain the same value for less money, impact fees can be analogized to a one-time excise tax that produces no benefits to the taxpayer.<sup>32</sup> In this case, the fee will increase the price of housing directly or indirectly, depending on whether the consumer, the developer, or the developer’s factors of production, such as the landowner, bears the cost of the impact fee. Whether consumers, developers, or landowners bear the cost of the fee depends on the relative elasticities of supply and demand for undeveloped land and for housing—that is, on how the quantities of undeveloped land and housing supplied and demanded within the impact fee jurisdiction would vary with changes in the market price of housing (Ellickson and Been, 2005; Ellickson, 1977; Huffman et. al, 1988; Slack, 1990; Weitz, 1985).

If the consumer bears all or most of the cost, housing prices will increase directly. If the landowner bears all or most of the cost, quantities of land available to be converted to housing will fall, at least in the short run, thereby restricting the supply of housing and eventually raising prices on the limited supply available (assuming demand is rising).<sup>33</sup> If the developer bears all or most of the cost, quantities of land converted for development again will fall, at least in the short run, with consequent increases in the price of housing in the face of rising demand.

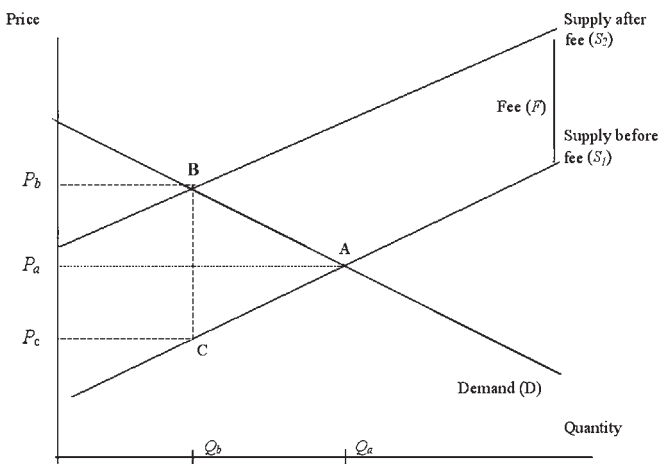
Exhibit 1 illustrates the problem. The horizontal axis represents the quantity of housing supplied, and the vertical axis represents the price per unit of that housing. The  $S_1$  and  $D$  curves in exhibit 1 indicate, respectively, the supply and demand for new housing in the jurisdiction before the impact fee is imposed.<sup>34</sup> These curves intersect at point A, the equilibrium for the pre-fee market. Before the fee is imposed, quantity  $Q_a$  of new housing would be sold at price  $P_a$  per unit. If the locality were to impose an impact fee of  $F$  per unit of housing, the supply curve would shift upward by distance  $F$ .<sup>35</sup> The new supply curve would be  $S_2$ , and the post-fee market equilibrium would be B, the intersection of  $D$  and  $S_2$ . The fee would cause the price of housing to rise from  $P_a$  to  $P_b$  and the quantity sold to drop from  $Q_a$  to  $Q_b$ . The fee, represented by rectangle  $P_bBCP_c$ , would be paid to the municipality, with the consumer’s share represented by  $P_bBAP_a$  and the developer or landowner’s share represented by  $P_aACP_c$ .

Exactly where the dividing line between the consumer's share and the developer or landowner's share falls will depend on the relative slope of the supply and demand curves. Where developers are able to pass on the entire amount of the impact fee (plus any cost of the fee, such as financing charges)<sup>36</sup> to the consumer, the increase in the price of housing would equal  $F$  (or the line  $BC$ ). That would be the case if either the supply curve or the demand curve were perfectly inelastic (if the quantity of housing supplied were not responsive to the price at which it is sold or if consumers were completely insensitive to price so that demand was not responsive to changes in price). But if either the supply curve is upward-sloping or the demand curve is downward-sloping—indicating that supply and demand are sensitive to changes in price—the developer will not be able to pass the entire cost of the fee to the consumer, and the amount that cannot be passed forward must be borne by the developer or landowner.<sup>37</sup>

More precisely, where consumers are freely mobile and substitutes for the new housing on which an impact fee has been imposed are available either in the jurisdiction imposing the fee (existing housing is not subject to the fee, for example), or in comparable jurisdictions in the same housing market that do not impose fees, consumers will refuse to pay higher prices for the new housing subject to the impact fee. In this *fungible jurisdiction, unusual exaction* case, consumers can obtain an equivalent new house in another suburb, or even an equivalent existing dwelling in the taxing suburb, for the pre-exaction price, which means that the developer will be unable to raise prices to consumers. In more technical terms, when the demand for housing is perfectly elastic, an impact fee (or other "tax" on development) will not be passed on to consumers (Pollakowski and Wachter, 1990). Instead, developers aware of the fee will bid less for land in the jurisdiction imposing the fee, and the fee will be passed backward and fall on owners of undeveloped land in that jurisdiction. In that case, if the supply of land is elastic, all other things being equal, the lower land prices will delay the rate at which land is converted to urban use, and thereby produce a drop in the quantity of housing being built in the jurisdiction until increased demand drives the price of the land back up (Downing and McCaleb, 1987). Unless the reduction in the supply of housing can be "made up" after increased demand makes conversion worthwhile, the shortage will eventually raise housing prices in the face of increasing demand to a level higher than they would have been had the impact fee never been imposed.

## Exhibit 1

### Hypothetical Market for Land Improvements



Of course, not all housing has perfect substitutes, and not all municipalities are perfectly fungible. Further, not all consumers are perfectly informed about the substitutes that exist nor are they perfectly mobile even if fully informed about substitutes. Nevertheless, in general, the more substitutes for new housing in a jurisdiction imposing impact fees that are available, the less likely the cost of the impact fee will be born by consumers (Dresch and Sheffrin, 1997). Exhibit 2 presents the four primary scenarios that require analysis regarding who would bear the cost of the fee.

## Exhibit 2

### Incidence of Impact Fees That Provide No Value to Consumer

Competitiveness of Housing Market	Uniqueness of Exaction	
	Unusual Exaction	Widespread Exaction
<i>Fungible Jurisdiction</i> (competitive housing market and elastic housing demand)	Landowner, developer, or owners of capital bear fee in short term; consumers may pay higher prices in long run.	Consumers pay or demand less housing across all jurisdictions (if demand drops across all jurisdictions, landowners will bear some of the cost).
	<i>Elastic land supply:</i> Either landowners will take less for their land or will withhold land from conversion until rising demand again drives prices back up (consumers will then pay higher prices if quantity cannot "catch up"). <i>Inelastic (and limited) land supply:</i> Landowners will be unwilling to take lower price for limited supply of land; therefore, developers will stop building until rising demand again drives prices back up or will substitute more housing amenities for less land, provide higher end housing, or seek to pass the fee on to other factors such as lenders.	
<i>Unique or Free-Standing Jurisdiction</i> (inelastic housing demand)	Consumer or landowner pays	Consumer pays.
	<i>Elastic land supply:</i> Consumer will pay most of fee. <i>Inelastic (and limited) land supply:</i> Consumer again will pay most of the fee, or developers will provide higher end housing.	

In the second scenario—the *fungible jurisdiction, widespread exaction* case—although the housing market is competitive and the demand for housing is elastic, the consumer will pay all or most of the impact fee. The consumer will be unable to find substitute housing that is not subject to the fee because by definition, the exaction is imposed on all or most of the housing in the market. Unless the consumer can reduce demand by, for example, doubling up in housing units (young adults living longer with parents, or elderly parents moving back in with their adult children before they otherwise would), the consumer will bear the fee. To the extent that consumers can reduce demand for housing, part of the fee will be passed back to the landowners under the same terms as explained in the “fungible jurisdiction, unique exaction” case.<sup>38</sup>

In the third scenario—*unique jurisdiction, unusual exaction*—where the local government possesses a combination of features (such as topography, location, and public services) unique enough that most consumers regard the locality as having no perfect substitute, the developer will be able to pass the cost of the impact fee on to consumers, and the price of housing will rise (Hodge and Cameron, 1989).<sup>39</sup> Unless the jurisdiction is unique, and housing demand is completely inelastic, however, the price increase will not be as great as the fee, and the balance of the cost of the fee will be passed backward to owners of undeveloped land. When the demand for housing is inelastic because of the lack of substitute housing, impact fees will raise the price of both new and old housing. Developers will pass the cost of the impact fee on to consumers of new housing, but some consumers will bid instead for existing housing until the price for existing housing has risen to equal that of new housing (Huffman et al., 1988).<sup>40</sup>

In the fourth scenario, where there is a *unique jurisdiction and a widespread exaction*, the consumer will be even more likely to pay.<sup>41</sup> Even consumers willing to forego the unique benefits of a particular jurisdiction will be unable to escape the fee by buying substitute housing elsewhere, so that the developer will seek to pass the charge on to consumers by charging a higher price or by reducing quality or size of houses offered. Again, the increased housing prices resulting from the impact fee will affect both new and existing housing in a jurisdiction.

In each of those cases, the assumption is that the developers will bear none of the fee because if their profit margins were high enough to absorb the fee, competition already would have either reduced the price of housing to the consumer or increased the prices paid to the landowner.<sup>42</sup> If the market for development is not competitive so that developers were earning abnormal profits, the developer may bear some of the costs of the fee (Slack, 1990).

The developer also might be forced to bear some of the cost of the fee if the developer did not anticipate the fee at the time he or she bid for the land (Downing and McCaleb, 1987; Ellickson, 1977; Slack, 1990). If the developer knew the fee in advance with certainty, he or she would bid less for the land, thus passing the fee back to the landowner. If the developer is surprised by the fee after committing to the purchase price of the land, however, the developer will bear its cost (Ellickson, 1977; Weitz, 1985). In that case, the developer is likely to try to build more expensive houses (increasing the housing amenities provided on the same sized lot), and aim “up-market” to increase the chance of recovering the fee from the buyer (Huffman et al., 1988).

## B. Empirical Evidence Regarding the Price Effects of Impact Fees

### *Empirical Studies of Growth Control and Management Generally*

Over the past 15 years, many empirical investigations have been conducted on the effect that growth management or growth control mechanisms have on the supply and price of housing. Although impact fees differ from growth management tools in important ways, as discussed below, the literature on growth control and management provides some insight into the effects impact fees may have on the price of housing. Considerable controversy exists over the terms “growth control,” “growth management,” and “smart growth,” and this article seeks to avoid engaging in that controversy. In general, *growth control* and *growth management* have been used together in this article, and *smart growth* has been avoided altogether. For purposes of this article, *growth control* refers to efforts to stop or limit growth through traditional regulatory tools such as growth caps or indefinite moratoria not tied to a particular goal, such as completing a comprehensive plan. *Growth management* means efforts to channel (but not stop or limit) growth into particular areas. Growth management tools include urban growth boundaries that seek to contain the geographical spread of a city but accommodate growth within the boundary through higher density or infill development. Growth management also may take the form of concurrency requirements that seek to direct growth to areas in which infrastructure is already available or planned, rather than allowing it to occur without regard to the availability of infrastructure.<sup>43</sup>

Many cross-sectional studies have attempted to measure the effect regulatory constraints have on the price of housing by comparing the relationship between the existence of regulatory constraints in a particular jurisdiction and the price of housing in that jurisdiction versus an unregulated control market. Time-series studies have examined the price of housing before and after the introduction of or increase in regulatory constraints. Most cross-sectional and time-series studies used hedonic price models to attempt to isolate the effect regulatory constraints have on the price of housing; some looked instead at the effect constraints have on the value of undeveloped land; and a few examined the effect constraints have on the rate at which agricultural land is converted to development.

Most of those studies found that land use regulatory constraints, especially traditional growth control measures, are associated with higher housing prices. Some studies found that growth control and management are correlated with lower values for undeveloped (and constrained) land. Other research showed that such constraints are associated with decreased supply of developable land or decreases in the responsiveness of supply to demand (Deakin, 1989; Fischel, 1990; Lillydahl and Singell, 1987; Nelson et al., 2002).

Although many of the studies assumed that higher housing prices are inefficient or otherwise undesirable, evidence of higher prices is not necessarily proof of inefficiency, as Fischel (1990) pointed out. If the restraints studied raised the value of the housing or the neighborhood to consumers or prevented congestion or other disamenities that would lower the value of the housing or neighborhood, the fact that housing prices rose in response to the regulation signals that the regulations were working as intended and increased demand for the housing (Fischel, 1990; Nelson et al., 2002).<sup>44</sup> In addition, because the studies did not control for the reasons that restrictive communities had for adopting growth management regulations, this research may be confuse cause and effect. If communities adopted growth management regulations to address rapid growth, higher housing prices in the community (relative to nonrestrictive communities) may be capturing the price effect of growth rather than the price effect of the growth management techniques (Fischel, 1990).



Further, even if growth management regulations increase the price of housing, if they make the housing more valuable to consumers (rather than inefficiently increasing the cost of development without adding value), these price increases do not necessarily mean that housing is less affordable. If, for example, growth management techniques increase the accessibility of housing to public transportation, an increase in housing prices may be offset by a decrease in a family's transportation costs. Additionally, if growth management increases the price of housing in a particular jurisdiction, but substitute housing in communities that are fungible with the restrictive community is available, the overall supply of affordable housing will not be affected (Fischel, 1990). Of course, if the restrictive community is not fungible because of the unique job opportunities it offers, for example, the reduction in affordable housing in that particular jurisdiction will be problematic.<sup>45</sup> If the restrictive community's policies have spillover effects by raising prices in nearby communities without providing any benefits to those communities, that too would have a negative effect on housing affordability (Pollakowski and Wachter, 1990).

Those caveats are especially likely to apply in the case of impact fees for several reasons. First, impact fees by definition pay for infrastructure or other amenities that may have value to the housing consumer. As noted above, if the fees pay for infrastructure (or a level or quality of services) that otherwise would be provided without cost to the consumer, the value of the infrastructure should not be capitalized into the land if the housing market is competitive. But if the fees pay for infrastructure that would otherwise not be provided, or if they pay for infrastructure that would be provided only through increases in consumer's property taxes (or other expenses) greater than the impact fee, the value of the infrastructure should increase the demand for the housing, and therefore should be reflected in housing prices. All land use regulations may produce benefits so that increases in the price of housing associated with regulations may be a measure of the regulations' benefit rather than a measure of the regulations' costs, as noted above. But impact fees may be more likely than other regulations to produce direct and tangible benefits to the extent that legal constraints work to ensure that fees collected are actually used to provide the infrastructure needed.

Second, impact fees may enable growth that would not otherwise occur. Impact fees may provide a way around a moratorium on development until infrastructure can be provided, for example. Impact fees in these circumstances would be expected to increase the development value of undeveloped land, therefore affecting the supply of land converted to development. While growth control and even growth management restrictions are unlikely to enable growth, impact fees may do so by allowing growth to occur in advance of the jurisdiction's timetable for supplying infrastructure. The funds to build infrastructure must come from somewhere, so whether impact fees actually restrict or enable growth will depend on how the jurisdiction facing a shortfall of funds for infrastructure would react to the shortfall if precluded from adopting impact fees. Such a jurisdiction could adopt more restrictive growth management policies (thereby affecting housing supply and prices); raise taxes, special assessments, or other forms of financing (again affecting housing prices); or find the funds by reducing other programs (possibly affecting other items in the consumer's budget), by decreasing neighborhood quality and thereby affecting house prices, or by increasing productivity (Fischel, 1990).

Finally, to the extent that other regulatory constraints raise costs by increasing the uncertainty and risk of development, impact fees can be structured to be more transparent and certain than most growth management tools. Where impact fees are scheduled, the schedule is readily understandable by the developer, and the scheduled rate is stable, developers will know exactly what they must pay, and few delays are imposed by the application of the fee schedule. When the city must perform individual cost or nexus studies to determine the fee, however, that process will introduce delay and uncertainty.<sup>46</sup>

The differences between impact fees and other regulatory tools that may be used to limit or manage growth make the general literature about the supply and price effects of growth control and management tools particularly difficult to apply to impact fees. There is, however, a more specific literature about the price and supply effects of impact fees.

### *Empirical Studies of the Price Effects of Impact Fees in Particular*

Studies that specifically focus on the price or supply effects of development impact fees generally show that impact fees raise the price of both new and existing housing (Evans-Cowley and Lawhon, 2003).<sup>47</sup> These studies are analyzed below by type and in chronological order. To set the stage for the ensuing discussion of advances researchers need to make in the future, this part highlights shortcomings of the various studies without intending to disparage the very significant contributions each made in the development of our understanding of the effects of impact fees.

The first major study, by Charles Delaney and Marc Smith (1989a), used hedonic regressions to examine the effect a \$1,150 impact fee that Dunedin, Florida, adopted in 1974 had on the price of new single-family dwellings in Dunedin over the 12-year period from 1971 to 1982, relative to three surrounding communities that had not adopted such fees or had adopted only very minor fees.<sup>48</sup> Delaney and Smith began by regressing a few housing characteristics and the cost per square foot of the land when the home was originally built (the authors used cost of land as a proxy for neighborhood quality) on housing prices.<sup>49</sup> They then used those estimations to calculate the price of a new, “constant-quality” house for each city in each year.<sup>50</sup> Finally, they regressed, for each year, the ratio of Dunedin’s estimated price for a constant quality home to the estimated price for such a home in the comparison city against a dummy variable coded 1 for the years when the impact fee was expected to influence housing prices (Delaney and Smith, 1989a).

Delaney and Smith found that there was a statistically significant difference between the price of new housing in Dunedin and housing prices in two of the three non-impact fee cities for the period between 1973 and 1978, but not thereafter. The coefficients for the impact fee dummy variable in the regressions for those two comparison cities were more than three times the actual amount of the fee (indicating that every \$1.00 in impact fees raised the price of housing by more than \$3.00).

Delaney and Smith (1989b) later extended their first study to examine the effects the impact fee had on the prices of existing housing. Using only one of the comparison cities, Clearwater, the authors regressed the sales prices of existing dwellings against the housing characteristics and the neighborhood quality proxy, as well as the age of the house. They used those regression results to construct “constant-quality” price indexes for existing housing in Dunedin and the comparison city. Delaney and Smith then regressed the ratios of Dunedin’s index for new housing to its index for existing housing, as well as the ratios of Dunedin’s index for existing housing to Clearwater’s index for existing housing, against a dummy variable again coded 1 in years when the impact fees were expected to raise prices (Delaney and Smith, 1989b).

The results showed that the price of new housing, compared to the price of existing housing, rose in Dunedin until 1978. The price difference of \$2,600 was more than twice the amount of the \$1,150 fee. In addition, the price of existing housing in Dunedin rose compared to the price of existing housing in Clearwater until 1979. That price difference averaged \$1,643. Both price differentials dissipated after 1978 and 1979, which the authors interpreted to mean that whatever market imperfections allowed the price differentials to occur, despite the substitutability of the housing, were eventually overcome. Based on both studies, therefore, the authors concluded that the introduction of impact fees in

Dunedin (1) raised the price of new housing in Dunedin relative to new housing in two of the three control communities; (2) raised the price of new housing in Dunedin relative to the price of its existing housing; and (3) raised the price of existing housing in Dunedin relative to Clearwater's existing housing. All three effects lasted for a period of 6 years before the housing market was able to adjust to eliminate the price differentials.

The Delaney and Smith studies have several limitations. First, as Delaney and Smith noted, during the years studied, the market for housing in Pinellas County was characterized by rapid growth and low vacancy rates, suggesting a market with inelastic demand—precisely the market in which impact fees are most likely to be capitalized into housing prices. The results, therefore, might not be applicable to markets in which demand is more elastic. The study area also was unusual in that several years of controversy and litigation preceded the implementation of the fee actually studied, and the differential in prices may have resulted in part from different expectations about the potential benefits of the fee by those involved in the controversy (presumably existing residents) and those less knowledgeable (newcomers or people in the neighboring comparison communities).

Second, the sharpness of the break between 1978 and later years (the ratio of new home prices to existing home prices in Dunedin, for example, fell from 1.11 in 1978 to 1.04 in 1979) raises the possibility that some omitted variable (such as a particularly favorable employment climate that ended in 1978) may account for the differential and its disappearance.

Third, Delaney and Smith included no direct neighborhood variables in their regression, and their proxy for neighborhood effects—the square foot cost of land—is a very attenuated proxy for such determinants of demand as school quality or the race, income, and household type of neighborhood residents.<sup>51</sup>

Fourth, Delaney and Smith noted that the fees provided little or no benefit because they generated too little revenue to result in improvements to infrastructure (or presumably savings in other taxes). The lack of any possible amenity value from the fee makes the magnitude of the price effects found especially difficult to understand. Delaney and Smith posited that the magnitude of the effect might be explained by the costs of financing the fee, along with overhead and related expenses, but they acknowledged that those expenses were unlikely to have been large enough to explain the “over-shifting.”

Finally, differences between current housing markets and the Florida market in the 1970s as described by Delaney and Smith raise serious questions about how applicable their findings are today. They noted, for example, that limitations in the 1970s Multiple Listing Service may explain consumers' failure to reject the higher prices in Dunedin in favor of substitute housing in Clearwater. Today, with access to information about houses around the nation and the world available on the Internet, it is very unlikely that information imperfections would allow the differential between Dunedin and Clearwater (if it were actually attributable to the impact fee) to persist for 6 years.

Larry Singell and Jane Lillydahl (1990) studied the effect that an increase of approximately \$1,182 in impact fees in Loveland, Colorado, in 1984 had on the prices of new and existing housing. The study focused on the 18 months before and after the adoption of the higher fee, and regressed, separately for new and existing housing, the log of the sales price against the logs of interest rates, the logs of five characteristics of the house,<sup>52</sup> a time variable for the month the house was sold, and a dummy variable for the time the impact fee was in effect.<sup>53</sup> The results indicated that the impact fee had a significant effect on both new and old housing prices, increasing the price of new housing by approximately \$3,800 and the price of existing housing by about \$7,000. Like Delaney and Smith, the Singell and Lillydahl study did not include neighborhood characteristics.

Again, the Singell and Lillydahl study may be difficult to generalize because the authors described Loveland as being an unusual community with few substitutes. The 18-month period may be too short to reflect the market's adjustment to the fee (especially if Delaney and Smith's finding that the market took 6 years to adjust to price differentials in Florida is correct). The magnitude of the price effect Singell and Lillydahl found is difficult to understand (Yinger, 1998).<sup>54</sup> So, too, is the large differential between the price effect on new and existing housing and that the differential is in the opposite direction of that found by Delaney and Smith (1989a, 1989b). Singell and Lillydahl found the magnitude of the effect on existing housing "surprising," but provide no explanation for the larger effect on existing housing (Singer and Lillydahl, 1990: 90).<sup>55</sup> As explained above in Part IIIA, economic theory regarding the incidence of fees suggests that if fees provide no amenity value but are passed on to consumers, both existing and new housing will increase in price as consumers bid up the prices of existing housing while trying to escape the impact fee imposed on new houses. If the fee does provide an amenity value not available to existing housing, existing housing will rise in price only to the extent that the higher value of new houses may provide a reduction in taxes demanded of existing homes. There is no reason in either scenario, however, for existing housing to become *more* valuable than the new housing (Yinger, 1998).<sup>56</sup>

Marla Dresch and Steven Sheffrin (1997) studied the effect of development fees, ranging from \$16,000 to \$24,000 per house, on housing prices in Contra Costa County, California, between 1992 and 1996.<sup>57</sup> The period studied coincided with a slump in the real estate market during which prices generally were declining sharply, but the authors accounted for the falling market by allowing the sales price variable to differ for every 4-month period in the years studied. Although Dresch and Sheffrin did not include neighborhood characteristics in their model directly, they used dummy variables for each of the different communities in the sample to try to account for differences among the communities. To account for significant differences in the quality and price of homes in different parts of the county, Dresch and Sheffrin also divided the county into distinct data pools.<sup>58</sup>

For the less wealthy, eastern portion of the county, Dresch and Sheffrin found that every \$1.00 in fees increased new housing prices by \$0.25. The findings suggest that consumers were bearing only a fraction of the impact fees; the study could not determine if developers, landowners, or both were bearing the remaining portion. For the wealthier, western portion of the county, Dresch and Sheffrin found that every \$1.00 increase in fees raised new housing prices by \$1.88.<sup>59</sup> Dresch and Sheffrin speculated that the difference between the two parts of the county was based on greater distress in the housing market for the less wealthy communities. Presumably, the two parts of the county were not seen as substitutes for each other or competition would have equalized any effect of the impact fees.

Dresch and Sheffrin also studied the effect of fees on the prices of existing homes by regressing average fees on the sales prices of existing homes and adding variables for the age of the existing housing. In the less wealthy portion of the county, they estimated that every \$1.00 of fees raised the prices of existing homes by \$0.23. In the wealthier portion of the county, the authors found no relationship between the average fee imposed on new housing and the sales prices of existing housing. They offered no explanation for the different price effect the impact fees had on new and existing housing in the wealthier portion of the county. If the impact fee did not add value for the consumer, any increase in prices caused by the fee should be reflected in both new and existing housing because they are substitutes for one another. If the impact fee did add value for consumers, the different price effect for new and existing housing may be explained by the capitalization of value into the new housing that primarily enjoyed the new amenity, with any positive externality to the existing housing being much smaller in value.

Two studies explored the effect impact fees had on the price of undeveloped land (rather than housing prices). Nelson and Lillydahl et al. (1992) used Loveland, Colorado, as one study area, regressing land prices on a development fee variable that captured differences in fees over time, as well as on neighborhood characteristics.<sup>60</sup> The study found no statistically significant effect on *land* prices (Singell and Lillydahl, described earlier, studied the effect impact fees in Loveland had on *housing* prices). Nelson and Lillydahl et al. also studied Sarasota County, Florida, and found that land prices were significantly higher in those areas of the county in which impact fees were higher.<sup>61</sup> Rather than finding land prices depressed because of a passback of the fee, they found an increase in land prices. The authors speculated that the impact fee led to greater expectations that infrastructure would be provided for the land or may have enabled developers to receive development permits faster, and that such increased certainty about development potential or such time savings (and accompanying risk reduction) might explain the increase in land values (Nelson and Lillydahl et al., 1992; Nelson, Frank, and Nicholas, 1992).

Skaburskis and Qadeer (1992) studied the effect impact fees had on the prices of a 10-percent sample of all vacant single-family lots sold in three suburbs of Toronto between 1977 and 1986. The authors regressed the prices of 1,021 observed lot sales on the amounts of impact fees paid for each lot, a coefficient describing the interaction of the fee and the region's rate of growth at the time of the sale, development costs, locational factors, expected future growth in housing prices, and expected growth in construction costs.<sup>62</sup> The regressions include no data about the amenities available to the lots nor any information about neighborhood quality, but the authors believed that any variation between the lots on those characteristics was minor.

Skaburskis and Qadeer found that each dollar in fees increased lot prices by approximately \$1.88 when the growth rate of building permits was zero, but lot prices increased by only about \$1.23 when the growth rate was the period's average of 2.33 percent per year. Without more information about the nature of the housing market, it is difficult to interpret those findings. If no growth occurred in building permits because of the lack of demand for housing, it would have been a buyer's market, and the price effect of the impact fee should have been lower than in a higher-growth period, not higher. On the other hand, if the lack of growth in building permits was due to artificial constraints on supply (such as a development moratorium), the larger price effect of the fee in the constrained market would be consistent with the incidence theory described in Part IIIA above. The authors mentioned a recession and explained differences between the three suburbs as being based on one jurisdiction's efforts to attract developers. If no building was under way because demand was low, the study's findings are unexpected—why consumers would pay more of the impact fee (or more for the value added to the house by the infrastructure funded by the fee) when demand is low than when demand is higher is difficult to comprehend.

Several studies in recent years have examined the effect that impact fees have on the supply of housing rather than on prices. Mark Skidmore and Michael Peddle (1998) examined the effects impact fees had on the number of new homes built each year over a 15-year period in municipalities in Dupage County, Illinois. Dupage County is a rapidly growing suburban county with considerable variation among its municipalities in both growth rates and use of impact fees. Skidmore and Peddle regressed the number of new homes built each year in each municipality against a dummy variable for whether a municipality used impact fees (regardless of the amount of the impact fee), as well as against such municipal variables as tax base and tax burdens. The regression included a time dummy variable to control for changes over time in factors, such as the cost of construction, that were likely to affect all municipalities equally. The regression also included a municipality dummy variable to control for unobserved differences among the municipalities that did

not vary over time. The data did not allow Skidmore and Peddle to control directly for changes over time within individual municipalities, such as changes in the quality or quantity of public services provided.

Skidmore and Peddle found that the introduction of an impact fee was correlated with an approximately 30-percent reduction in the number of new homes built.<sup>63</sup> The authors did not directly examine the effect the introduction of the impact fee had on the price of housing, although presumably a decrease in supply will result in an increase in price.

Christopher Mayer and C. Tsuriel Somerville (2000) used quarterly data from 44 U.S. metropolitan areas for the years 1985 to 1996 to examine the relationship of changes in supply (as proxied by the number of new single-family building permits issued each quarter) to measures of regulatory restrictiveness (the number of months required for subdivision approval, the number of ways growth management techniques had been introduced, and whether impact fees were imposed). The authors found that although regulatory constraints such as growth management policies and regulatory delays were associated with lower new construction levels, development fees had little effect on the rate of new construction. The study used the presence or absence of impact fees, rather than the amount of the fees, as its variable. Mayer and Somerville explained their findings regarding the effect of impact fees by noting that builders complained that the uncertainty surrounding other land use regulations created more problems for the builders than the predictable costs of fees.

Finally, three recent studies returned to analysis of the effects impact fees have on the price of housing. Baden and Coursey (1999) studied eight Chicago suburbs over the 3-year period of 1995 through 1997. They regressed the log of the sales price of both new and existing homes on the logs of a wider range of housing characteristics than earlier studies had included in their models.<sup>64</sup> Baden and Coursey did not include neighborhood quality variables other than the municipality's 1990 population in the regressions; however, in one of the regressions, the authors assigned each municipality a separate indicator to control for unspecified differences between the municipalities.

Baden and Coursey found that the coefficient for the impact fee variable was positive and statistically significant. They used those coefficients to calculate the effect the fees each community actually charged would have on the price of a four-bedroom house on a quarter-acre lot. The increase in house prices ranged from 70 to 210 percent of the actual amount of the fee imposed. For existing homes, Baden and Coursey estimated the price effect of fees on the average price of 25-year-old houses with four bedrooms, and found a statistically significant price effect that was less than the price effect for new homes.<sup>65</sup> Because Baden and Coursey pooled the new and existing home sale data, their results are difficult to interpret or compare with those of earlier studies.

Shishir Mathur, Paul Waddell, and Hilda Blanco (2004) examined the effect of impact fees on the prices of new single-family homes in Kings County, Washington (the state's most populous county), using sales data from 38 cities and towns in Kings County for the 10 years of 1991 through 2000. Their model uses the structural attributes of the housing (such as the square footage and lot size and a measure of the quality of construction), locational attributes (such as the view and travel time to the central business district), and jurisdictional attributes (such as crime rate and school spending) as independent variables. The regression analysis found "robust" evidence that impact fees have increased the price of new housing: for a \$246,000 house, the mean of the data set, a \$1 increase in impact fees is correlated with a \$1.66 increase in the price of the house. The analysis found that impact fees have an even greater effect for higher quality housing, such that a \$1 increase in impact fees leads to a \$3.58 increase in the price of higher quality homes. The effect of impact fees on lower quality housing was statistically insignificant.

Mathur et al. note that the period studied was a time of rapid economic growth and population expansion within Kings County, evidencing a market in which the fees were likely to be passed on to consumers. They speculated that the finding that the price effects were greater than the amount of the fees was best explained as evidence that the value of the infrastructure paid for by the fees was greater than the cost of the fee.

Keith Ihlanfeldt and Timothy Shaughnessy (2004), in the most recent study of the effect of impact fees on housing prices, strongly criticize all the earlier studies:

“[T]he reliability of the evidence presented by these studies is questionable because it is generally not consistent with expectations derived from economic theory, and emanates from sparsely specified hedonic price models that omit variables that are likely correlated with impact fees. Perhaps an even more significant limitation of the extant literature is that there is little evidence on the impact that fees have on the value of vacant land, despite the fact that economic theory suggests that landowners may be heavily impacted by fees (Ihlanfeldt and Shaughnessy, 2004: 640).

To remedy all these errors, Ihlanfeldt and Shaughnessy estimated the effects impact fees had on the prices of new and existing homes and undeveloped residential land using time-series data for Dade County, Florida.

Ihlanfeldt and Shaughnessy’s model used hedonic price and repeat sale models to construct monthly indexes of the price of new and existing housing and undeveloped residential land of constant quality. Unlike earlier studies, their hedonic model included the structural characteristics of the houses and neighborhood characteristics such as race, income, percentage of rental housing, and distance to employment centers, but no data on the quality of public services or infrastructure in the neighborhood. In the second stage of the model, the monthly indexes for new and existing housing were regressed separately on construction costs, interest rates, housing stock, rent, per capita income, tax millage rate, change in the price index for the previous year, and a continuous impact fee variable.

Ihlanfeldt and Shaughnessy found that the coefficient for the impact fee variable in the regression for new homes was 1.64, and the coefficient for the impact fee variable in the existing home regression was 1.68. Both were statistically significant, although neither is significantly different from 1. Thus, for every dollar of impact fees assessed, new and existing home prices increased by \$1.64 and \$1.68, respectively (although the results cannot rule out the possibility that the increase is \$1.00 for \$1.00).

Ihlanfeldt and Shaughnessy interpreted their results to mean that consumers perceived a value for the property tax savings they will enjoy with the switch from property tax financing of infrastructure to impact fee financing. Their regressions showed that impact fees did reduce the property tax rate, but the effect was statistically significant only after a 3-year lag. The authors calculated the present value of the expected savings in property taxes to be about \$1.20 for each \$1.00 in impact fees.<sup>66</sup> Finally, Ihlanfeldt and Shaughnessy also found that land prices declined by about 8 percent, or by roughly the amount of the impact fees, because of the use of impact fees.<sup>67</sup>

Ihlanfeldt and Shaughnessy considered their results to be a major advance in the literature and a vindication of the view that impact fees add value for consumers that is capitalized into home prices rather than serving merely as an excise tax that provides no value to the consumer but may be passed on to consumers in certain market situations. The authors’ explanation of their results, however, is muddled. They posited that the increase in house prices “should equal the capitalized value of the property tax savings that homeowners expect from the reduction in the tax rate” (Ihlanfeldt and Shaughnessy, 2004: 643). But why tax rates will fall is unclear. At one point, Ihlanfeldt and Shaughnessy argued that

the reduction in taxes will result from higher property tax revenues occasioned by the fact that “the benefits that accrue to new homebuyers from the infrastructure financed from the fee are capitalized into new home prices” (Ihlanfeldt and Shaughnessy, 2004: 642).

If that capitalization occurred, however, the price effects of the fee would be different for new and existing homes. The Ihlanfeldt and Shaughnessy theory posited that new home prices will rise to reflect the value of the amenities financed by impact fees.<sup>68</sup> That rise in prices will result in increased property tax revenues, which in turn will bring about a reduction in property tax rates for all residents. That reduction in property tax rates will increase the value of new and existing homes. But the amenity value resulting from the impact fee should be capitalized only into existing homes (unless the amenities provided a benefit to new and existing homes equally, which would raise legal concerns). The property tax savings that result from the higher taxes received for the amenity-enhanced value of new homes will be spread over all new and (many more) existing homes.

Thus, Ihlanfeldt and Shaughnessy’s finding of equal impacts for new and existing homes is troubling. If new home prices rise to reflect the amenity financed by the fee, and both new and existing home values rise to reflect the property tax rate change, new home prices should rise more than existing home prices. The price increase for new and existing homes would be the same only if the impact fee added no amenity value to the new homes (or if the price effect of the added value was competed away because the amenities could be purchased elsewhere for less). But if the fee added no value (or were competed away), the increase in property tax revenue that drives Ihlanfeldt’s and Shaughnessy’s explanation would not occur.

Further, why would homebuyers be so sure that property taxes would fall as a result of increases in home values that they would be willing to pay increased prices in advance of the decrease (the impact fee’s effect on tax rates become statistically significant only after a 3-year lag) (Wachter, 2002). In the real world, property taxes are rarely lowered because of the increasing value of the jurisdiction’s tax base—the increased value is eaten up by increases in the cost of doing business, increased demands for services, and so on. An increase in the value of the home of between \$1.00 and \$1.68 per \$1.00 of impact fee on the promise of a rate rollback seems extraordinarily optimistic on the part of the homebuyers.

Elsewhere in the paper, Ihlanfeldt and Shaughnessy offered a different explanation for the price effect: they argued that if an impact fee provides no change in infrastructure quality for new houses (relative to existing houses), the fee will increase the prices of new and existing homes by equal amounts because homeowners will realize a savings on property taxes by shifting the costs of infrastructure from taxpayers to developers. The authors claimed, however, that “based on our housing model results, developers of new housing appear to be fully compensated for the impact fees that they pay by increases in the prices that they can charge for new homes.” (Ihlanfeldt and Shaughnessy, 2004: 658).<sup>69</sup> The shift in financing, then, was not from taxpayers to the developer but from taxpayers to new homebuyers. If the impact fee was passed on to new homebuyers, it also would drive the price of existing housing up as buyers sought substitutes for the higher-priced new housing. A fee passed on to new homebuyers would be reflected in equal price increases for new and used homes, as the authors found, but the price increase for existing homes would largely be a windfall gain, not the “present value of the property tax savings” expected from the shift in financing methods, as Ihlanfeldt and Shaughnessy claimed (Ihlanfeldt and Shaughnessy, 2004: 658). Moreover, this argument unrealistically assumes that homebuyers will be willing to pay more for their housing based on the promise of property tax rate reductions in the future.



Ihlanfeldt and Shaughnessy thus offered evidence of a price effect from impact fees. But despite their claims, their model did not distinguish between an “excise” tax effect and a capitalization of value added (or property tax reductions achieved) by the impact fee. That issue remains the most troubling gap in the incidence studies—although most found a price effect from impact fees, none was able to distinguish between a price effect that reflected added value to the homebuyer from the amenities for which the fee was spent (or from efficiencies achieved by the shift in financing methods) and a simple “passthrough” of a tax that added no value for the consumer.<sup>70</sup> That difference is crucial to understanding the effect impact fees have on the affordability of housing because a price increase offset by increased value to the consumer is quite different from an unmitigated price increase. Further, because the various studies analyzed above found such different magnitudes of effect and such differences between the effects on new and existing homes, the literature overall raises serious doubts about whether the models are insufficiently or incorrectly specified.

## Research Needed

The introduction of (or an increase in) impact fees could cause housing prices to rise for several different—and for policy purposes, conflicting—reasons. Increases could reflect the value the fee adds to the property by either providing improved infrastructure or other amenities or reducing the homeowner’s liability for property taxes for future infrastructure. Conversely, increases in housing prices could instead reflect a dead-weight loss to consumers as a tax that provides no value to the homes on which the fee is levied. To evaluate which of these alternatives—or perhaps others—may be at play in the price effects of impact fees, researchers might try several different approaches.

First, to understand whether any price effect of an impact fee reflects value added or a dead-weight loss to the housing consumer, researchers must include variables related to the infrastructure and other amenities that may be financed from the impact fee in their models. Similarly, to understand if the transition from property tax to impact fee financing of infrastructure adds value to residents by either reducing uncertainty about the effect of future growth or reducing subsidies for inefficient growth, researchers should add variables to their models that capture changes in property tax rates or rates of increase.

Second, studies of price effects need to be more attentive to the effect fees have on the supply of housing in the jurisdiction. Mayer and Somerville (2000), Skidmore and Peddle (1998), and McFarlane (1999) started work on this issue, but much more can be done. If price effects are observed in situations in which supply is increasing, the price effect is more likely to be a capitalization of value added (which contributes to demand) rather than a passthrough of an inefficient fee. If price effects are seen in situations in which supply is decreasing, it is especially important for researchers to account for other growth controls or artificial limitations on supply in their models. To help elucidate the relationship between price effects and changes in supply and demand, models should include variables that would proxy demand, such as the differential between asking prices and sales prices or the period during which a listing remains unsold.

Third, because an inefficient impact fee is most likely to be passed through to consumers when the consumers have few substitutes for the housing, adapting the work of Pollakowski and Wachter (1990) to test whether the price effect of impact fees varies with the level of fees charged in neighboring jurisdictions would also be useful.

Fourth, because opponents of impact fees often are concerned that these fees are, in fact, growth control devices, while resigned proponents sometimes view fees as a necessary evil to prevent worse forms of growth management (Altshuler and Gómez-Ibáñez, 1993),

assessing the relationship between impact fee use and various measures of growth, as the Clarke and Evans study (1999) started to do, would add much to the literature on this topic. The introduction of variables that proxy for supply and demand characteristics would help shed light on the issue, as would more attention to the relationship between property tax rates and impact fees, as suggested earlier. In addition, however, further attention to spending levels for infrastructure in impact fee and non-impact fee jurisdictions would be a useful contribution.

## Relationship Between Price Effects and the Affordability of Housing

Even if growth control or growth management regulations in general—and impact fees in particular—may increase the price of housing by more than the benefits these regulations add to the housing, it does not necessarily follow that such regulations in general—or impact fees in particular—decrease the affordability of housing. If a regulation increases the price of housing by more than it adds value to the housing, by definition it raises the cost of housing, and, therefore, might be assumed to decrease the affordability of housing.<sup>71</sup> This conclusion is too simplistic, however, for several reasons.

First, if an impact fee makes the price of housing to consumers equal to the net cost the housing imposes on society, by forcing the producers of housing to internalize harms the development imposes, the fee promotes efficiency, even if housing is less “affordable” as a result. Such a price increase would correct a market imperfection—the failure of the price system to reflect accurately the total social costs of the housing. If housing previously was affordable only because the market was not accurately pricing the cost the housing imposed on society as a whole, correcting the price will promote greater efficiency.

Although this correction to the price of housing may enhance efficiency, it may raise distributional concerns. The transition to more accurate prices may appear unfair to those who expected to be able to benefit from the underpriced housing. If society allowed homebuyers to externalize the costs of development during a time when homebuyers were disproportionately Caucasian, but insists on correcting prices by forcing internalization of all social costs just as significant numbers of people of color begin to buy homes, the transition may be especially unfair. The solution to the unfairness probably would not be to continue to allow housing producers to externalize harms, however, but to provide some form of redistribution to ease the transition to a more accurate pricing system.

Second, even if impact fees raise the price of housing by more than the benefits they provide to that housing (or by more than the social costs they force consumers to internalize), fees may offset that effect by encouraging a more efficient use of infrastructure or land or by encouraging higher density development. Similarly, the increase to the price of housing may be offset by reductions in other items (such as transportation costs) in a family’s budget. In such cases, the overall affordability of housing in a jurisdiction might not be affected by an increase in the average sales price of housing because that increase would be counterbalanced by a decrease in property taxes from the more efficient use of infrastructure, an offsetting decrease in the price of certain types of housing as a result of more efficient use of land, or a decrease in other family expenditures.

Third, to promote housing affordability for moderate-income groups and racial and ethnic minorities, increasing the supply of new “starter” homes, multifamily housing, rental housing, and especially “affordable” rental housing is critical. These housing types are especially important in efforts to make housing affordable and available to moderate-income families and to people of color because research shows that new neighborhoods of starter homes are more racially mixed than established neighborhoods (Pendall, 2000). Whether impact fees are imposed on all those types of housing to the same extent that

such fees are imposed on higher value single-family housing is not clear. Whether fees have the same price effects on these types of housing that they do on higher value, single-family housing also is not clear, although the 2004 study by Mathur et al. begins to address that issue. Some evidence indicates that the introduction of impact fees may result in the provision of more high-density and multifamily housing (Pendall, 2000), and an increase in supply may help to offset any price effects of an impact fee. To fully understand the effect impact fees have on the affordability of housing requires greater understanding of how impact fees are being used and the effects impact fees have on the provision of the different types of housing, and on the prices of these different housing types.

Fourth, even if impact fees raise the price of housing, that effect might be countered by an increase in the provision of housing specially targeted for moderate-income families through linkage programs, for example. Where impact fees or linkage programs are used to create moderate-income housing, the overall effect of the fee program may be to raise housing prices for the purchasers of the new homes subject to the impact fee and any close substitutes for that new housing. But that increase in prices for middle income or high income buyers will subsidize the provision of housing for moderate-income consumers. Whether that subsidization is appropriate will depend on the relative wealth of the new home purchasers versus the beneficiaries of the subsidized housing, whether filtering processes mean that a price increase in the market for new housing and its substitutes will lead to price increases in the market for the moderate-income housing subsidized by the inclusionary zoning impact fee or linkage program, and if those increases will outweigh the effects of increasing supply in that market.

Finally, price effects from impact fees may be countered by increases in the supply made possible by the use of impact fees. As noted earlier, impact fees may enable growth that would otherwise be constricted by concurrency requirements, adequate public facility ordinances, or by a jurisdiction's use of traditional zoning tools. Further, because impact fees are relatively transparent and nondiscretionary, they may provide greater certainty than many other forms of land use regulation, and thus may result in more housing being built than under traditional zoning, growth control, or growth management schemes.

To account for those factors, several important issues must be added to the research agenda. More attention needs to be paid to the difference between the effect impact fees may have on housing prices and the ultimate effect they may have on the affordability of housing. The distributional implications of a transition to impact fee financing of infrastructure should receive careful attention. More research should be conducted to account for the benefits that impact fees provide by financing neighborhood amenities, reducing taxes, or reducing risk. All discussions of the effect impact fees have on housing affordability and opportunity should consider that effect relative to the effect of other means of financing infrastructure. Finally, research should focus on the relationship between impact fees and programs explicitly designed to increase the efficiency of the land development process as well as programs designed to increase the supply of affordable housing. Each of those issues is explored in more detail below.

**Prices versus affordability.** Because impact fees are assessed on new housing, more research is required to understand how price effects on new (and, therefore, usually higher quality) housing translate to effects on the housing that is most commonly purchased (or rented) by moderate-income households. Somerville and Mayer (2002) tackled this issue by examining how the use of growth management techniques and impact fees in an area influenced changes in the stock of affordable housing (defined as units for which gross rents were less than or equal to 30 percent of household income for a household with 35 percent of the area's median household income).<sup>72</sup> The authors hypothesized that as restrictions on new construction, such as growth management tools or impact fees,

decreased the supply of new high-quality, “unaffordable” housing, owners will invest sufficiently in repair and maintenance of affordable housing units to cause units to “filter up” to a less affordable market. Somerville and Mayer used as their impact fee variable a dummy for whether jurisdictions in the area imposed impact fees (the authors did not specify if just one jurisdiction in the area would trigger the variable, or if some percentage of jurisdictions must use fees to trigger the variable).<sup>73</sup>

Somerville and Mayer found that the presence of impact fees increased the probability that an affordable rental unit filters up to become unaffordable, although the effect is small: a 10-percent change in the dummy variable for whether jurisdictions in the area imposed fees resulted in a 0.92-percent change in the probability that an affordable unit filtered up to become unaffordable. The Somerville and Mayer study is hampered by the bluntness of the impact fee variable used. Exactly what a 10-percent change in the dummy variable that measures whether a jurisdiction in a metropolitan area imposed an impact fee means is not clear. It could mean either that more of the metropolitan areas studied have such jurisdictions or that more housing falls within an area that has a jurisdiction using fees. Neither of these measures is clearly linked to the probability that a fee adds value to the home or to the elasticity of supply and demand that determines whether a dead-weight fee can be passed on to consumers. Further, nothing in the Somerville and Mayer model addresses the possibility that impact fees funded amenities that increased demand for new housing (rather than restricting the supply of new housing, as the authors hypothesized). In addition, unless the number of jurisdictions in an area imposing impact fees is relatively constant across the 44 metropolitan areas in the sample, and the areas are roughly equivalent in terms of the elasticity of their housing markets, one would not expect the effect of the impact fee variable on the filtering up process to be uniform across areas. But without variables for the individual areas in the study, evaluating the increase in odds ratios the authors found to be correlated with the impact fee dummy is difficult.

Nevertheless, Somerville and Mayer were right to try to test the effect price increases caused by impact fees have on actual measures of affordability, rather than just on prices; more work along those lines should be undertaken.

**Distributional effects.** Price increases occasioned by impact fees (and, as just noted, the changes in the stock of affordable housing occasioned by impact fees) may have effects on the already troubling disparity in the rates of homeownership between Caucasians and African Americans, Latinos, Asians, and other racial and ethnic minorities. African-American homeownership rates, for example, have trailed Caucasian homeownership rates by between 20 and 30 percentage points for most of the last century (Masnick, 2001; Simmons, 2001). These differences persist even when differences in demographic and income factors known to affect homeownership rates, such as income, age, and educational attainment, are accounted for (Segal and Sullivan, 1998; Wachter and Megbolugbe, 1992). A transition from property tax funding of infrastructure to impact fee financing may have differential effects on various racial and ethnic groups. If impact fees have a greater impact on first-time homebuyers, for example, that may have different impacts on racial minorities than on Caucasians because so many more Caucasians than minorities already own their own homes. An urgent need exists, therefore, for a very careful parsing of the likely effects impact fees may have on racial and ethnic minorities.

**Accounting for the benefits provided by impact fees.** As noted above, because an impact fee may raise prices of housing but provide amenities or savings on other taxes or expenses that are of value to consumers, that impact fees raise the price of housing is not necessarily “bad.” If impact fees provide better access to public transit for a home, for example, the increase in housing price may be more than offset by the decrease in the homeowner’s transportation costs. Similarly, if impact fees provide better storm-water

drainage, the increase in the price of the home may be more than offset by reductions in future losses from flooding. If impact fees reduce the homeowner's property tax liability, of course, the affordability of the total home/service/tax package will be unaffected. Understanding the benefits impact fees are financing, accordingly, is critical to assessing the effect such fees may have on the affordability of housing. While quantifying those benefits is extremely difficult, the need to do so should be paramount on the research agenda.<sup>74</sup>

**The relativity of the effect of impact fees on affordability.** Similarly, discussing the effect impact fees may have on the affordability of housing in the abstract without a comparison to the effect that alternative forms of financing will have on affordability is not helpful. If the infrastructure financed with impact fees is cost-efficient because it either adds value to housing and neighborhood quality or avoids harms greater than its cost, the infrastructure would be desirable to provide even if impact fees were to be banned.<sup>75</sup> If the infrastructure is provided, it must be paid for, and every source of financing will have effects on the affordability of housing or some other basic item in a household's budget. Therefore, the focus of the research needs to be on a comparative analysis of the effects that impact fees have on the affordability of housing (and other related items in the consumer's budget) *relative* to the effects that other realistic forms of financing would have.

As noted previously, discussions of the relative affordability of alternative housing/service/financing packages need to be attentive to potential differences in the effect of alternative packages for different racial and ethnic minorities. For example, a shift from property tax financing to impact fees means that although existing residents enjoyed a subsidy for property taxes used to finance infrastructure because property taxes were deductible from federal income taxes, new residents will not enjoy that subsidy for their infrastructure payments. New residents instead will receive the mortgage tax deduction for interest payments on the consumer's mortgage (which will include the cost of the impact fee). If the property tax subsidy was more valuable for some reason, and if new residents are likely to be more racially diverse than owners of existing homes, the transition from property taxes to impact fees would have distributional consequences that must be considered. Any transition has distributional consequences, but better information about the demographics of those homeowners whose infrastructure is financed by impact fees compared with those whose infrastructure is (or was) financed by property taxes would shed light on whether the transition costs have unacceptable racial implications.<sup>76</sup>

Learning more about the regressiveness of impact fees relative to other forms of infrastructure finance also is important. Legally, impact fees cannot be based on ability to pay, absent evidence that facility costs decline with family income, which is unlikely to be the case for most services (Netzer, Schill, and Susin, 2001). Accordingly, impact fees are undoubtedly regressive; they increase as a percentage of income as income decreases (Nicholas, 1992). But again, the issue is relative: are impact fees more regressive than property taxes or the other alternative forms of infrastructure finance? A second question is how impact fees can be designed to minimize their regressiveness without sacrificing other goals. Nicholas (1992) started to address this second question, but more research needs to be conducted. Nicholas showed that basing fees on the square footage of a unit was less regressive than basing the fees on the number of bedrooms in a residential unit, which in turn was less regressive than basing fees simply on the type of unit (single-family detached versus multifamily apartment, for example). Basing the fee on unit size also is likely to be more accurate in measuring the impact of the development on local facilities because unit size correlates more closely with the number of people in the unit than does the type of unit or the number of bedrooms. Similarly, Malizia and Norton (1997) showed that school impact fees based on housing type and size were less regressive than flat-fee programs.

**Examining the relationship between impact fees and measures to increase affordability by encouraging more efficient land use, more efficient regulatory systems, or greater density.** Many growth management proponents claim that any restrictions in supply caused by the adoption of growth management tools will be offset by increases in density that will channel the market toward the provision of more multifamily housing. Little research has been conducted on the extent to which jurisdictions adopting impact fees already have adopted measures that would allow increased density or on measures that would allow developers other savings, such as fast-track permitting. To assess the effect impact fees have on housing affordability, the relationship between impact fees and measures to improve the efficiency of development patterns and reduce the costs of the development process should be examined.<sup>77</sup>

**The relationship between impact fees and programs explicitly designed to increase affordable housing.** Finally, incorporating evaluations of “mitigation” measures aimed explicitly at addressing the affordability issue into the discussion of the effect impact fees, relative to other financing mechanisms, may have on housing affordability is critical. Increasing evidence suggests that jurisdictions are seeking to address any effect that impact fees may have on affordability by waiving fees, providing grants to cover the amounts of fees to moderate-income home-buyers, or by assessing fees to fund affordable housing. Pendall’s survey (1995) of jurisdictions with 1990 populations of 10,000 located in the 25 largest metropolitan areas of the United States found that 85 of the 1,152 respondents, or 7.4 percent, offered waivers of planning or impact fees on affordable housing developments, and 10 percent had inclusionary zoning requirements. An in-depth study of the impact fee practices of 89 communities in California showed that 37 percent waived or reduced fees for affordable housing (Landis et al., 2001). In Florida, a 1991 survey showed that 11 percent of the governments imposing impact fees had waivers or other accommodations for affordable housing (Florida Advisory Council, 1991). Little is known, however, about how well those programs are working—who they actually benefit, what they cost in relation to the benefits they provide, and if they distort the housing market in unintended ways.

## Conclusion

Opponents of impact fees decry fees (and growth management tools, in general) as the “new segregation.” (QuantEcon, 2002: 1). The careful analysis of the existing research discussed in Part III of this article, however, reveals that the existing literature has not yet established that impact fees raise the net price of housing—the price after offsetting benefits, such as amenities or savings on alternative financing mechanisms, are accounted for. The evidence that a transition from existing methods of financing growth to greater use of impact fees will have disproportionate effects on low- and moderate-income consumers in general, or racial minorities in particular, or otherwise lead to a new segregation is even thinner because the issue has only just begun to be addressed by rigorous testing and analysis. This article has attempted to set out an agenda for research academics, policy-makers, and housing affordability advocates to undertake to provide local governments with tools they can use to ensure that they are pricing the cost of development accurately and ensure that development pays its own way without sacrificing the affordability and availability of housing to moderate-income families and people of color.

Impact fees can be used to correct the myriad market failures that have allowed inefficient development to harm the natural and constructed environments of our communities, often at taxpayer expense. But impact fees also can be abused—to either exclude low- and moderate-income residents or people of color from communities or exploit new homebuyers who have no vote in the community. They also can be unfair to those caught in the transition from other forms of infrastructure finance. By paying careful attention to the numerous issues identified above, researchers can help local governments seize the potential impact

fees offer to promote more efficient development patterns while minimizing any negative effects impact fees might have on the affordability of housing and the distribution of housing opportunities to all residents.

## Author

*Vicki Been, the Elihu Root Professor of Law, is the Director of the Furman Center for Real Estate and Urban Policy and Faculty Director of the Root-Tilden-Kern program at New York University. She teaches courses in land use regulation, property, and state and local government; seminars on the Takings Clause, environmental justice, and empirical issues in land use and environmental law; and, as co-teacher, an interdisciplinary Colloquium on the Law, Economics and Politics of Urban Affairs. Professor Been has written extensively on the Fifth Amendment's Just Compensation Clause, environmental justice, impact fees, housing affordability, "smart" growth, and other land use topics.*

## Notes

1. This paper primarily addresses impact fees in the United States, but impact fees are gaining favor around the world. See Alterman (2001); Slack and Bird (1991). Further, although this paper focuses on impact fees, two closely related financing mechanisms—adequate public facilities requirements and user fees—also have enjoyed a surge in popularity. Pendall's (1995) survey, conducted in 1994 with planning officials in jurisdictions with 1990 populations exceeding 10,000 people in the 25 largest metropolitan areas in the United States, found that almost 30 percent of the jurisdictions responding (77 percent of those sampled responded) had adopted Adequate Public Facilities Ordinances (APFOs). APFOs typically prohibit new housing if development would reduce levels of service for specified facilities below existing or specified levels. Pendall found that APFOs tended to be adopted by large jurisdictions (the jurisdictions with such ordinances had an average 1990 population of 94,000) in the high-growth sunbelt states such as Florida, California, Texas, and Colorado. The APFOs were most often applied to parks, water supply and wastewater facilities, and transportation facilities. APFOs are roughly interchangeable with impact fee ordinances because they essentially force developers to either pay for the infrastructure necessary to service a development or relocate to communities with excess capacity in their public facilities. Similarly, the use of user fees for sewer and wastewater treatment has increased, and these user fees also are analogous to impact fees. See Netzer, Schill, and Susin (2001).
2. The survey was included in a Government Finance Officers Association newsletter to 12,459 subscribers, including 8,417 cities, counties, and special district governments. The response rate was 5.8 percent, or 485 governments.
3. Because the 89 local governments studied were not randomly sampled, the percentages are undoubtedly higher than in the total population of local governments.
4. The Wharton 1989 study again found much higher rates of impact fee use in California, documenting that 84 percent of the California cities in the sample imposed impact fees, compared with only 32 percent of the jurisdictions sampled from the Philadelphia metropolitan area. See Gyourko (1991).
5. The Government Finance Officers Association conducted a second national survey of 367 jurisdictions in 28 different states believed to have impact fee programs (not a random sample of jurisdictions) in 1989. That survey found that among the states that were the heaviest users of impact fees, the percentage of the jurisdictions' capital budgets paid for by impact fees ranged from an average of 2 percent in Texas to an average of 60 percent in California.

6. See also Skaburskis and Qadeer (1992), who found that the amount of the impact fees imposed increased with distance from the city's central business district and decreased with distance to suburban centers.
7. Greater use of fees in low-growth communities than in moderate-growth communities may signal their use as growth control devices.
8. See also Frank and Downing (1988), who compiled evidence from four studies about the average fees levied on a variety of different developments; Leithe (1990), who found that average fees for single-family dwellings were \$746 for water treatment facilities, \$1,295 for sewer treatment facilities, \$1,329 for roads, and \$519 for parks.
9. Throughout their report, the authors often combined administrative planning fees and building permit and inspection fees with impact fees; therefore, their analyses and conclusions must be carefully parsed to isolate the role that impact fees alone played.
10. A related problem arises not because of congestion effects but because of what Gyourko (1991) referred to (citing private communications with Peter Linneman) as an "incentive compatibility" problem: when public services are financed by general obligation bonds paid off with general tax revenues, families in life-cycle stages that put especially heavy demands on public services (when they have children using the public schools, for example) are able to seek to have those services financed by bonds, and then leave the community after their heavy demand years to avoid paying the indebtedness incurred to finance the services.
11. See also Downing's (1973) comparison of the financing of sewer service under marginal cost pricing, average cost pricing, and property taxes, which found that property taxes better approximate marginal costing than do average cost schemes but overcharged outlying and central areas to the advantage of the intermediate distance and density development.
12. Marginal cost pricing is not appropriate when the facility or service provides benefits to all of society; thus, these services that benefit all should be funded by society as a whole. Education, for example, may not be appropriately financed through impact fees (or through local property taxes) because of the many benefits a well-educated citizenry provides to society at-large.
13. Brueckner (1997) compared impact fee financing to a current cost-sharing scheme in which infrastructure was paid for when it was installed, and then the cost was shared among city residents, or a perpetual-sharing scheme in which the cost was financed by the sale of infinite-maturity bonds, and the interest payments in the future are shared among all owners of the urban land when the payment comes due. The two last options capture features of the property tax schemes commonly used by local governments.
14. For contrary views, see Gordon and Richardson (1997).
15. Slack's survey found "some uniformity in regional housing markets," which Slack took to mean that charges were based on what the market would bear rather than on actual costs of service (Slack, 1990: 41). Because Slack's survey results showed a considerable range in fees charged, exactly what he believed constituted sufficient "uniformity" to signal that fees are not based on the actual cost of service is not clear. In addition, his conclusion that some "uniformity" existed was not based on multivariate analysis, and therefore does not account for differences among municipalities that might otherwise explain the apparent convergence in fees.



16. The definitions of growth control and growth management, and the differences between them, which are especially important to any discussion of the motivations behind growth controls or growth management programs, are discussed more fully in the text in Part IIIB.
17. See, for example, Branfman et al. (1973), who found no substantial relationship between clustering of the poor and fiscal incentives for exclusionary controls, but did determine that clustering increased as the number of zoning authorities increased and as the proportion of African Americans and Latinos increased; Clinger Mayer (1996), who found a correlation between the level of exclusionary zoning and levels of home ownership, thereby supporting fiscal zoning motive for exclusionary zoning. In Rolleston's study (1987), restrictiveness of zoning positively correlated with both fiscal measures, such as the proportion of the local tax base derived from nonresidential property, and with the extent to which the adopting community had smaller percentages of racial minorities than its neighboring jurisdictions. But see Bogart (1993), who discussed flaws in the models for identifying motivations for exclusionary zoning.
18. See, for example, *Southern Burlington County NAACP v. Mount Laurel*, 336 A.2d 713, 723 (N.J. 1975) (finding that municipalities use large-lot zoning and other traditional growth control tools to "in effect build[] a wall around [themselves] to keep out those people or entities not adding favorably to the tax base"). See also Babcock (1966); Danielson (1976); Haar (1996); Kirp (1995); Williams and Norman (1971).
19. Greater use of fees in low-growth communities than in moderate-growth communities may signal their use as growth control devices.
20. Note that having consumers pay an upfront property tax financed through their mortgage rather than having them pay for the infrastructure in annual property tax payments over time may be inefficient or may raise distributional concerns. In terms of efficiency, one would need to compare the relative cost of public borrowing financed through property taxes versus private borrowing to finance impact fees. In terms of distributional impact, one would need to compare (1) the relative progressiveness or regressiveness of property taxes versus impact fees, and (2) the consumers' ability to purchase a lower housing price/higher property tax package with their ability to purchase a higher housing price (with impact fee)/lower property tax package.
21. For recent overviews of the legal constraints currently imposed on impact fees, see, for example, Bringardner (2000); Fenster (2004); Rosenberg (2003).
22. Several other problems that may arise in the use of impact fees should receive further attention in research. As noted earlier in the paper, using impact fees to finance facilities that have considerable positive externalities for other citizens or for society at large may be inappropriate. Some researchers have criticized using impact fees to finance the construction of schools, for example, arguing that education provides such broad benefits to society that all aspects of education, including facility costs, should be financed through general taxation. Similarly, the use of impact fees may contribute to urban sprawl by encouraging developers to locate in rural jurisdictions less likely to impose fees. Finally, any comparison of the wisdom of replacing property tax financing with impact fee financing for infrastructure should investigate both the administrative and financing costs of impact fees versus property taxes and any differences in the openness and transparency of the processes of setting and implementing impact fees versus property taxes.

23. Ellickson's exploration of the price effects of impact fees proceeded from the assumption that the housing market already was at a social optimum before the impact fee was imposed so that the fee would "necessarily raise the costs of housing construction by more than the prospect of additional services would increase the value of that housing to consumers" (Ellickson, 1977: 396).
24. Yinger did not claim to be offering a "new view," but claimed that "most previous studies ignore the capitalization of infrastructure benefits into house values, and no previous study recognizes the impact of property tax capitalization on the incidence of development fees (Yinger, 1998: 27)." The "new view" claim is made on Yinger's behalf by Ihlanfeldt and Shaughnessy (2004). Neither Yinger nor Ihlanfeldt and Shaughnessy cite Ellickson's work.
25. Several earlier writers had flagged the problems involved in treating impact fees as excise taxes (see, for example, Downing and McCaleb, 1987).
26. If the value of the infrastructure financed by the impact fee exceeds its cost, the price of housing will rise by more than the amount of the fee (and its associated financing and other costs). In that case, assuming that the developer cannot make supranormal profits because of the competitiveness of the development market, the landowner may receive more for the land—a capital gain (see Yinger, 1998).
27. For well-written summaries of the literature about the capitalization of property taxes and public service quality into housing prices, see, for example, Yinger et al. (1988); Ross and Yinger (1999).
28. Similarly, if the fees decrease property tax liability for new growth, consumers may be willing to pay more for housing in a jurisdiction that offers that "insurance" than in jurisdictions that do not.
29. Existing housing also would benefit from the reduced risk of liability for infrastructure needed for future residents, and that value will be capitalized into the prices of existing housing.
30. The size of the capital gain to existing homeowners relative to the price effect for new homes will depend on factors such as whether the amenity provided is equally valuable for existing homeowners (which would be suspicious from a legal standpoint) and the percentage of the housing stock represented by existing housing (which would affect the share of any savings on property taxes that would accrue to new homeowners).
31. The legal tests have been applied by the U.S. Supreme Court to land dedications, and possibly in lieu of fees, at least if they are negotiated on an ad hoc basis, but do not necessarily apply to impact fees (see Fenster, 2004). The analogy to the property tax capitalization arguments suggests that the proportionality and nexus tests might actually protect jurisdictions against inadvertently pricing themselves out of the market.
32. The difference between the capitalization of amenity value created by impact fees into home prices versus the passthrough of an excise tax in housing prices is analogous to the amenity-creation and supply-restriction models of the price effects of growth controls more generally; see, for example, Brueckner and Lai (1996); Brueckner (1990, 1995).

33. For a thorough exploration of the effect impact fees may have on the timing of development, see McFarlane (1999). Briefly, McFarlane found that a fee on housing will delay development; a fee on capital (such as a fee based on floor space) will delay the timing of development if agricultural rent on undeveloped land is positive and will be neutral if agricultural rent is zero; and a fee on land area will delay development.
34. In reality, of course, the housing supply of a jurisdiction would consist of both new and existing housing. For diagrams that incorporate the supply curves for both new and existing housing, see Ellickson (1977).
35. Note that if the impact fee is efficient (produces infrastructure or other amenities the consumers value as much as the cost of the fee), a shift in the demand curve would result as well, as discussed in Part IIIA; see Ihlanfeldt and Shaughnessy (2004). This discussion, however, considers only impact fees that either do not produce amenities or tax savings that consumers value or that produce amenities consumers value but are able to obtain from other jurisdictions without paying the fee.
36. According to Snyder and Stegman (1986), a large developer in Colorado Springs, Colorado, reported that he would mark the impact fee up by about 28 percent to cover his costs of financing and overhead and to maintain his profit margin.
37. Or the developer's other factors of supply, such as capital; see Ellickson and Been (2005).
38. Hodge and Cameron (1989) argued that even when a perfectly inelastic supply of land exists (for example, where the land zoned for development is strictly constrained), the landowner nevertheless will bear the fee if consumer demand is perfectly elastic. The matrix presented in exhibit 1 assumes, however, that landowners will be unwilling to bear the fee if the supply of land is constrained because the present value of the higher gains they anticipate from converting the land in the future as demand increases will exceed the carrying costs of the land.
39. Yinger (1998) argued that if households are mobile, the assumption of downward-sloping (inelastic) demand curves for housing in "unique" jurisdictions is misplaced because the nonreproducible characteristics of the jurisdiction will be capitalized into the price of the housing, but will have no effect on the consumer demand curve. Yinger's argument revealed that confusion exists in the literature about the relationship between a unique jurisdiction's attributes and limitations on consumer mobility. The argument that the consumer will pay most of the fee in a unique jurisdiction because of inelastic demand also does not explain why, if the consumer can be made to pay the fee, although by definition it does not bring any value to the consumer, developers would not already have been charging higher prices for the housing.
40. Note that the increase in prices for existing housing that results from substitution, when an inefficient impact fee is passed forward to the buyers of new homes, is different from increases in the value of existing homes that might occur when an efficient impact fee provides amenities for both new and existing housing.
41. Some theorists predicted that in this widespread impact fee situation, a portion of the fee would fall ultimately on owners of capital. They argued that because all development would be subject to the impact fee, developers would be less eager to develop, and as a result lenders would have to charge lower interest rates to induce them to proceed. See Ellickson and Been (2005).

42. The exception is Watkins (1999), who argued using mathematical proofs that the developer will always bear at least half the development charge. Watkins did not provide an intuitive explanation for that surprising result, and his argument has been largely ignored in the literature.
43. For a discussion of the differences between growth control and growth management, see, for example, Nelson et al. (2002).
44. Similarly, if the restraints force the internalization of externalities, the fact that housing prices rise in response to the regulation signals that the regulations are working as intended to correct the previous market failure.
45. Even if many consumers are mobile, those who are bound to a jurisdiction by family or job ties or by emotional connections with the community may face housing affordability problems in a community that imposes growth control or growth management.
46. For a discussion of the role uncertainty plays in land prices and the rate by which agricultural land is converted for development, see, for example, Capozza (1994); for a discussion of the role that instability about the amount of impact fees may have played in the price effects of impact fees, see Baden and Coursey (1999).
47. Several studies of land use regulations, in general, included exactions (generally) or impact fees (specifically) in their studies. Several found no price or supply effect. See, for example, Green (1999), who studied requirements that developers provide either curbs and gutters or sidewalks, and found that neither requirement had a statistically significant effect on house prices.
48. Hedonic regressions are a standard econometric technique that seeks to separate the contribution (or detriment) that each one of various attributes of a house and its neighborhood make to the sales price of the house. Under the hedonic technique, data about variables representing each important attribute of a house are regressed on the actual sales prices of homes in the study area to assign a value to the attribute.
49. The housing characteristic variables used were the total living area of the house and the lot size. Delaney and Smith (1989a, 1989b) and Singell and Lillydahl (1990) included very few variables relating to housing characteristics in their regressions. For discussion of the virtues of parsimony versus the need to include relevant variables, see for example, Fischel (1990) and Butler (1982), who found that estimations based on four independent variables were statistically indistinguishable from those using 11 variables.
50. The “constant-quality” house is at the mean of each of the explanatory variables.
51. Yinger (1998) pointed out that Delaney and Smith (1989b) held constant the cost of land, so that their analysis could not detect any “passback” of the impact fee to the landowner (and any reductions in housing prices flowing from reductions in land prices). The results, therefore, may have overstated the price effect the impact fee had on housing prices. The use of land cost as a variable also introduces an endogeneity problem into the regressions.
52. The housing characteristics used as variables were the square footage, number of bedrooms, number of bathrooms, lot size, and age.

53. The authors included a 3-month lead-time during which the fee increase was anticipated in the dummy variable for the impact fee.
54. Singell and Lillydahl (1990) speculated that the price effect on new homes was higher than the impact fee because the developers sought recovery not only of the fee but for the costs of financing the fee, may have used the occasion to seek to pass on other fees that the developers had previously borne, or may have increased the quality of the housing provided. Why developers would have chosen to absorb the fees before 1984 but sought to pass them on after 1984 is difficult to understand, unless some change occurred in the market, in which case that change may be an alternative explanation for the price increases.
55. Yinger (1998) suggested that the explanation must be that some time-related variable increasing housing values for both new and existing housing was omitted from the analysis.
56. Existing housing could become more valuable than new housing if the new housing received no benefit but absorbed the cost of the impact fee and provided a benefit to the existing housing (that is, paid for infrastructure of value to the existing homes rather than the new homes). Legal constraints are designed to prevent this from occurring but may not be effective at doing so.
57. The authors counted as fees some charges—administrative charges for processing permit applications, unrelated to infrastructure provided for the homes—that are not typically thought of as impact fees. These charges are unlikely to add any value to a house from the buyer’s perspective.
58. Dresch and Sheffrin (1997) used a simple linear model, rather than using logs or other techniques that allow consideration of the diminishing marginal utility of housing characteristics. A linear model assumes that each housing attribute has a linear relationship to the price of the attribute so that each additional unit of the attribute has the same effect on price. But after some point, the effect of the attribute is likely to diminish. The use of the simple linear model may somewhat limit the usefulness of the Dresch and Sheffrin results; see Baden and Coursey (1999). Delaney and Smith (1989a, 1989b) also used a linear reduced form equation rather than logs. The remainder of the regressions reported in the paper used the log form of the hedonic method.
59. The results had a standard error of 0.65, however, which means that the relationship between fees and price increases could actually have been dollar for dollar. If prices did rise by more than the fee charged, Dresch and Sheffrin speculated that the data neither captured all the fees associated with new construction nor accounted for the full cost of the fees (such as financing costs) to developers, which means that the fee variable understated the fee, and the price effect better reflected its actual cost. The fees charged may have been used to provide infrastructure or amenities that consumers valued so that the increase in housing prices in the wealthy area actually was the capitalization of value added by the fee.
60. Yinger (1998) criticizes the Nelson et al. regression as subject to endogeneity bias because both sides of the regression contain the number of acres or the number of sites as variables.

61. See also Nelson, Frank and Nicholas (1992). The study period ran from July 1981 to June 1987. The county adopted its impact fee program in 1983. The regression includes a variable for the month in which the land sales took place, which, in those parts of the county that implemented the fee, may be correlated with the variable for the amount of the fee, leading to a multi-collinearity problem. An additional problem with the Nelson, Frank, and Nicholas (1992) and the Nelson et al. (1992) studies is that they were based on very small sample sizes: the Sarasota data involved only 40 observations. For criticism of the Nelson et al. (1992) and Nelson, Frank, and Nicholas (1992) studies, see Ihlanfeldt and Shaughnessy (2004).
62. For one of the suburbs, the authors used as a variable the amount the fee schedule required for the type of lot rather than the actual fee imposed.
63. The coefficient for the impact fee dummy variable was significant at the 95-percent level in one model and at the 90-percent level in another.
64. Baden and Coursey's housing characteristic variables were the number of rooms; the number of bathrooms; the square footage of the master bedroom, the second through fifth bedrooms, kitchen, dining room, living room, and the sum of the remaining rooms; the presence of a "great room"; the age of existing housing; the size of the garage; and the size and irregular shape of the lot (a proxy for whether the lot is on a cul-de-sac). The authors used the square footage of the various rooms to avoid multi-collinearity problems posed by using the number of bedrooms, given that several of the fees studied were based on the number of bedrooms.
65. Baden and Coursey (1999) were unclear about why they chose to pool the data for the new and existing homes in the regression and why the coefficient on the impact fee variable should be attributed to both new and existing homes equally when there does not seem to be a dummy variable to distinguish new houses from existing houses.
66. Skidmore and Peddle (1998) also attempted to measure the correlation between the introduction of impact fees and property tax rates. Although these authors cautioned that the results were preliminary and hampered by various data constraints, the initial estimates found that the introduction of impact fees was associated with reductions in property taxes.
67. Ihlanfeldt and Shaughnessy (2004) explained the decrease in land values, given that the full cost of the impact fees appeared to have been passed forward to the consumer, as reflecting developers' uncertainty about future increases in impact fees and about regulatory delays. The explanatory power of their model for land prices, however, was quite low ( $R^2 = 0.1849$ ). See also Wachter (2002).
68. Ihlanfeldt and Shaughnessy (2004) might have tried to account for whether impact fees added value (rather than served as an excise tax) by using quality of neighborhood amenity variables to the regression.
69. Perhaps Ihlanfeldt and Shaughnessy (2004) meant that developers will be fully compensated for impact fees if they are able to charge higher prices for new homes because the price for new homes will capitalize the savings in property taxes that all residents of the jurisdiction will enjoy by shifting the financing of new infrastructure to impact fees. However, that scenario is not plausible. First, as pointed out in the text, the promise that property taxes will be reduced in the future (or will not rise as fast as they otherwise would) because of a shift in financing methods is full of political

risk, and consumers would surely discount the expected property tax savings by that risk. Second, for new home values to rise by enough to compensate developers for impact fees, growth rates would have to be extremely high. The savings from shifting to impact fee financing would accrue to all residents, while the impact fees would be paid only for new homes. Typically, so many more existing homes would be eligible for a tax decrease than new homes on which an impact fee could be imposed that the property tax savings enjoyed by each household would be a small fraction of the impact fee charged for new houses.

70. Mayer and Somerville (2000) recognized the problems posed by their study's focus on prices, which cannot distinguish between whether price increases are due to higher demand because of the capitalization of benefits regulation provides consumers or lower supply.
71. What constitutes "affordable" housing is a much-contested issue. In controversies over growth control and growth management, particular concern has been raised about the effect land use regulation of all kinds has on low- and moderate-income consumers and the racial and ethnic groups that traditionally have been discriminated against in housing markets. This part focuses on that controversy.
72. Two other studies of the effect of impact fees on affordability to moderate-income consumers bear mention. Anthony (2003) found that Florida's Growth Management Act, which requires "concurrency" by mandating that the infrastructure needed to service a development must be available before the development is completed, was significantly related to decreases in housing affordability as measured by a composite index based on the income needed to qualify for a mortgage to buy an existing median-price home in the state. Although the Growth Management Act's concurrency requirement encouraged some jurisdictions to impose impact fees to finance the infrastructure needed to meet the concurrency requirement, it resulted in the implementation of a number of other "growth management" tools as well (and may have encouraged developers to meet concurrency requirements by relocating to jurisdictions that had less congested infrastructure, possibly leading to even worse sprawl). Because Anthony's findings did not separate the effect of impact fees from the effects of those other controls, determining if impact fees alone were correlated with decreases in housing affordability is not possible. Pendall (2000) studied the effect that adequate public facilities ordinances, which are essentially concurrency requirements, had on the type of housing produced, and found that they encouraged a shift toward multi-family housing.
73. Somerville and Mayer (2002) reported that the "mean" for the impact fee dummy variable is 0.36 for affordable units and 0.51 for unaffordable units. The reported mean appeared to relate to the number of all affordable and unaffordable units located in a jurisdiction that imposes impact fees. The mean, therefore, did not signal if many or few jurisdictions in a metropolitan area imposed fees.
74. Interesting efforts to quantify the benefits of some of the amenities sometimes financed with impact fees include Cheshire and Sheppard (2002) and Malpezzi and Mayo (1997).
75. If a particular kind of infrastructure is not cost-efficient, the problem lies not in the choice of impact fees over other forms of financing but in the decision to impose the subdivision regulation, building code, or zoning restriction that mandates the infrastructure.

76. The best elucidation of the “intergenerational equity” concerns raised by the transition from property taxes to impact fees remains. See Snyder and Stegman (1986); Levine (1994).
77. Whether increasing density necessarily increases housing affordability, at least for a constant-quality housing/neighborhood/service package, is far from clear. Any research about whether increased density mitigates any effect impact fees may have on affordability has to account for that issue.

## References

- Abbott, William W., et al. 2001. *Exactions and Impact Fees in California*. Point Arena, CA: Solano Press.
- Alterman, Rachele. 2001. *National-Level Planning in Democratic Countries: An International Comparison of City and Regional Policy-Making*. Town Planning Review Book Series. Liverpool: Liverpool University Press.
- Altshuler, Alan A., and Jose A. Gómez-Ibáñez. 1993. *Regulation for Revenue*. Cambridge, MA: Lincoln Institute of Land Policy.
- Anthony, Jerry. 2003. “The Effects of Florida’s Growth Management Act on Housing Affordability,” *Journal of the American Planning Association* 69: 282–295.
- Babcock, Richard F. 1966. *The Zoning Game: Municipal Practices and Policies*. Madison: University of Wisconsin Press.
- Baden, Brett M., and Don L. Coursey. 1999. An Examination of the Effects of Impact Fees on Chicago’s Suburbs. Working paper 99: 20. Harris School of Public Policy Studies, University of Chicago.
- Baldassare, Mark, and Georjeanna Wilson. 1996. “Changing Sources of Suburban Support for Local Growth Controls,” *Urban Studies* 33: 459–471.
- Bauman, Gus, and William H. Ethier. 1987. “Development Exactions and Impact Fees: A Survey of American Practice,” *Law & Contemporary Problems* 50: 51–68.
- Been, Vicki, 1991. “‘Exit’ As a Constraint on Land Use Exactions: Rethinking the Unconstitutional Conditions Doctrine,” *Columbia Law Review* 91: 473–506.
- Blaesser, Brian, and Christene M. Kentopp. 1990. “Impact Fees: The Second Generation,” *Washington University Journal of Urban and Contemporary Law* 38: 55–100.
- Blewett, Robert A., and Arthur C. Nelson. 1988. “A Public Choice and Efficiency Argument for Development Impact Fees.” In *Development Impact Fees: Policy Rationale, Practice, Theory, and Issues*, edited by Arthur C. Nelson. Chicago: Planners Press, American Planning Association.
- Bogart, William T. 1993. “‘What Big Teeth You Have!’ Identifying the Motivations for Exclusionary Zoning,” *Urban Studies* 30: 1669–1681.
- Branfman, Eric J., Benjamin I. Cohen, and David M. Trubek. 1973. “Measuring the Invisible Wall: Land Use Controls and the Residential Patterns of the Poor,” *Yale Law Journal* 82: 483–508.



Braun, Mark Edward. 2003. "Suburban Sprawl in Southeastern Wisconsin: Planning, Politics, and the Lack of Affordable Housing." In *Suburban Sprawl: Culture, Theory, and Politics*, edited by Matthew J. Lindstrom and Hugh Bartling. Lanham, MD: Rowman & Littlefield.

Bringardner, Bruce W. 2000. "Exactions, Impact Fees, and Dedications: National and Texas Law After *Dolan* and *Del Monte Dunes*," *Urban Lawyer* 32: 561–585.

Brueckner, Jan K. 2001. "Urban Sprawl: Lessons from Urban Economics." In *Brookings-Wharton Papers on Urban Affairs: 2001*, edited by William G. Gale and Janet Rothenberg Pack. Washington, DC: Brookings Institution Press.

———. 1997. "Infrastructure Financing and Urban Development: The Economics of Impact Fees," *Journal of Public Economics* 66: 383–407.

———. 1995. "Strategic Control of Growth in a System of Cities," *Journal of Public Economics* 57: 393–416.

———. 1990. "Growth Controls and Land Values in an Open City," *Land Economics* 66 (3): 237–248.

Brueckner, Jan K., and Fu-Chuan Lai. 1996. "Urban Growth Controls with Resident Homeowners," *Regional Science and Urban Economics* 26: 125–143.

Bullard, Robert, J. Eugene Grigsby III, and Charles Lee, eds. 1994. *Residential Apartheid*. Los Angeles: CAAS Publications.

Burchell, Robert W., et al. 1998. *The Costs of Sprawl—Revisited*. Washington, DC: Transportation Cooperative Research Program.

Burchell, Robert W., and David Listokin. 1995. *Land, Infrastructure, Housing Costs, and Fiscal Impacts Associated With Growth: The Literature on the Impacts of Sprawl Versus Managed Growth*. Cambridge, MA: Lincoln Institute of Land Policy.

Burchell, Robert W., David Listokin, and William R. Dolphin. 1994. *Development Impact Assessment Handbook*. Washington, DC: The Urban Land Institute.

Butler, Richard. 1982. "The Specification of Hedonic Indexes for Urban Housing," *Land Economics* 58 (1): 96–10.

Capozza, Dennis R. 1994. "The Risk Structure of Land Markets," *Journal of Urban Economics* 35: 297–31.

Cheshire, Paul, and Stephen Sheppard. 2002. "The Welfare Economics of Land Use Planning," *Journal of Urban Economics* 52: 242–269.

Clarke, Wes, and Jennifer Evans. 1999. "Development Impact Fees and the Acquisition of Infrastructure," *Journal of Urban Affairs* 21: 281–288.

Clingermayer, James. 1996. "Quasi-Judicial Decision Making and Exclusionary Zoning," *Urban Affairs Review* 31: 544–553.

Danielson, Michael N. 1976. *The Politics of Exclusion*. New York: Columbia University Press.

- Deakin, Elizabeth. 1989. "Growth Control: A Summary and Review of Empirical Research." In *Understanding Growth Management: Critical Issues and a Research Agenda*, edited by David Brower, David R. Godschalk, and Douglas R. Porter. Washington, DC: The Urban Land Institute.
- Delaney, Charles J., and Marc T. Smith. 1989a. "Impact Fees and the Price of New Housing: An Empirical Study," *AREUAE Journal* 17: 41–54.
- . 1989b. "Pricing Implications of Development Exactions on Existing Housing Stock," *Growth and Change* 20: 1–12.
- Downing, Paul. 1973. "User Charges and the Development of Urban Land," *National Tax Journal* 26: 631.
- Downing, Paul, and Thomas S. McCaleb. 1987. "The Economics of Development Exactions." In *Development Exactions*, edited by J. Frank and R. Rhodes. Chicago: Planners Press, American Planning Association.
- Dresch, Marla, and Steven M. Sheffrin. 1997. *Who Pays for Development Fees and Exactions?* San Francisco: Public Policy Institute of California.
- Ellickson, Robert C. 1977. "Suburban Growth Controls: An Economic and Legal Analysis," *Yale Law Journal* 86: 385–442.
- Ellickson, Robert C., and Vicki L. Been, eds. 2005. *Land Use Controls*. Gaithersburg, NY: Aspen Law and Business.
- Evans-Cowley, Jennifer S., and Larry L. Lawhon. 2003. "The Effects of Impact Fees on the Price of Housing and Land: A Literature Review," *Journal of Planning Literature* 17: 351–359.
- Fenster, Mark. 2004. "Takings Formalism and Regulatory Formulas: Exactions and the Consequences of Clarity," *California Law Review* 92: 609–682.
- Fischel, William A. 2001. *The Homevoter Hypothesis*. Cambridge, MA: Harvard University Press.
- . 1995. *Regulatory Takings: Law, Economics, and Politics*. Cambridge, MA: Harvard University Press.
- . 1990. *Do Growth Controls Matter: A Review of Empirical Evidence on the Effectiveness and Efficiency of Local Government Land Use Regulation*. Cambridge, MA: Lincoln Institute of Land Policy.
- . 1985. *The Economics of Zoning Laws: A Property Rights Approach to American Land Use Controls*. Baltimore: Johns Hopkins University Press.
- Florida Advisory Council on Intergovernmental Relations. 1991. *1991 Florida Impact Fee Report*.
- Ford, Richard Thompson. 1994. "The Boundaries of Race: Political Geography in Legal Analysis," *Harvard Law Review* 107: 1841–1844.
- Frank, James E. 1989. *The Costs of Alternative Development Patterns: A Review of the Literature*. Washington, DC: The Urban Land Institute.

- Freilich, Robert H., and David W. Bushek, eds. 1995. *Exactions, Impact Fees and Dedications: Shaping Land-Use Development and Funding Infrastructure in the Dolan Era*. Chicago: State and Local Government Law Section, American Bar Association.
- Frey, William H. 2001. *Melting Pot Suburbs: A Census 2000 Study of Suburban Diversity*. Census 2000 Series. Washington, DC: Brookings Institute.
- Frug, Gerald. 1996. "The Geography of Community," *Stanford Law Review* 48: 1047–1108.
- Gatzlaff, Dean H., and Marc T. Smith. 1993. "Uncertainty, Growth Controls, and the Efficiency of Development Patterns," *Journal of Real Estate Finance and Economics* 6: 147–155.
- General Accounting Office. 2000. *Local Growth Issues—Federal Opportunities and Challenges*. Washington, DC: U.S. Government Printing Office.
- Gilliland, C.E., L.D. Krebs, and T.J. Vanderberg. 1992. *Texas Development Impact Fees*. Real Estate Center Technical Report. College Station, TX: Texas A&M University.
- Gómez-Ibáñez, Jose A. 1996. "The Debate Over Impact Fees," *Illinois Real Estate Letter* Winter/Spring: 1–3. <http://www.business.uiuc.edu/orer/V10-1-1.pdf>.
- Gordon, Peter, and Harry W. Richardson. 1997. "Are Compact Cities a Desirable Planning Goal?" *Journal of the American Planning Association* 63: 95–106.
- Green, Richard K. 1999. "Land Use Regulation and the Price of Housing in a Suburban Wisconsin County," *Journal of Housing Economics* 8: 144–159.
- Gyourko, Joseph. 1991. "Impact Fees, Exclusionary Zoning, and the Density of New Development," *Journal of Urban Economics* 30 (2): 242–256.
- Haar, Charles M. 1996. *Suburbs Under Siege: Race, Space, and Audacious Judges*. Princeton, NJ: Princeton University Press.
- Hodge, Ian, and Gordon Cameron. 1989. "Raising Infrastructure Charges on Land Development: Incidence and Adjustments," *Land Development Studies* 6: 171–182.
- Holcombe, Randall G. 2001. "Growth Management in Action: The Case of Florida." In *Smarter Growth*, edited by Randall G. Holcombe and Samuel R. Staley. Westport, CT: Greenwood Publishing Group.
- Huffman, Forrest E., et al. 1988. "Who Bears the Burden of Development Impact Fees?" *Journal of the American Planning Association* 54 (Winter): 49–55.
- Ihlanfeldt, Keith R., and Timothy M. Shaughnessy. 2004. "An Empirical Investigation of the Effects of Impact Fees on Housing and Land Markets," *Regional Science and Urban Economics* 34: 639–661.
- Inman, Robert, and Daniel Rubinfeld. 1979. "The Judicial Pursuit of Local Fiscal Equity," *Harvard Law Review* 92: 1662–1689.
- Kaplow, Louis. 1986. "An Economic Analysis of Legal Transitions," *Harvard Law Review* 99: 509–617.

- Kasowski, Kevin. 1993. *The Costs of Sprawl, Revisited*. Planners Advisory Service Memo. February 1993. Chicago: American Planning Association.
- Kirp, David L., John P. Dwyer, and Larry A. Rosenthal. 1995. *Our Town: Race, Housing, and the Soul of Suburbia*. New Brunswick, NJ: Rutgers University Press.
- Landis, John, et al. 2001. *Pay to Play: Residential Development Fees in California Cities and Counties 1999*. Sacramento: State of California Department of Housing and Community Development.
- Leithe, Joni L. 1990. *Impact Fee Programs: A Survey of Design and Administrative Issues*. With Matthew Montavon. Washington, DC: Government Finance Research Center.
- Levine, Jonathan C. 1994. "Equity in Infrastructure Finance: When Are Impact Fees Justified?" *Land Economics* 70 (2): 210–222.
- Levmore, Saul. 1999. "Changes, Anticipations, and Reparations," *Columbia Law Review* 99: 1657–1700.
- Lillydahl, Jane H., and Larry D. Singell. 1987. "The Effects of Growth Management on the Housing Market: A Review of Theoretical and Empirical Evidence," *Journal of Urban Affairs* 9: 63–77.
- Malizia, Emil, and Richard Norton. 1997. "Reading, Writing, and Impact Fees," *Planning* 63: 17–19.
- Malpezzi, Stephen, and Stephen K. Mayo. 1997. "Getting Housing Incentives Right: A Case Study of the Effects of Regulation, Taxes, and Subsidies on Housing Supply in Malaysia," *Land Economics* 73 (3): 372–391.
- Masnack, George S. 2001. *Home Ownership Trends and Racial Inequality in the United States in the 20th Century*. Working Paper WO1-4. Cambridge, MA: Joint Center for Housing Studies, Harvard University.
- Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
- Mayer, Christopher J., and C. Tsurriel Somerville. 2000. "Land Use Regulation and New Construction," *Regional Science and Urban Economics* 30 (6): 639–662.
- McFarlane, Alastair. 1999. "Taxes, Fees, and Urban Development," *Journal of Urban Economics* 46: 416–436.
- Mullen, Clancy. 2005. 2005 National Impact Fee Survey. Unpublished paper. Duncan Associates. <http://www.impactfees.com/surveys.htm>.
- Nelson, Arthur C., and James B. Duncan. 1988. *Growth Management Principles and Practices*. Chicago: Planners Press, American Planning Association.
- Nelson, Arthur C., et al. 2002. *The Link Between Growth Management and Housing Affordability: The Academic Evidence*. Discussion Paper. Washington, DC: Brookings Institution Center for Urban and Metropolitan Policy.
- Nelson, Arthur C., et al. 1992. "Price Effects of Road and Other Impact Fees on Urban Land," *Transportation Research Record* 1305: 36–41.

- Nelson, Arthur C., James E. Frank, and James C. Nicholas. 1992. "Positive Influence of Impact-Fee in Urban Planning and Development," *Journal of Urban Planning and Development* 118: 59–64.
- Netzer, Dick. 1988. "Exactions in the Public Finance Context." In *Private Supply of Public*, edited by Rachele Alterman. New York: New York University Press.
- Netzer, Dick, Michael Schill, and Scott Susin. 2001. "Changing Water and Sewer Finance: Distributional Impacts and Effects on the Viability of Affordable Housing," *Journal of the American Planning Association* 67 (4): 420–436.
- Nicholas, James C. 1992. "On the Progression of Impact Fees," *Journal of the American Planning Association* 58: 517–525.
- Pendall, Rolf. 2000. "Local Land Use Regulation and the Chain of Exclusion," *Journal of the American Planning Association* 66: 125–142.
- . 1995. *Growth Controls and Affordable Housing in the United States: Results from a Recent Survey*. Working Paper 636. Berkeley, CA: University of California, Berkeley.
- Pollakowski, Henry O., and Susan M. Wachter. 1990. "The Effects of Land-Use Constraints on Housing Prices," *Land Economics* 66 (3): 315–324.
- Purdum, Elizabeth D., and James E. Frank. 1987. "Community Use of Exactions: Results of a National Survey." In *Development Exactions*, edited by J. Frank and R. Rhodes. Chicago: Planners Press, American Planning Association.
- QuantEcon. 2002. *Smart Growth and Its Effects on Housing Markets: The New Segregation*. Washington, DC: National Center for Public Policy Research.
- Rolleston, Barbara Sherman. 1987. "Determinants of Restrictive Suburban Zoning: An Empirical Analysis," *Journal of Urban Economics* 21 (1): 1–21.
- Rosenberg, Nick. 2003. "Development Impact Fees: Is Limited Cost Internalization Actually Smart Growth?" *Boston College Environmental Affairs Law Review* 30: 641–688.
- Ross, Stephen, and John Yinger, 1999. "Sorting and Voting: A Review of the Literature on Urban Public Finance." In *Handbook of Regional and Urban Economics: Applied Urban Economics*, edited by Paul Cheshire and Edwin S. Mills. New York: Elsevier Science Ltd.
- Segal, Lewis M., and Daniel G. Sullivan. 1998. "Trends in Homeownership: Race, Demographics, and Income," *Federal Reserve Bank of Chicago Economic Perspectives* 22: 53–72.
- Shaviro, Daniel. 2000. *When Rules Change: An Economic and Political Analysis of Transition Relief and Retroactivity*. Chicago: University of Chicago Press.
- Simmons, Patrick A. 2001. *Changes in Minority Homeownership During the 1990s*. Census Note 07. Washington, DC: Fannie Mae Foundation.
- Singell, Larry D., and Jane H. Lillydahl. 1990. "Housing Impact Fees," *Land Economics* 66 (1): 82–92.

- Skaburskis, Andrejs, and Mohammad Qadeer. 1992. "An Empirical Estimation of the Price Effects of Development Impact Fees," *Urban Studies* 29: 653–667.
- Skidmore, Mark, and Michael Peddle. 1998. "Do Development Impact Fees Reduce the Rate of Residential Development?" *Growth and Change* 29: 383–400.
- Slack, Enid. 1990. *An Economic Analysis of Development Charges in British Columbia and Ontario*. Waterloo, ON: Laurier Institute.
- Slack, Enid, and Richard Bird. 1991. "Financing Urban Growth Through Development Charges," *Canadian Tax Journal* 39: 1288–1304.
- Snyder, Thomas P., and Michael A. Stegman. 1986. *Paying for Growth: Using Impact Fees to Finance Infrastructure*. Washington, DC: The Urban Land Institute.
- Somerville, C. Tsuriel, and Christopher J. Mayer. 2002. Government Regulation and Changes in the Affordable Housing Stock, Centre for Urban Economics and Real Estate. Working paper 02-02. University of British Columbia.
- Speir, Cameron, and Kurt Stephenson. 2002. "Does Sprawl Cost Us All? Isolating the Effects of Housing Patterns on Public Water and Sewer Costs," *Journal of the American Planning Association* 68 (1): 56–70.
- Turnbull, Geoffrey K. 2003. *Urban Growth Controls: The Transitional Dynamics of Development Fees and Growth Boundaries*. Working Paper No. 03-05, Urban and Regional Analysis Group. Atlanta: Andrew Young School of Policy Studies, Georgia State University.
- Wachter, Susan M. 2002. Comments on "An Empirical Investigation of the Effects of Impact Fees on Housing and Land Markets" by Keith R. Ihlandfeldt and Timothy M. Shaughnessy. Paper presented at Lincoln Institute of Land Policy Conference, July 10–12.
- Wachter, Susan, and I. Megbolugbe. 1992. "Racial and Ethnic Disparities in Homeownership," *Housing Policy Debate* 3: 333–370.
- Watkins, Andrew R. 1999. "Impacts of Land Development Charges," *Land Economics* 75 (3): 415–424.
- Weinstein, Alan C. 1997. *Anderson's American Law of Zoning*. 4<sup>th</sup> ed. Vol. 5. Deerfield, IL: Clark Boardman Callaghan.
- Weitz, Stevenson. 1985. "Who Pays Infrastructure Benefit Charges—The Builder or the Home Buyer?" In *The Changing Structure of Infrastructure Finance*, edited by James C. Nicholas. Cambridge, MA: Lincoln Institute of Land Policy.
- Williams, Norman, Jr., and Thomas Norman. 1971. "Exclusionary Land Use Controls: The Case of North-Eastern New Jersey," *Syracuse Law Review* 22: 475–507.
- Windsor, Duane. 1979. *Fiscal Zoning in Suburban Communities*. Lanham, MD: Lexington Books.
- Yinger, John. 1998. "The Incidence of Development Fees and Special Assessments," *National Tax Journal* 5123–5141.

———. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. New York: Russell Sage Foundation.

Yinger, John, et al. 1988. *Property Taxes and House Values: The Theory and Estimation of Intrajurisdictional Property Tax Capitalization*. New York: Academic Press.

