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Regulatory Barriers to Affordable Housing

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Cityscape focuses on innovative ideas, policies, and programs that show promise in revitalizing cities and regions, renewing their infrastructure, and creating economic opportunities. A typical issue consists of articles that examine various aspects of a theme of particular interest to our audience.

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Foreword

The U.S. Department of Housing and Urban Development's Research Conference on Regulatory Barriers to Affordable Housing was held on April 22, 2004, in Washington, D.C.

As an integral part of the Department's Affordable Communities Initiative, the conference assessed the state of regulatory barriers research to help the Department establish research priorities for overcoming regulatory barriers to affordable housing. Through a series of research papers, presenters discussed the limitations of the availability of affordable housing resulting from restrictive regulation of building construction, land use regulations, impact fees and exactions, environmental regulations, and administrative processes.

This publication includes the papers that were prepared for and delivered during the conference. The appendix includes discussant comments for several of the papers.

Guest Editor's Introduction

Edwin A. Stromberg
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

The recently released U.S. Housing and Development (HUD) report, *"Why Not in Our Community?": Removing Barriers to Affordable Housing*, has found that over the past 13 years many of the regulatory barriers originally documented in the 1991 report, *"Not in My Backyard": Removing Barriers to Affordable Housing*, still exist and may have worsened. The new report identifies how discriminatory, exclusionary, and unnecessary regulations continue to constitute barriers to affordable housing in communities throughout the United States. Because few significant and lasting improvements have occurred over the past decade, HUD realized that effectively addressing and redressing these barriers would require a concerted, nationwide, multifaceted effort.

Confronting the challenge of such an effort, HUD made a major commitment to barrier removal by launching the American Affordable Communities Initiative. Under this initiative, the Department assumed a leadership role in working with states and local communities to identify strategies to reduce regulatory barriers and mitigate their impact. The initiative's ambitious agenda includes working with governments, local housing groups, associations, and housing advocates on strategies for reducing regulatory barriers, including model regulatory approaches and systems; encouraging a public/private partnership to develop state and local coalitions and policies that can reduce barriers at the state and local level; and ensuring that the federal government, and HUD in particular, gets its own "house" in order by working to remove or reduce federal barriers to housing affordability. As part of this initiative, the Department is developing and implementing efforts to disseminate best practices, building coalitions interested in reducing barriers, reducing barriers at the federal level (particularly at HUD), and continuing to conduct and support much-needed research into regulatory barrier issues. Consequently, the initiative calls for working with HUD's Office of Policy Development and Research (PD&R) to coordinate a large research effort to better understand the impacts of regulatory barriers and assess the success of strategies aimed at reducing them.

In seeking to craft an effective regulatory barriers research strategy, we in PD&R realized the first order of business was to assess the state of play of regulatory barriers research in this country. Although useful research on regulatory barriers certainly has been undertaken, the research typically is small in scale, narrowly focused, and intermittent. Moreover, only a small part of the potentially large research community has been engaged in regulatory barriers research. Consequently, the amount of sound, policy-oriented research has been disproportionately small compared to the seriousness of the problem.

An integral component of any such effort is sound, credible, persuasive research pinpointing the harmful impacts of these barriers on the affordable housing needs of communities and helping to point the way to overcoming these barriers.

To carry out this review and assessment of the state of play of regulatory barriers research, PD&R sponsored a meeting of the leading researchers to review what is known and what needs to be known about regulatory barriers research for such research to have a meaningful policy impact. This meeting, the Research Conference on Regulatory Barriers to Affordable Housing, convened on April 22, 2004, in Washington, D.C.

By all measures, the Research Conference on Regulatory Barriers to Affordable Housing achieved its objectives. The presenters' articles in this issue of *Cityscape* shed considerable light on what is known and offer a clear roadmap for future research endeavors; the commenters' articles in the Appendix sharpen and embellish the guidance for an effective regulatory barriers research agenda. Moreover, the introductory and wrap-up articles by Professor Michael H. Schill and the policy reflections of Jeffrey M. Lubell neatly summarize and frame the state of knowledge and the directions that regulatory barriers research can fruitfully take. We firmly anticipate that this volume can and will serve as a blueprint for much-needed research on this important issue.

For all those who contributed to this volume—the article writers and presenters, the commenters, the moderators, and other discussants—we extend our thanks and appreciation.

Regulations and Housing Development: What We Know

Michael H. Schill
University of California, Los Angeles

Abstract

Informed public debate on the issue of regulatory barriers to housing development is impeded both by the lack of precision concerning the concept of regulatory barriers and the absence of sophisticated research on the impact of regulations on the supply and cost of housing. Existing research suggests that a wide range of federal, state, and local regulations, including building codes, environmental laws, land use regulations, and impact fees, as well as the government procedures to administer these regulations, reduces the supply of housing and generates substantial costs.

Nevertheless, not all of these regulations can be fairly condemned as "barriers." To the contrary, some costly regulations can be justified because they promote public health or safety. Others increase price because they generate amenities and, thereby, increase the demand for housing. Many forms of federal, state, and local regulation, however, are neither necessary nor efficient. Others may be efficient, but still generate unacceptable affordability problems for low- and moderate-income households.

Existing research on the effects of government regulation on the supply and cost of housing is insufficient to guide public policy. Current studies either ignore entire categories of relevant rules or employ poorly designed methodologies that cannot separate the independent effects of demand and supply. Along with political constraints, this lack of research has contributed to insufficient efforts at all levels of government to remove regulatory barriers.

Introduction

In recent years, policymakers and academics have paid increasing attention to the costs of federal, state, and local regulations. Perhaps nowhere is this research more important than in the area of housing. From 1990 to 2002, the median sales price of new homes rose by 52 percent, outpacing the change in the Consumer Price Index by a substantial margin (National Association of Homebuilders, 2004). At least part of this increase in price is attributable to increased land costs caused by government regulation (Quigley and Raphael, 2004). Inflated land and construction costs, in turn, reduce total housing supply and, in many jurisdictions, contribute to affordability problems.[1] In some municipalities, the high cost of housing may even retard economic growth.

This article will assess the current state of knowledge about the impacts of federal, state, and local regulations on the supply and cost of housing. As the other articles in this volume indicate, we know very little about the effect of many forms of government intervention, such as building codes and environmental regulations, on housing prices in general, let alone the impact on affordable housing. Even where the literature is most abundant (that is, zoning and land use regulation), we have wide gaps in our knowledge.

Part 1 of this article briefly explores the concept of regulatory barriers to development. In common parlance, *regulatory barrier* is used to refer to something negative, a rule that rational lawmakers should seek to repeal or eliminate. Defining a regulatory barrier precisely, however, is difficult and often value laden.

Studies that seek to estimate the costs and benefits of regulations, while perhaps not the final word on whether a given regulation should be rejected or modified, do have an important role to play in helping policymakers analyze the tradeoffs involved. Part 2 summarizes the existing state of knowledge about the effects building codes, land use regulations, impact fees, environmental regulations, and administrative delays have on the cost and supply of housing, in general, and affordable housing, in particular.

The ambiguity of the concept of regulatory barriers and the gaps of knowledge concerning the impacts of regulations are two reasons why proposals to eliminate expensive government red tape and regulatory requirements have had only limited success in the United States. Part 3 describes these efforts and presents reasons for why the problem is so impervious to solution.

Part 1. What Are Regulatory Barriers?

Many regulations that increase the cost of housing or reduce its supply typically are not characterized as regulatory barriers. For example, many municipalities enact building codes that mandate the use of fire-retardant materials or zoning laws that prohibit housing in close proximity to chemical plants. These laws make housing less affordable, but we think of this effect as an unfortunate byproduct of rules necessary to promote health and safety, not as a barrier to be removed. In his 1990 request to former U.S. Department of Housing and Urban Development (HUD) Secretary Jack Kemp to create what came to be known as the Advisory Commission on Regulatory Barriers to Affordable Housing, President George H.W. Bush characterized the problem as "excessive rules, regulations, and red tape that add unnecessarily to the cost of housing…" (Advisory Commission on Regulatory Barriers to Affordable Housing, 1991: 1).

Distinguishing between unnecessary regulatory barriers that should be removed and necessary or useful regulation that should be preserved is an extraordinarily difficult task. Governments frequently enact regulations for a variety of reasons that directly and indirectly affect the supply and cost of housing. In many instances, the regulations are deemed necessary to promote the health and well-being of either the residents of buildings or the community as a whole. For example, housing codes were promulgated in the late 19th century to prevent disease and unhealthful conditions by setting minimum requirements for sanitary facilities, light, and air (Lubove, 1962). Building codes were enacted to prevent fire and ensure the safety of adjacent buildings and their residents, as well as firefighters (Wermiel, 2000).

Many other regulations are justified on the grounds of externalities that might be less immediately threatening. For example, in 1926, when the U.S. Supreme Court ruled in *Euclid v. Ambler Realty* (272 U.S. 365 [1926]) that zoning was a constitutional exercise of the police power, it did so expressly on the ground that zoning would prevent nuisances. The prohibited activity need not be something illegal but might be "merely a right thing

in the wrong place—like a pig in the parlor instead of the barnyard." Large lot zoning, minimum setbacks, and required architectural standards all fit within this set of purposes.

A wide variety of environmental regulations also fits, ranging from federal and state laws to preserve wetland habitats to those that limit development that would endanger certain species of animals. More recently, efforts to limit suburban sprawl also may be thought of as efforts to internalize externalities such as automobile pollution and traffic congestion.

Governments also enact regulations to fund needed or desired facilities and public services. Subdivision regulations typically require developers to set aside land for roadways, schools, and parks. Impact fees, at least in theory, are imposed to charge developers the marginal costs of services that arise from new housing and its occupants.

Each of these regulations serves an important public purpose. Their potentially negative impact on the supply and cost of housing is a secondary byproduct of the government action. Of course, these same regulations can be adopted by governments for the primary purpose of inhibiting the supply of housing built in a jurisdiction and/or increasing its price. Such regulations could promote scarcity, thereby increasing the values of existing homes and the wealth of residents (Thorson, 1996).

More commonly, local governments will seek to limit housing development for fiscal reasons. Because local governments must raise taxes to fund schools and other needed public services, they typically are under pressure to promote certain types of development over others. Commercial uses and large homes that generate substantial tax collections (known as "fiscal zoning") are favored; dense housing developments and low-cost housing that increase demand for schools and social services beyond the tax revenues they generate are disfavored. Large lot zoning, expensive subdivision regulations, excessive building codes, and prohibitions on multifamily housing can effectively ensure that the price of housing is so expensive as to prevent cross-subsidization (Hamilton, 1978).

While sometimes difficult to distinguish from fiscal zoning, many of these same regulations can be used by municipalities to promote social or racial homogeneity. In some instances, residents of a town will be concerned with the disamenities that could arguably arise from close proximity with people who are different from themselves. In other instances, residents may be motivated by racist or classist impulses.

Indeed, the difficulty of distinguishing an economically valid use of government regulation from a less acceptable use is exemplified by the *Euclid* case itself. Much of the court's opinion in *Euclid* was devoted to a defense of efforts to separate apartment buildings from single-family homes, even though that issue was not implicated by the facts of the case. This defense has led many to believe that the decision is less a case about externality prevention than a case about the use of government regulation to preserve income homogeneity.[2]

In seeking to separate "bad" regulations (that is, regulatory barriers) from "good" ones, it is extremely perilous to look solely at the effects of these regulations on the price of housing. Many regulations may increase the price of housing by affecting the desirability of the neighborhood where it is located or the quality of the structure. Increased demand induced by the greater amenities required by the laws may generate price increases (Fischel, 1990).

Thus, one is immediately drawn to the concept of economic efficiency. To the extent that the social costs of a regulation exceed its social benefits, it would seem that the rule or ordinance would meet President Bush's criteria of excessive and unnecessary. A more

difficult question surrounds those regulations that are efficient but generate unsatisfactory distributional results. For example, some regulations may generate a surplus of benefits over costs, but the benefits will primarily inure to higher income families and the costs to low- and moderate-income families. This problem is highlighted in Vicki Been's article on impact fees (2005). Theoretically, impact fees could be imposed in such a way as to promote an economically efficient level of development activity in a jurisdiction if they were set at an amount that reflected the marginal cost of development to that community. At the same time, to the extent that the impact fees were to be passed forward to future owners of housing or were to cause an owner of land to substitute other, more expensive housing types for dense, moderate-income housing, this gain in economic efficiency might be achieved at the cost of affordability.[3] Is the impact fee a barrier to affordable housing, or is affordable housing an inefficient use of land in this community?

To some degree, the answer to both of these questions is "yes." The question of whether a regulation constitutes a barrier that needs to be removed may sometimes depend on how much housing is valued compared to other social objectives. Research may not provide a clear answer to a question that is inexorably intermixed with politics and difficult moral and social questions. Social science, however, can still be helpful. Cost/benefit analyses of regulations can be useful in identifying which laws do little except drive up the cost of housing. Presumably, those regulations in which economic costs exceed their benefits, and which reduce affordable housing, would be prime candidates for removal. Even in instances when economic efficiency and equity concerns point in different directions, careful theoretical and empirical research can help us understand the relevant tradeoffs and identify which regulations are least beneficial and/or most problematic. Such research also may provide us with information to modify existing regulations to reduce their negative effects on affordable housing.

Part 2. Regulations and Housing: An Assessment of the Literature

The articles prepared for this volume extensively review the theoretical and empirical literature on the effects of regulation on the supply and cost of housing. One of the most consistent findings of the articles is how little we know about the subject. For some regulations, such as building codes and environmental regulations, the literature barely exists. For others, such as land use regulations and impact fees, many studies exist, but the results are often contradictory and difficult to interpret.

Building Codes

Building codes set forth the minimum standards that developers are required to meet when they construct housing. There is consensus that building codes are both a legitimate and necessary exercise of government's police powers. The fact that codes may raise the price of housing is unsurprising because, in many instances, the housing built under the codes is of a higher quality than would be constructed otherwise.

Building codes, however, also can become regulatory barriers under certain circumstances (Downs, 1991). For example, some codes require the use of materials or production processes that go well beyond minimum health and safety requirements. Sometimes, the reason for this is benign, such as legislative delays in revising a code to keep current with new technology. States and municipalities also might mandate redundant, or "belt and suspenders," regulations out of an overabundance of caution. In other instances, however, expense-generating code provisions might result from lobbying by building materials manufacturers or labor unions. Alternatively, building codes may be a covert way to exclude housing that is affordable to low- and moderate-income families.

In recent years, we have made tremendous progress in promoting the adoption of model building codes throughout the nation. Most recently, three regional codes have been supplanted by two national/international codes. Yet, a few jurisdictions have not adopted either of the model codes. Many more have made significant changes to the model code provisions. The ability of states and municipalities to customize codes can serve important public purposes, especially when the type of construction in a jurisdiction or the jurisdiction's soil or seismic conditions are sufficiently different from those in the rest of the country. As building codes become less uniform because of these jurisdictional changes, however, more complexity is introduced, and the likelihood increases that they could serve as barriers to entry for national developers. Each of these factors could lead to higher production costs. Complexity also can create delay because of the greater need for discretionary approvals or explanations from government officials.

The literature on the impact of building codes on the price of housing is extremely thin. Much of it is so old as to be useful only for historic interest. Among the handful of studies completed after 1980, almost all are based on anecdotal accounts or poorly specified models. According to Listokin and Hattis (2005), the more quantitative studies suggest that the impact of building codes on price is no more than 5 percent.

Depreciation reduces the quantity of housing services a given housing unit provides over time. Building codes, therefore, also can affect housing supply by hindering the rehabilitation of buildings. In many jurisdictions, rehabilitation is subject to the same minimum standards as new construction. Therefore, to meet the requirements imposed by newer technologies, entire systems will have to be replaced at great expense. In an effort to overcome those costs, some states have enacted "smart codes" specifically geared toward rehabilitation. For example, according to Listokin and Hattis (2005), the adoption of a rehabilitation code by the state of New Jersey may have reduced rehabilitation costs by between 10 and 40 percent and increased the amount of building renovation activity substantially.

Environmental Regulations

Over the past 25 years, the scope and quantity of environmental protection regulations have grown tremendously. Many of these laws have a direct or indirect impact on housing development. Among the two most important laws are the federal Clean Water Act, which limits development in wetlands, and the Endangered Species Act, which restricts development in areas where more than 600 species live. Many states also have enacted environmental protection laws limiting where and how development can take place. In addition, governments at all levels often require developers who need discretionary government approvals or who build on government land to undertake extensive environmental impact analyses, sometimes culminating in the preparation of voluminous environmental impact statements.

More recently, states and municipalities have enacted additional regulations under the banner of "smart growth." Smart growth is a catchall phrase that typically encompasses a variety of policies to limit growth at the periphery of metropolitan areas and, in some formulations, incentives to increase density in more central areas. Municipalities, most often those located in the outer suburban rings, have reduced permitted densities or begun to ration building permits. A few jurisdictions, most notably in the state of Oregon, have adopted urban growth boundaries—severe restrictions on residential construction at the periphery. The stated purpose of these regulations is to preserve greenfields, reduce traffic congestion, and, occasionally, promote reinvestment and development in more dense, urbanized areas.

Economic theory unambiguously predicts that environmental regulations will increase the price of housing. For example, regulations could affect the price of developable land. Assuming constant demand, as the supply of land available for development decreases, the price of land should increase. In addition, at least some environmental protection statutes should generate amenities that may increase demand, thereby further intensifying the price effect.

Government rules requiring developers and/or public entities to undertake environmental impact analyses also are likely to generate higher costs and lead to a diminished supply of housing for two reasons. First, the review itself and the possible resulting environmental impact statement could be very costly. Second, potential lawsuits from neighbors or environmental activists challenging the review could be even more problematic. In addition to assuming the costs of defending the case, the developer would have to factor into the project the costs of delay and settlement. In some instances, this uncertainty actually may deter builders from undertaking projects, thereby reducing the overall supply of housing and increasing price.

Surprisingly, very few academic studies have investigated the relationship between environmental protection statutes and housing supply and prices. As Kiel (2005) indicates, the few studies that have been completed tend to show that, as expected, the value of land that is restricted falls and demand for land nearby tends to increase. The most relevant study by Frech and Lafferty (1984) of land preservation regulations implemented by the California Coastal Commission found that the prices of homes close to restricted areas increased by between $2,882 and $5,040 in 1975 dollars, and that those further inland went up by $989 to $1,700. The difference between these two sets of numbers captures the amenity effect, whereas the increases further away capture the supply effects of the regulations.

Portland, Oregon's urban growth boundary, while not technically an environmental regulation, has been the subject of much debate and recent analysis. Some studies have suggested that the restrictions on development imposed by the greenbelt increased housing prices (Staley and Mildner, 1999). Other studies have argued that any increase in housing prices in Portland was more attributable to increased demand for living in the city and other demographic factors (Downs, 2002; Phillips and Goodstein, 2000).

Zoning and Land Use

Zoning and land use regulations are ubiquitous in the United States. Traditionally, zoning sought to separate uses that might be incompatible—industrial uses were to be located in certain portions of a municipality and residential uses in another. Over time, ordinances made finer distinctions within each type of use (for example, single-family versus multifamily) and imposed an array of requirements on the permitted size and bulk of the buildings allowed (for example, height restrictions and minimum floor area requirements). In addition to promulgating traditional zoning requirements, municipalities enacted requirements for developers who sought to subdivide their properties. Oftentimes, developers would need to provide roads, schools, and other public facilities to the municipality in return for the privilege of being able to develop and sell the housing. Over time, the variety of land use regulations has mushroomed. Today, many jurisdictions have implemented growth control ordinances that ration the number of building permits that will be granted in any particular year. In addition, many municipalities prescribe and enforce architectural standards through their land use and subdivision regulations.

As described in part 1, municipalities have a variety of motives for imposing limitations on the use and density of new housing, including the desire to reduce negative externalities,

keep tax rates low, achieve monopoly profits, and promote racial and economic homogeneity. Just as with environmental regulations, typical zoning and land use regulations, if enforced, are likely to increase the price of housing. Limitations on density or requirements that developers provide costly amenities to a community, if not capitalized into the price of land, will be passed forward to the ultimate purchasers or renters of housing. Even if the cost of the regulations is passed back to the owners of vacant land, density restrictions (and growth controls) of the type imposed by most towns and cities will lead to lower levels of production, and, therefore, higher prices for existing housing. At the same time, to the extent that land use regulations successfully protect against negative externalities, housing prices will go up because of increased demand.

In contrast to building codes and environmental regulations, many studies examine the impact of land use regulations on the price and quantity of housing. According to Quigley and Rosenthal (2005: 69), "[c]aps on development, restrictive zoning limits on allowable densities, urban growth boundaries, and long permit-processing delays have all been associated with increased housing prices." With the exception of a few studies suggesting that some municipalities use zoning as a way to achieve monopoly pricing, however, the research largely fails to sort out whether the supply effect or the amenity effect predominates.

Impact Fees

In addition to, or in lieu of, subdivision exactions, many jurisdictions levy impact fees on the developers of new housing. The purpose of these fees, at least in theory, is to promote efficient development by requiring developers or consumers of new housing to absorb the marginal cost of the development to the municipality. A second related purpose is to shift the financial burden of new development away from existing residents. Of course, as with zoning, land use regulations, and subdivision controls, impact fees also can intentionally be used to discourage new development by raising its cost.

As Been (2005) demonstrates, economic theory does not provide us with a clear answer to the question of whether impact fees lead to more or less expensive housing in a given jurisdiction. In the end, much will depend upon who bears the fee. If the impact fee is passed back to the owner of vacant land, then it should not affect either the quantity of housing produced or its price, unless the owner is permitted under applicable zoning to substitute different and less costly (from the perspective of the impact fee) forms of housing or other uses. For example, if a municipality imposes a flat fee based upon the number of apartments or homes built, a developer might choose to build larger homes, thereby leading to less overall supply and higher prices. A similar result could occur if the landowner could choose to build a commercial development in place of the housing. If the fee is not passed back to the owner of the land or is borne by the developer, then it will fall upon the ultimate consumer of the housing. This will cause the housing to be more expensive and likely lead to less overall supply.

Been (2005) adds two additional complications to the difficult issue of how impact fees affect the price and quantity of housing. The adoption of an impact fee by a municipality is endogenous to its other land use regulatory decisions. In other words, a municipality's decision to adopt an impact fee will be affected by its other land use regulations. For example, if the municipality were not to adopt an impact fee, it might instead choose to restrict housing construction with large lot zoning or growth controls because it wishes to avoid having to raise taxes to pay for the incremental costs of the development. Thus, it is possible that the ability to impose an impact fee might make a municipality more—not less—willing to permit housing to locate within its borders. Second, some impact fees will selectively exempt affordable housing from the fee, and, thus, actually may be neutral or positive regarding this type of accommodation.

Several studies have examined the effect of impact fees. These studies generally show that impact fees are associated with higher housing prices for newly constructed housing, as well as existing housing. In many instances, researchers have found that the increase in price is significantly higher than the fee itself. Once again, as was the case with each of the regulations discussed so far, increased prices for housing do not necessarily mean that an impact fee is a barrier that should be removed. To the extent that the impact fee is calculated in such a way that housing consumers value the amenities it pays for, the price increase may reflect only increased demand. Nevertheless, while the impact fee might be efficient under this scenario, it effectively may make housing in the jurisdiction unaffordable to low- and moderate-income families. Furthermore, the empirical result showing that impact fees seem to have a positive impact on existing housing, as well as newly constructed housing, may be attributable to the fact that fees are structured in such a way as to exceed the marginal cost of the new development, thereby providing a cross-subsidy to existing homeowners.

Administrative Processes

According to the academic literature, each of the regulations discussed so far (building codes, environmental regulations, zoning and land use regulations, and impact fees) is likely to increase housing prices. These price increases are ambiguous in terms of social welfare because increased housing prices might reflect the benefits (not just the burdens) the regulations generate. The final regulatory barrier to be covered in this part of the article, however, is unambiguous. In many municipalities throughout the nation, the costs of regulation are multiplied as a result of inefficient and duplicative government administrative processes.

As government regulations become more complex, housing developers and government officials must interact more frequently. These contacts might take place at the approval stage for a project when the developer must negotiate a zoning change or variance, satisfy an environmental review, or obtain a building permit. Long, costly delays frequently occur and may be attributable to insufficient staffing of governmental agencies, long backlogs in processing, and antiquated procedures. The problems are multiplied when, as often happens, the developer must deal with multiple agencies, and even multiple governments, to obtain permits and approvals.

In addition, the more times a developer must come into contact with government, the greater the opportunity for politics to intervene. Much development will require discretionary government approvals, which frequently will be influenced by public pressure, sometimes from community residents or other developers threatened with increased competition. In addition, each government approval provides citizens with the opportunity to raise concerns, voice opposition, and bring lawsuits against a project. In many instances, the uncertainty generated can be more detrimental to a project than any of the substantive regulations described in this article.

Research on administrative processes affecting the development process is truly embryonic. Most estimates of the impact of administrative inefficiency and delay on development come from anecdotal accounts or surveys of developers, which may be biased. Most of these studies, as described by May (2005), suggest that administrative roadblocks add significantly to the cost of housing and truly constitute barriers to development. This finding is further supported by the findings from a recent analysis by Glaeser and Gyourko (2003) in which the relationship among several measures of housing and land cost and an index based on the average length of time between an application for rezoning and the issuance of a building permit was studied. The authors found that the increase in time to obtain a permit is strongly associated with rising land and housing prices.[4]

Overall Impacts

The articles prepared for this volume describe research that seeks to estimate the impacts that individual sets of regulations have on housing development. Importantly, though, a housing developer is likely to encounter many of these regulations (and others) simultaneously. For example, to successfully complete one development in the suburbs, a typical builder will need to apply for subdivision approval, pay an impact fee, obtain a building permit and a certificate of occupancy and, if he is unlucky enough, apply for a rezoning or a variance. Thus, the costs generated by government regulations and their impacts on housing are cumulative.

Several studies have sought to examine the cumulative impact of different types of local development regulations on the cost of housing, and each found it to be quite substantial. For example, the National Association of Home Builders (NAHB) (1998) surveyed builders in 42 metropolitan areas in 1998 and asked them to provide a detailed breakdown of the cost of constructing a 2,150-square-foot house on a 7,500- to 10,000-square-foot lot. The average sales price of such a home was estimated to be $226,668. Of this total, the builders estimated that approximately 10 percent could be shaved off "if unnecessary government regulations, delays, and fees were eliminated."

Luger and Temkin (2000) also used survey data from developers, engineers, and planners to estimate the impact of "discretionary" or "excessive" costs imposed by regulation in New Jersey municipalities. They found these costs to be sizable, albeit somewhat more modest than those reported in the NAHB study, ranging from $10,000 to $20,000 per unit on a home with a median sales price of $236,000. The authors further concluded that the impact of those regulations is more likely to be felt at the lower end of the market.

Two recent studies used indices of regulatory restrictiveness to estimate the impact of varying levels of land development regulation across metropolitan areas. According to estimates by Green and Malpezzi (2003), moving from a lightly regulated environment to a heavily regulated environment would raise rents by 17 percent, increase house values by 51 percent, and lower homeownership rates by 10 percentage points. According to Mayer and Somerville (2000), a metropolitan area with a 4.5-month delay in approval and two different types of growth-control restrictions would have an estimated 45 percent less construction than a metropolitan area with a 1.5-month delay and no growth management policy.

Part 3. Removing Regulatory Barriers to Housing: A Short History

Concerns about the impact of regulatory barriers on the housing market have existed for decades. For example, in 1968, the National Commission on Urban Problems described how different building code standards impeded the development of housing in the United States. The proposition that regulation stood in the way of affordable housing was echoed by the President's Commission on Housing in 1982 and found its fullest exposition in the report of the 1991 Advisory Commission on Regulatory Barriers to Affordable Housing. In its report entitled "Not in My Back Yard: Removing Barriers to Affordable Housing," the Commission set forth a comprehensive program for deregulation with state governments playing pivotal roles. The approach of using states as a fulcrum was justified because local governments derive their regulatory powers from the states. In addition, states were thought to be in a better position than the federal government to take into account interregional variations, while at the same time being sufficiently centralized to take into account the extra-municipal effects of local actions.

The 1991 Commission report proposed that the federal government "inspire" state and local governments to reform their regulations using a "carrot and stick" approach. All states and localities that received federal assistance would be required to include in annual reports to the government a description of what they were doing to reduce regulatory barriers. HUD would have the power to condition assistance on satisfactory barrier removal strategies. A state that failed to adequately remove regulatory barriers to housing development would lose its ability to issue tax-exempt bonds for housing and its authority to allocate tax credits to developers of low- and moderate-income housing.

Congress never adopted the Commission's proposals, despite praise from some quarters (Schill, 1992). Instead, Congress required that jurisdictions that receive federal housing submit a comprehensive housing affordability strategy that would include an explanation of whether the cost of housing in the jurisdiction was affected by policies such as land use controls, zoning ordinances, building codes, and growth limits.[5] The existence of these regulations, however, would not justify HUD disapproval of assistance.[6] In 1992, Congress passed a minor piece of legislation authorizing HUD to make grants to states and localities to develop removal strategies for regulatory barriers, including drafting model legislation and simplifying and consolidating administrative procedures. In addition, HUD created the Regulatory Barriers Clearinghouse to facilitate the dissemination of best practices about barrier removal strategies. Several years later, an even more modest effort to require the federal government to publish a cost impact statement when it imposes regulations that would drive up the cost of housing was not passed by Congress despite being proposed several times.

At the federal level, the issue of regulatory barriers to development was dormant throughout the Clinton administration but has been revitalized by the George W. Bush administration. HUD has established a new departmentwide initiative, America's Affordable Communities Initiative, to tackle the problem. Thus far, HUD has set aside funds for research on regulatory barriers and sought to build coalitions to address the problem. More tangibly, in 2004, the Department published a Federal Notice announcing its intent to include in most of its competitive fiscal year 2004 funding opportunities (Notice of Funding Availability) a series of questions on the local regulatory environment (U.S. Department of Housing and Urban Development, 2004). Applicants for HUD funds have an opportunity, if they desire, to respond to these questions; those applicants who meet the requisite minimum criteria for regulatory reform can receive additional "points," which can assist them in the competitive selection process.

In addition, a number of states and cities have shown renewed interest in the issue of regulatory barriers. For example, several jurisdictions have sponsored studies that outline strategies for barrier removal (Colorado Department of Local Affairs, 1999; Commonwealth of Massachusetts, 2000; Salama, Schill, and Stark, 1999). A few have even implemented the proposals. For example, California, Florida, and New Jersey require municipalities to plan for affordable housing.[7] Other states have taken steps to expedite permitting procedures for affordable housing[8] or to exempt some affordable housing projects from environmental impact requirements.[9] New York City, long known for chronic housing shortages exacerbated by cumbersome development rules, also has seemingly changed its approach. In 2002, Mayor Michael Bloomberg announced an ambitious agenda to rezone manufacturing land for housing development and adopt a model building code (New York City Department of Housing Preservation and Development, 2002).

Nevertheless, most states and municipalities do business as usual. With the exception of a handful of states that either have passed statutes or had activist courts require fair share housing plans (Schill, 2002), regulatory barriers abound and may even be intensifying. The persistence of regulatory barriers in the United States, despite the prevalence of rising

housing prices and extraordinary rent-to-income burdens among many renters, can be explained by many factors. The simplest and most important of these factors is that in our federal system, states have traditionally vested the police power in municipalities. Because each city or town pursues its own parochial interest, it is not forced to consider the cumulative impact of regulation on housing in the metropolitan area or region. Indeed, each municipality has strong fiscal incentives to erect regulatory barriers to avoid tax increases to pay for needed services. In addition, direct participation by citizens tends to be most intense and effective with respect to local governments. Many existing residents would prefer to avoid development because they want to preserve the status quo, are concerned about congestion, or want to maintain racial or economic homogeneity. Although some states have shown interest in statewide planning, many more are interested in responding to the desires of their suburban constituents. Thus, instead of reducing regulatory barriers, many states have clamped down on development, sometimes under the banner of smart growth.

Smart growth presents both an opportunity and a hazard for those who wish to remove regulatory barriers to development. In many ways, smart growth is more of a political slogan than a coherent set of proposals. To suburban residents, it represents an opportunity to erect barriers to development, slow demographic change, and reduce congestion on the roads. To environmentalists, it means the preservation of greenfields and the reduction of air pollution. To urban advocates, it holds out the promise for renewed interest in dense development as options in the suburbs are restricted.

Smart growth, however, is a risky strategy for those who would like to see increased production of affordable housing. Because cities and suburbs are politically independent, there is no guarantee that restrictions at the periphery would be matched by increased development in the city. City dwellers may wonder why they should have to shoulder the burden of increased development, both in terms of increased service costs and congestion. In the absence of some form of regional or state authority, smart growth could merely exacerbate current inequities and make affordable housing even scarcer for low- and moderate-income Americans.[10]

At the federal level, Congress has never strongly supported the removal of regulatory barriers, partly because members of Congress, like state legislators, are ultimately responsive to their increasingly suburban constituencies. In addition, advocates for reducing regulatory barriers have repeatedly failed to form effective coalitions among natural allies. Unfortunately, the only vocal groups consistently advocating for barrier removal are the home-building and real estate industries. Traditional low-income housing advocates, with the exception of some groups dedicated to the fight against exclusionary zoning, are—at best—generally silent, or—at worst—hostile when the debate turns to deregulation. One explanation for this reaction may be sympathy with the purposes underlying many of the regulations that so negatively affect housing production, such as environmental protection.

An additional impediment to effective mobilization on the issue of regulatory barriers is the simple fact, described in detail above, that we know too little about the subject. The articles that follow emphatically illustrate this paucity of high-quality research and definitive empirical studies.

Author

Michael H. Schill, Dean of the UCLA School of Law, is a national expert on real estate and housing policy, deregulation, finance, and discrimination. Before joining the UCLA School of Law, he was the Wilf Family Professor in Property Law at the New York University School of Law and professor of urban planning at the New York University's Robert F. Wagner Graduate School of Public Service. He has written or edited three books and more than forty articles on various aspects of housing, real estate, and property law.

Notes

1. Many households pay extremely high proportions of their incomes for housing, leaving little at the end of the month for other necessities. For example, according to the American Housing Survey (U.S. Department of Commerce, 2002), in 2001, 23.2 percent of all renter and 9.8 percent of all homeowner households in the United States paid more than half their incomes for housing.

2. This interpretation of the function of the village's zoning ordinance was offered by the lower court judge in a decision that would have invalidated the ordinance: "The purpose to be accomplished is to classify the population and segregate them according to their income or situation in life." 297 F. 307, 316 (N.D. Ohio 1924).

3. One possible way to resolve the conflict between efficient regulations and affordability concerns might be to increase levels of housing subsidies. In today's fiscal environment, however, it is doubtful that the amount of public resources devoted to housing will be substantially augmented.

4. Glaeser and Gyourko regress two dependent variables over the index values, the log of median family income and percentage population growth. The first dependent variable is the fraction of units in a metropolitan area that are valued at or above 140 percent of construction costs. The second is an "implied zoning tax" that is derived by subtracting the cost of land estimated by a nonlinear hedonic equation from the cost of land obtained by subtracting the structure cost from total home value.

5. See 42 U.S.C. sec. 12705(b)(4).

6. "[T]he adoption of a public policy identified pursuant to subsection (b)(4) of this section shall not be a basis for the Secretary's disapproval of a housing strategy." 42 U.S.C. sec. 12705(c)(1).

7. See Cal. Gov. Code sec. 65580 et seq.; Fla. Stat. Ann. Sec. 163.3191; N.J. Stat. sec. 52:27D-301–334.

8. See Fla. Stat. Ann. Sec. 373.4141 (requiring expedited permitting procedures for affordable housing developments).

9. See, for example, Cal. Pub. Res. Code sec. 21080.14 (exempting from CEQA affordable housing of up to 100 units).

10. Smart growth also can be criticized for restricting opportunities for minority households to live in suburban locations and for infringing on property rights. See Schill (2003).

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Building Codes and Housing

David Listokin
Rutgers University

David B. Hattis
Building Technology Inc.

Abstract

This article examines whether and to what extent building codes affect housing costs. It first describes these technical provisions, then considers how building codes could theoretically affect housing costs, and finally analyzes empirical studies on the subject. While the latter are dated and suffer from other limitations, the more rigorous quantitative analyses indicate that codes increase housing costs by 5 percent or less. Further, building codes are in a state of flux and we need to examine how the current generation of regulations affects housing. Thus, building codes merit contemporary investigation; however, these regulations have much less impact on housing costs compared to other regulations such as zoning and subdivisions requirements.

Introduction and Summary

This article considers the regulation of housing construction (single-family and multifamily, new construction and rehabilitation of existing buildings), focusing on the building code (a broad term specifically defined in this article). It first describes the building code and then traces its history. The history of the building code is important because numerous events and disparate parties have shaped the code, which currently is in a state of evolution. The code is moving toward two national model templates that influence local building code regulations, and away from the three regional-oriented model codes that have been influencing local regulations.

In theory, the building code could adversely affect housing production and could increase housing costs through both substantive (technical) and administrative impediments. Examples of the former include restrictions of cost-saving materials and technologies and barriers to mass production; the latter encompasses such barriers as administrative conflicts among different administering parties (for example, building and fire departments) and inadequately trained inspectors.

The literature on the subject of building codes and housing presents many examples of such impediments. Studies find that code inadequacies increase the cost of new housing from roughly 1 percent to more than 200 percent. The more quantitative analyses find code-related housing cost increases of 5 percent or less.

Though informative, the literature to date suffers from gaps in timeliness, conceptual basis, methodology, and scope. Much research describes the code world of yesteryear, rather than the current situation of two national model codes influencing the regulations. Conceptually, limited "benchmark" and cost-benefit study has been conducted to define what are "appropriate" versus "inappropriate," or "excessive," regulations. Further, most reports on the subject are characterized by anecdotal—as opposed to empirical-based—quantitative analysis, and by limited scope (for example, study of only the regulations, but not their administration). Similarly, some studies have been carried out by parties with proprietary interests, or at their behest.

To address these gaps, we conclude with examples for a research agenda, including the following topics:

1. Examine the cost impacts of the more stringent requirements for new construction mandated by the emerging national codes in the areas of seismic provisions, wind impact protection, sprinklers, and plumbing.

2. Examine differences among the various emerging "smart code" regulations affecting building rehabilitation, such as the New Jersey Rehabilitation Subcode and the Nationally Applicable Recommended Rehabilitation Provisions (NARRP). This analysis should include evaluation of the empirical results from adoption of smart codes (for example, enhanced renovation activity) in New Jersey, Maryland, and other states.

3. Analyze potentially lingering onerous building code provisions regarding rehabilitation. For example, "substantial improvement" may trigger (under governing Federal Emergency Management Administration [FEMA] and rehabilitation code provisions) expensive new requirements for flood plain and seismic design.

4. Include cost-benefit study in building code research. For example, use FEMA's Natural Hazard Loss Estimation Methodology to examine the societal consequences of the more stringent seismic and wind provisions, such as cost-per-life-saved. Such research could help define benchmark standards; requirements above these benchmarks would constitute excessive regulations.

5. Work backward from the desired end model of the affordable housing unit—another tack for developing a benchmark for appropriate standards. We can agree that the most affordable types of shelter consist of reinventing the single room occupancy (SRO) dwelling and allowing accessory housing, such as "granny flats," or other affordable configurations (for example, the Boston "triple decker"); therefore, we should analyze if and how building codes restrict production of these affordable units.

6. Gather more empirical data on the subject and conduct quantitative analysis on how codes affect housing. For example, contemporary information is needed on the local implementation of building regulations, including if a local jurisdiction has a code, the basis of that code, the profile of officials implementing the regulations (for example, background, education, and civil service status), as well as other details (for example, prohibited and permitted materials and procedures). The last national comparable survey of that type dates from the late 1960s to the early 1970s. A contemporary database could be created through a new survey and/or by tapping extant sources, such as the Building Code Effectiveness Grading Schedule developed by the insurance industry. With such data, we can effect, in a contemporary setting, the quantitative analysis of how building regulations and their administration affect housing.

7. When researching the subject, analyze the influence of diffusion of innovation. Many extant studies on the impact of codes on housing presume that if a cost-saving material or procedure is available, it will be used—but for code restrictions. The literature on diffusion of innovation paints a murkier picture; cost-saving techniques may be resisted because of inefficient information, builder inertia, inadequacy of skills, and perceived rejection by housing consumers, as well as because of code barriers. That murkier reality must be acknowledged in the future study of how the building code affects housing.

8. Add overall perspective to the many fruitful areas for building code research. In all likelihood, building codes have much less impact on new housing costs compared to other regulations, such as zoning and subdivision requirements. As such, building codes constitute a high, but not the highest, priority for regulatory study.

Description of the Regulations/Practices Involved: Their History, Prevalence, and Justifications

Description

The regulation of building construction in the United States is an exercise of government police power, and with very few exceptions (for example, accessibility for the disabled and manufactured housing), this regulation is legislated at the local or state government levels. It traditionally has been accomplished by means of a set of interrelated codes, each addressing a specific building system or a specific building attribute. While these codes may be packaged in different ways in different jurisdictions, they generally can be described as follows:

- A building code that addresses the building's structural system, fire safety, general safety, enclosure, interior environment, and materials.
- A plumbing code that addresses the building's potable water supply and waste systems.
- A mechanical code that addresses the building's combustion and mechanical equipment.
- An electrical code that addresses the installation of electrical wiring and equipment in buildings, and a gas code that does the same for the installation of gas piping and gas-burning equipment.
- An energy code that addresses all parts of the building that consume energy or contribute to the consumption of energy.
- Other specialty regulations, such as an accessibility code, that address building accessibility to the physically disabled.

Because of the technical complexity of these codes and the time and money needed to keep them updated, most state and local governments have abandoned the development and maintenance of their own codes, and rely on adoption (with or without amendment) of a model code (developed by a regional or national association). These codes make use of extensive references to voluntary consensus standards on design methods, test methods, materials, and systems. By reference, these standards become part of the building regulatory system. These codes typically are enforced at the local level in a process that begins with the application for a building or construction permit, followed by plan review, permit issuance, inspections, and certificate of occupancy issuance.

At times, a related but different set of regulations that control the use and maintenance of existing buildings is packaged with the above measures. Since parts of these codes may overlap with plumbing, mechanical, or electrical codes, some aspects of operation and maintenance may be included in the codes. They generally can be described as follows:

- A fire prevention code, sometimes called a fire code, that regulates the building's fire safety throughout its occupancy and use.
- A housing code that regulates the health and sanitation of residential buildings throughout their occupancy and use.
- A property maintenance code that expands the scope of the housing code to include other types of buildings.
- A hazard abatement code that identifies building conditions that are so hazardous that immediate remedial action may be required.

These codes are generally enforced at the local level by means of periodic inspections and citation of violations. An existing property that is rehabilitated typically will have to satisfy building, plumbing, mechanical, and sister codes as well as the fire, housing, property, and hazard codes.

Retroactive regulations form another category, generally addressing hazards in existing buildings that, while not necessarily imminent, are identified by society as needing remediation. Some examples of such regulations are the enclosure of open stairs in public buildings, the installation of sprinklers, and the reinforcement of unreinforced masonry buildings in zones of high seismicity. Because of the extremely high costs imposed by such regulations on building owners, retroactive regulations are quite rare and local in nature.

In this article, the term *building code* is broadly used to refer to the entire set of interrelated building-related requirements described above, although such usage may not be technically correct.

Historical Development

The current building regulatory system in the United States is the product of several diverse trends. From a historical perspective, it may be thought of as resting on four foundations, supported by three buttresses. Allegorically, then, the system rests on the following four foundations:

1. The insurance industry.
2. The tenement and housing movements.
3. The engineering profession.
4. The construction industry.

The following three buttresses support the foundation of the system:

1. The federal government.
2. The model code groups.
3. The voluntary consensus standards organizations.

The Insurance Industry

In the 19th century, the insurance industry regulated fire safety in buildings with an institutional framework created to regulate, as well as to provide research and technical support. For more than 50 years, the regulation of fire safety in buildings has been a function of state or local governments, while some of those original insurance-related organizations

continue to perform regulatory support functions to this day: the National Board of Fire Underwriters (today called the American Insurance Association), the National Fire Protection Association (NFPA), and Underwriters Laboratories Inc. These organizations were first concerned with property risk and the risk of conflagration. Concern for life safety became articulated and institutionalized in 1913. In 1905, the National Board of Fire Underwriters developed and published the first model building code in the United States. The National Building Code, which also included housing and structural requirements in addition to fire safety, was updated and published until 1976.

The insurance industry also was the earliest regulator of electrical safety in building, consolidating the diversity of early local regulations when many entities came together to create the first National Electrical Code® in 1897 in a conference that anticipated today's consensus processes. The National Electrical Code has been periodically updated to this day and has been published exclusively by NFPA since 1965.

Today, in addition to the continued activities of the early organizations, other insurance industry organizations continue to be active in the building regulatory arena. The Institute for Business & Home Safety was created specifically to support the development of regulations in the natural disaster areas of earthquakes, hurricanes, and floods. The Insurance Services Office, Inc., evaluates building code enforcement programs in states and local jurisdictions throughout the United States and provides relative ratings to assist with insurance underwriting.

The Tenement and Housing Movements

Tenement and housing movements arose in various U.S. cities toward the end of the 19th century in response to blatantly unhealthy housing conditions. In 1900, many charitable organizations joined together to form the National Housing Association to press for housing reform. Tenement laws developed in U.S. cities in the second half of the 19th century and, in the early years of the 20th century, began to reflect the concern for housing reform by regulating health and sanitation, as well as the fire safety aspects of housing. The New York Tenement House Act of 1901 served as model legislation for many other cities.

Tenement laws also were included in the 1905 National Building Code. Since 1939, the American Public Health Association has been concerned with housing standards and usually is credited with developing the prototype for modern housing codes, as well as the health and sanitation requirements in model building codes (including room dimensions and arrangements). In recent years, the regulation of room dimensions and arrangements has been reduced in scope, based on the assumption that they are provided for adequately by the marketplace.

The Engineering Profession

Civil and structural engineering provided the foundation for the structural requirements of building regulations. By the second half of the 19th century, structural analysis and design methods had been developed for various structural materials. These methods were accepted by a consensus of the profession and incorporated into early city building codes and the 1905 National Building Code. In more recent years, engineering associations have been involved in developing consensus standards for structural design (American Society of Civil Engineers [ASCE]), mechanical codes and standards (American Society of Heating, Refrigerating and Air-Conditioning Engineers [ASHRAE] and American Society of Mechanical Engineers), and plumbing codes and standards (American Society of Plumbing Engineers).

The Construction Industry

The construction industry always has had a vital interest in building regulations, often as a way of furthering—and at other times, limiting—the use of certain materials and construction trades. Perhaps the industry's strongest influence can be seen in the plumbing codes, though self-serving provisions can be found in all the codes. Plumbing codes developed early at the local level. The earliest on record is the 1870 code of Washington, D.C. Since its organization in 1883, the National Association of Master Plumbers had been concerned with plumbing codes. Nevertheless, extreme diversity reflecting local practices and conditions typified the early plumbing codes.

The National Association of Master Plumbers itself did not publish a model plumbing code until 1933. The Plumbing-Heating-Cooling Contractors–National Association, successor to the National Association of Master Plumbers, has been publishing the National Standard Plumbing Code, used in many jurisdictions, since the 1970s.

The National Association of Home Builders (NAHB) has a longstanding interest in building codes that affect home construction activity and the ability of homeowners and apartment dwellers to secure affordable shelter.

The Federal Government

The federal government has played two roles in buttressing the current building regulatory system: (1) provider of technical expertise and (2) formulator of national policies.

As a provider of technical expertise, the National Institute of Standards and Technology (NIST) (formerly the National Bureau of Standards [NBS]) has played a paramount role. Starting with the testing of materials and structural systems in the early part of the 20th century, NIST's role has expanded. Most of the publications of NBS's unique Building and Housing Series from 1921 to 1932 directly addressed the regulatory system (building code organization and format, structural provisions, fire resistance provisions, and a model plumbing code—the "Hoover Code" of 1928), greatly influencing subsequent modern codes. Since then, NIST has continued to develop technical materials in various areas directly usable by the building regulatory system. Today, NIST leads or participates in multiple voluntary standards activities at the American Society for Testing and Materials (ASTM) International, NFPA, ASHRAE, ASCE, and other voluntary standards organizations that support the regulatory system.

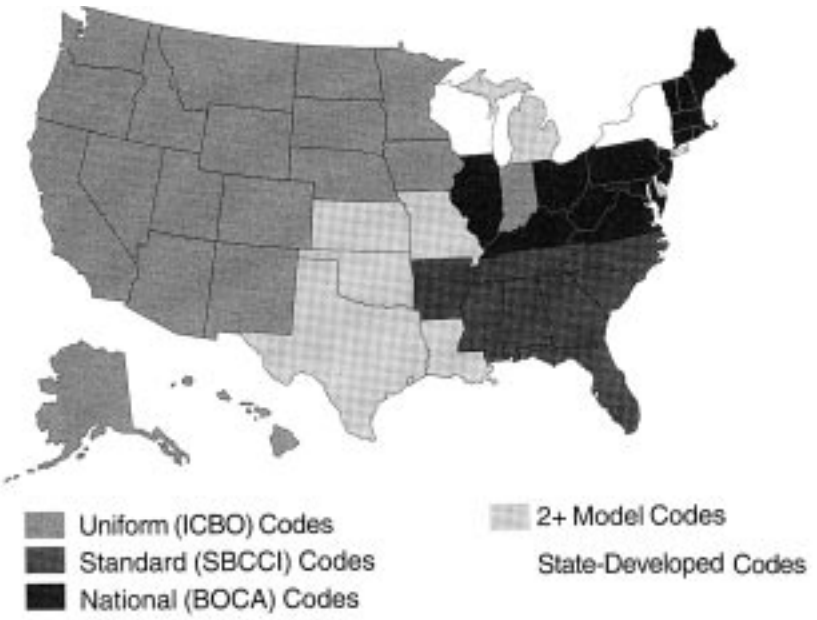
As formulators of national policies, various federal agencies have often interfaced with building regulations or influenced them directly. Notable in this capacity is the U.S. Department of Housing and Urban Development (HUD), which developed its own Minimum Property Standards for underwriting its mortgage insurance programs and has pressed for the widespread adoption of building and housing codes and code reform, as well as specific provisions. These provisions include accessibility in housing, lead-based paint regulations, and, most recently, codes related to rehabilitation (rehabilitation codes). The federal Consumer Product Safety Commission has developed safety standards that have been incorporated in building codes (for example, safety glazing). The U.S. Department of Energy has been a strong advocate for the development of energy codes. FEMA developed and administers the National Flood Insurance Program, many provisions of which have been incorporated in building codes. FEMA's National Earthquake Hazards Reduction Program (NEHRP) has provided the impetus for current seismic provisions in the building codes.

The Model Code Groups

The original three regional model code groups—Building Officials and Code Administrators (BOCA) International, Inc., International Conference of Building Officials (ICBO), and Southern Building Code Congress International, Inc. (SBCCI)—were established as professional associations of building officials and code enforcement personnel (BOCA primarily in the Northeast and Midwest, ICBO primarily in the West, and SBCCI primarily in the Southeast; see Exhibit 1). These organizations began developing model codes in response to the increasing difficulty for state and local governments to develop and maintain technically complex building codes, the recognized need for uniformity in building codes and code enforcement methods, and encouragement from industry and government. BOCA, founded in 1915, published its first model building code, the Basic Building Code, in 1950. ICBO, founded in 1922, published its first model code, the Uniform Building Code, in 1927. SBCCI followed shortly thereafter with publication of the Standard Building Code in 1945.

Exhibit 1

Historical, Regional-Oriented Model Codes



Source: National Conference of States on Building Codes and Standards, Inc. (2000)

Until 1994, when the three regional groups joined together, each of these organizations published and updated comprehensive suites of model building regulations, including building, plumbing, mechanical, housing, fire prevention, and other related requirements. Amendments to the model codes could be proposed annually by anyone with an interest or a stake in building design and construction. These amendments would be heard and debated before code change committees, and ultimately would be voted on for approval or denial by the membership representing federal, state, and local governments. Supplements to the model codes were published annually, and a revised edition of the model codes was published every 3 years. These model codes typically would be adopted, with varying degrees of amendment and modification, as regulations by states or local jurisdictions in their respective geographic regions (with some notable exceptions).

The Voluntary Consensus Standards Organizations

Finally, the building regulatory system is buttressed by the voluntary standards consensus process, which develops and updates the numerous standards referenced in every building code. A few of the organizations involved in this process are ASCE, ASTM, ASHRAE, and NFPA. These organizations establish committees to develop and maintain specific standards. Standards, which can be proposed by anyone with an interest or stake in building design and construction, are debated in the committees and voted on in a process that attempts to ensure balance among the various stakeholders (for example, producers, consumers, and general interest groups).

Recent Developments

A number of changes have typified the building regulatory system in the past few decades.

One- and Two-Family Dwelling Code

In the early 1970s, the three regional-oriented model code groups (BOCA, ICBO, and SBCCI) joined with the American Insurance Association (then still the publisher of the fourth model code, the National Building Code) to develop a single model code for conventional single-family construction. Originally entitled the One and Two Family Dwelling Code [sic], the name was changed to the CABO One and Two Family Dwelling Code [sic] when the American Insurance Association dropped out, and the three remaining model code groups founded an umbrella organization, the Council of American Building Officials (CABO), to maintain and publish this code. The code continued to be published and updated until the establishment of the International Code Council (ICC) and evolved directly into the current International Residential Code (IRC) published by that group. While the extent of state and local adoption of the CABO One and Two Family Dwelling Code throughout the United States is not known, for the past 30 years a single model code governing this type of construction throughout the country has existed.

Regulation of Factory-Produced Housing

Initiated in the 1970s, factory-produced housing, whether panelized, modular, or manufactured (mobile homes), has increased in recent years. The production of components or entire houses in a remote factory and subsequent delivery to the site, which may be in a different state, require specialized regulatory procedures. Inspection for code compliance must be performed at the factory and certified in a form that can be acceptable at the site. When the factories are located across state lines, the inspection often is to a different code from that in force in the jurisdiction where the house is to be located. Procedures and compacts have been developed to accommodate these needs.

Federal regulation has worked to create uniformity of requirements for manufactured housing, thus fostering a national market for this product. In 1976, “mobile homes had come under regulation in the form of preemptive federal manufactured Home Construction and Safety Standards, or ‘HUD-Code,’ and the era of ‘manufactured homes’ began” (NAHB Research Center, Inc., 1998: 4). The Manufactured Housing Improvement Act of 2000 required that the HUD-Code regulation be updated regularly and called on states to implement installation standards and the training and licensing of home installers (Manufactured Housing Research Alliance, 2003). These changes reflected the rising amenity level of manufactured homes (prompting the updating of the HUD-Code) and the necessity of installation standards, because the original HUD-Code did not regulate installation and varying local standards regarding installation had caused problems that affected the growth of the manufactured home industry.

In the past 5 years, two trends have been predominant: (1) the emergence of two model codes, and (2) the adoption of rehabilitation codes.

The Emergence of Two Model Codes

In 1994, the three regional model code groups merged to become the International Code Council, and the ICC began producing a single family of codes: the International Codes, or I-Codes. The first complete set of I-Codes was promulgated in 2000. Since then, states and local jurisdictions have begun adopting them in place of one of the three models previously developed. The process for developing and modifying the I-Codes is much the same as that used by the three regional model code groups—amendments, which can be proposed by a variety of interested parties, are reviewed by code change committees and the membership at large.

In 2003, NFPA created the first edition of its own building code, NFPA 5000. NFPA used the same process for developing and modifying this code that was used in the development of voluntary consensus standards. An overview of the current ICC-NFPA regulatory framework, with respect to new construction and rehabilitation, is provided in Exhibit 2. NFPA 5000 references the ICC IRC for structural design of one- and two-family dwellings.

Exhibit 2

Overview of Contemporary National Model Building Code Regulation of New Construction and Rehabilitation (2004)

	International Code Council (ICC)		**National Fire Protection Association (NFPA)**
	International Building Code (IBC)	**International Existing Building Code (IEBC)**	**NFPA 5000**
New construction	Applicable to all buildings.	N/A	Applicable to all buildings.
One- and two-family housing and townhouses	Reference to International Residential Code (IRC) that recognizes industry standard for conventional wood frame construction.		Reference to IRC for one- and two-family only; townhouses must be engineered and cannot use conventional construction, but this requirement depends on interpretation.
Multifamily housing	Compliance with fire safety standards, structural load standards, and materials standards.		Essentially same as IBC, with minor differences in heights and areas, sprinkler and standpipe triggers, etc.
Existing buildings	Chapter 34, applicable to repairs, alterations, additions, and change of use (unless IEBC is adopted).	Applicable to all buildings undergoing repairs, alterations, additions, and change of use. Based on the Nationally Applicable Recommended Rehabilitation Provisions (NARRP), with added requirements.	Chapter 15, applicable to repairs, alterations, additions, and change of use. Based on NARRP and Code.

N/A = not applicable.

Building codes in the United States are in the process of shifting from regionally influenced multiple model codes (for example, BOCA, ICBO, and SBCCI), as is illustrated in Exhibit 1, to a system influenced by two competing national codes promulgated by the ICC and NFPA (Exhibit 3). This evolution represents an important change from the system that prevailed for decades.

Exhibit 3

Contemporary Adoption of the International Code

International Code Adoptions
- 44 states and the Department of Defense use the International Building Code.
- 32 states use the International Residential Code.
- 32 states use the International Fire Code.

Source: International Code Council, "International Code Adoptions"; http://www.iccsafe.org/government/adoption.html (accessed December 5, 2004)

Thus far, many more jurisdictions have adopted the I-Codes. An important exception is California, which has opted for NFPA regulations. The National Conference of States on Building Codes and Standards, Inc. (NCSBCS) has tried unsuccessfully to combine the ICC codes and NFPA regulations into one national code (National Conference of States on Building Codes and Standards, Inc., 2001).

The Adoption of Rehabilitation Codes

In the past 20 years, rehabilitation activity in existing buildings has grown as a proportion of all construction. Until the 1990s, such work was regulated by reference to the building code (Chapter 34 of the model codes), the vast bulk of which addressed new construction. In the 1990s, it became clear that this form of regulation was often arbitrary and unpredictable, and it constrained the reuse of older properties. Beginning with New Jersey, states and local jurisdictions began to develop new ways to regulate work in existing structures, using what came to be known as "rehabilitation codes," and in some jurisdictions as "smart codes." In January 1998, New Jersey adopted its rehabilitation code. In May 1997, HUD published NARRP to serve as a model for developing rehabilitation codes. Since then, smart codes have been adopted by several states and local jurisdictions, including Maryland;

New York State; Rhode Island; Minnesota; Wilmington, Delaware; and Wichita, Kansas. In 2003, the International Existing Building Code (IEBC) was added to the family of I-Codes, and the NFPA 5000 code developed a rehabilitation code as its Chapter 15 (see Exhibit 2). The extent of local adoption of these model rehabilitation codes is unknown at this time. These new codes are based on the principles of predictability and proportionality. Predictability states that clear rehabilitation code regulations would foster the accurate prediction of improvement standards and costs. Proportionality establishes a sliding scale of requirements depending on the level and scope of the rehabilitation activity, from repairs to reconstruction. The overall goal of the rehabilitation codes (considered in detail in a later section of this article) is to encourage the reuse of older buildings.

Prevalence and Framework of Building Codes

In 1968, the U.S. National Commission on Urban Problems (1969) conducted a national survey of all local governments in the United States and found that about half (46.4 percent) had a building code. Comparable national data is not available today, but by all accounts, the share of local jurisdictions with building codes has increased, especially among larger local jurisdictions and those in metropolitan, as opposed to rural, areas. In fact, a survey dating to the 1970s that focused on cities with more than 10,000 in population found almost all (96.7 percent) used building codes (Field and Ventre, 1971).

According to the NCSBCS, "over 90 percent of the [U.S.] population live, work, and recreate in one of the 44,000 jurisdictions in the U.S. with a building code….These codes govern over $1.1 trillion a year in the domestic construction industry, accounting for 12 percent of the gross domestic product in the U.S." (National Conference of States on Building Codes and Standards, Inc., 2004: 3).

While most code provisions are enforced locally, their technical basis is increasingly framed to some measure by the state. As of the mid-1970s, 22 states had a state building code. Of that total, 15 had a state building code governing single-family housing, while 19 had the same for multifamily housing (Office of Building Standards and Codes Services, 1975). As of 2003, according to data provided by NCSBCS, 46 states had a state building code,[1] and of those, 28 such regulations governed single-family housing and 37 regulated multifamily housing. Of the 46 states with state building codes, 9 applied only to government-owned buildings, leaving 35 state codes applying to privately owned properties. (The preceding discussion may oversimplify the complexities among the states.)

For the most part, these statewide codes were based on one of the three model codes, and now, to a growing extent, the I-Codes. That system seemingly would mean that numerous states in different regions of the country had uniform, model code-based regulations that would have to be followed at the local level. In fact, the regulatory system is far more disparate.

First, many states that based their state building codes on one of the models incorporated exceptions or amendments of their own, or did not continuously incorporate the latest versions of the model codes. (As of 2003, 24 of the 46 states with state building codes fell into this category.)

Second, many state building codes applied only to certain categories of property, such as public buildings or exclusively multifamily dwellings.

Third, even when the state building code applied to all or most properties, the regulation usually was not absolutely binding on local jurisdictions. Many state building codes (13 of the 46 in 2003) established only *minimum standards*. Local governments were allowed

to add to these base standards, thus potentially making the local codes more stringent (see Exhibit 4 for the 22 states that did so), or if not more stringent, then simply altered from the base state-level requirements. Such local modification might require state approval or some other procedure (for example, the locality having to document the case for the modification); however, these requirements were not very demanding, and local modifications were common. Only a few states with state building codes, including Connecticut, Kentucky, and New Jersey, framed their state building code as a *maximum* from which localities could not deviate. With the exception of these few states, and even among these states for properties not covered by the state building code, local jurisdictions routinely tinker with their building regulations. The net result is that with few exceptions (for example, Connecticut and New Jersey) different communities within a state may impose different building code requirements.

Exhibit 4

Building Code Categories by State

Building Codes Adopted by State for Most Structures					Building Codes Adopted Locally
Local Amendments Allowed	**Local Amendments as Approved by the State**	**Mandatory Statewide; No Local Amendments**	**Mandatory if Adopted Locally**	**Government Buildings Only**	
Arkansas	Georgia	Connecticut	Colorado	Alabama	Arizona
Alaska	Indiana	Kentucky	Idaho	Iowa	Delaware
California	Massachusetts	New Jersey	Michigan	Kansas	Hawaii
Florida	New York	Pennsylvania	Minnesota	Mississippi	Illinois
Louisiana	North Carolina	Rhode Island	Montana	Missouri	Maine
Maryland	Oregon	Virginia	North Dakota	Nebraska	Texas
Nevada	South Carolina		West Virginia	Oklahoma	
New Hampshire	Utah			South Dakota	
New Mexico				Vermont	
Ohio					
Tennessee					
Washington					
Wisconsin					
Wyoming					

Source: National Conference of States on Building Codes and Standards, Inc. (2004)

Justification of Building Code Provisions

The model codes have traditionally stipulated health, safety, and welfare of building occupants and society as the objectives of building regulation. To illustrate, paragraph 101.3 of the International Building Code (IBC) 2003 states the following:

> **101.3 Intent.** The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighter and emergency responders during emergency operations.

The corresponding paragraph R101.3 of the IRC, in addition to other minor differences, adds "affordability" to the list of means of achieving the intent.

Theoretically, various benefits accrue from building regulations. According to Oster and Quigley (1977: 363), these benefits include "protecting the consumer from the consequences of their own ignorance" (for example, a homebuyer purchasing a hazardous dwelling), as well as external benefits, such as protecting surrounding properties, or the community at large, from a dwelling that could collapse, catch fire, or otherwise be hazardous. Some of these benefits can be achieved through other avenues, such as having potential housing consumers use professional inspectors to avoid unsafe dwellings. Also, property owners carry insurance against external dangers threatening the community at large. That private-based system, however, is surely not foolproof, for inevitably some consumers will not avail themselves of professional services and insurance. Hence, many, albeit far from all, accept the rationale of benefits accruing from building codes that argue for their promulgation (Colwell and Kau, 1982).

The benefit of realizing the various building code objectives are presumed to justify the costs imposed on building owners, occupants, and society. The debates about specific changes to the regulations, even the most blatant attempts to preserve or enhance proprietary market share, are usually couched in terms of this stated intent. We suffer, however, from a paucity of cost-benefit-analyses that might justify proposed regulations or changes to the regulatory status quo.

Theoretical Description of the Ways Building Codes Could Affect Housing

As indicated in Exhibit 5, the idealized goal for building codes (or, for that matter, any regulation) is to incorporate appropriate substantive regulations and administer these regulations in an appropriate fashion. Deviation from this goal will add to housing costs; the greater the deviation, the greater the excess housing cost.

Exhibit 5

Building Regulations and Housing Cost

		1. Substantive Regulations	
		Appropriate	**Inappropriate**
2. Administration	**Appropriate**	Goal	Cost Inducing
	Inappropriate	Cost Inducing	Most Costly

Source: Modeled from Luger and Temkin (2000)

In a general sense, an appropriate building code would be one that protects the housing consumer and society in a balanced cost-benefit fashion.

The outline below frames in a more specific way the definition of inappropriate building codes from both a substantive (technical) and administrative perspective.

1. Substantive Impediments.
   a. Require questionable improvements.
   b. Restrict cost-saving materials and technologies.
   c. Impede scale and efficient production.
   d. Other challenges.

2. Administrative Impediments.
   a. Skill inadequacies.
   b. Administrative conflicts.
   c. Administrative delays.
   d. Excessive fees.
   e. Other challenges.

Substantive Impediments

Require Questionable Improvements

The "25–50 percent rule" governing rehabilitation is a classic example of requiring questionable improvement. This rule mandated that if investment in a building exceeded a certain threshold, the entire building would have to meet the standards for new construction, not just the area being improved. This rule was perverse on a number of counts. First, it discouraged needed investment in existing buildings. Second, it mandated a new construction standard for rehabilitation, which was frequently technically problematic, expensive, and unnecessary. For instance, a nonprofit group doing affordable housing rehabilitation in New Jersey was forced to widen a stairway that was 3/4 inch too narrow and to replace windows that were 5/8 inch too small. The existing stairway and windows were perfectly serviceable and had been in place for almost a century, yet had to be replaced, at a cost of thousands of dollars, to meet the new building standard (Listokin and Listokin, 2001).

The most recent requirements for seismic design in new construction in some parts of the country are a more current example. As a direct result of FEMA efforts under the NEHRP, seismic design is now required in regions of the country that previously ignored such requirements. Although the NEHRP recognizes regions of differing seismicity, when building on certain types of soil in Maryland, the requirements may preclude the use of flat plate concrete construction—commonly used for many years in multifamily housing construction. While the seismic design improvements are based on extensive and thorough analysis over a long period of time (probably more than most other code changes) and while FEMA will strongly support them, others may question their reasonableness and cost.

Other instances of questionable requirements exist. Four-story, combustible buildings in New York City are cost efficient for housing, commerce, and mixed uses; are permitted as Type III construction under the IBC; and were once quite typical in this urban area. Despite these advantages and history, the current New York City code prohibits building such structures.[2]

Restrict Cost-Saving Materials and Technologies

While residential construction may be a relatively low-tech industry, constant advances have been made in cost-saving materials and technologies. In the 1960s and 1970s, these advances included the use of plastic pipe, preassembled plumbing, and prefabricated metal chimneys, as well as the installation of bathroom ducts instead of windows (U.S. National Commission on Urban Problems, 1969).

Current cost-saving examples include use of precast foundation walls, wood/plastic composite exterior trim/molding, fiber cement exterior trim materials, and laminate flooring (Koebel et al., 2003). Despite the potential cost savings of these innovative materials and procedures, some local building codes at one time prohibited their use. To a certain extent, the building code approval process may simply lag behind the leading edge of technology and innovation. Yet, more questionable self-interest influences sometimes played a role, such as plumbers trying to control the market and limit competition by intentionally resisting the use of plastic pipe because it was easier and less costly to install, thus reducing plumbers' charges.

On the other hand, some would argue that recent cost-saving systems, such as Exterior Insulation and Finish Systems, were prematurely accepted by local codes, leading to failures and legal actions.

Impede Scale and Efficient Production

The multiplicity of codes can discourage the entry of builders and material suppliers, inhibit mass production, and increase professional costs. Field and Ventre made the following observation:

> Analysts and critics of the housing industry have pointed to the deleterious effects of code fragmentation upon producer efficiency and upon the introduction of new technologies. Development of new technologies and methods of construction is a costly process. Hence, the producer must sell to a large market before he can bring costs down to a level that will represent saving over the traditional construction approaches. Achievement of a large market requires selling in many different communities. But if these communities set different construction standards, they destroy the cost savings implicit in large volume production (Field and Ventre, 1971: 147).

For example, manufactured housing units provide an opportunity for affordable housing: because of economy of scale, a 2,000-square-foot manufactured home costs only 61 percent as much as a comparable site-built home (Apgar et al., 2002). In the late 1990s, the two largest manufactured home producers each built 60,000 homes (NAHB Research Center, Inc., 1998). Such production would not have been possible under different building code standards for manufactured homes in different states and localities—the situation that existed before the HUD-Code was promulgated in 1976. A late 1960s survey revealed that diverse local building codes presented the primary obstacle to home manufacturers (U.S. National Commission on Urban Problems, 1969).

Conventional construction also can be affected by multiple building codes. For instance, multiple building regulations and other code characteristics, such as arcane code language, can increase the learning curve for builders and professionals (for example, architects) to familiarize themselves with the building regulations governing a given area. This difficulty may limit competition among developers and professionals working in a given location, and increase construction costs. While this "cartel effect" is mentioned in the literature, it has not been empirically examined.

Other Challenges

Numerous other substantive requirements could add to costs. Added technical requirements can increase professional expenses. For instance, single-family or small multifamily construction typically does not require advanced engineering analyses, which can be costly. That situation can change, however, if the building code imposes seismic protection safeguards, mandates sprinklers, and/or raises snow load requirements.

A poorly written and disorganized building code also can raise expenses because comprehending and using the regulations will take more professional time. Arcane and poorly organized text also increases the likelihood of uneven interpretation by inspectors.

Administrative Impediments

Another article in this volume considers administrative barriers related to building codes; therefore, this article presents only an overview of potential administrative challenges.

Skill Inadequacies

Code personnel may not be adequately trained for their often technically demanding jobs. Insufficient experience may also foster inconsistent interpretation. Inadequate preparation and experience, and a fear of liability, may make inspectors go by the book instead of properly granting variations where warranted.

Administrative Conflicts

Compounding the problem is the potential for administrative conflicts. The field staff and back-office staff of the same code-administering unit may disagree. The potential for disagreement is even greater among staff of different departments charged with code oversight, such as building departments and fire departments.

Administrative Delays

Code administrative delays can add to costs. It may take far too long to pull a permit, schedule an inspection, or have a variation request reviewed. The threat of a stop-work order prompted by a code disagreement is chilling because it can halt construction in its tracks. Delays also may ensue if the building code requirements are not well coordinated with other regulations (for example, zoning and environmental) imposed on the residential development industry.

Excessive Fees

Excessive fees can unnecessarily add to costs. Theoretically, the building code fees should merely recover outlays for code review, inspection, and other services. In fact, local units of government may impose high building code fees as a separate profit center.

Other Challenges

Corruption may further taint building code administration. Sadly, bribery is a recurring scourge in building code enforcement, adding to costs and sapping the integrity of the system.

Summary of Theoretical Impacts

The numerous substantive and administrative building code impediments described above can frustrate residential development and add to housing costs. We assume that most of the added expenses from the adverse requirements and poor administration will be passed along to the housing consumer, as opposed to being absorbed by the producer.

The above impediments constitute the direct impacts of building codes on housing; but building codes may also trigger further indirect and simultaneous consequences. As argued by Noam (1983), if building codes increase the cost of new housing, then it stands to reason that codes may lead to a rise in prices of existing housing because of the positive cross-elasticity of demand between new and existing housing.

At the same time, building codes may increase housing prices, and areas with the highest housing prices may opt for the most restrictive codes to maintain their cachet and exclude the poor. Noam (1983) examines this simultaneous influence of building codes, which is noted in a different context (zoning and land costs) by Glaeser and Gyourko (2003).[3]

The extant literature on the subject discusses many aspects of the above theoretical description of the ways in which building codes affect housing.

Summary of the Literature

This section provides an overview of studies on the impact of building codes on housing production and costs, focusing first on analyses considering the codes' influence on new housing construction, and then on reports examining the building codes' impact on rehabilitation. Following this overview, this article examines the extant literature.

Literature on Building Codes and New Construction

Oster and Quigley provide the following overview of some of the earliest studies:

> Maisel's early study (1953) of the San Francisco housing market concluded that an increase of less than one percent in the cost of newly constructed housing was attributable to "known code inefficiencies" (pp. 249-250). Muth's 1968 econometric analysis of single, detached housing suggested that locally modified building codes increased average cost by about two percent (as reported in Stockfrisch (1968: 8) (Oster and Quigley, 1977: 364).

The U.S. National Commission on Urban Problems (1969)—often referred to as the Douglas Commission—conducted one of the most comprehensive building code studies. It found that unnecessary housing costs are inherent in building codes that delay construction, prevent the use of modern materials, mandate antiquated and outdated provisions, inhibit mass production (for example, the marketing of mobile homes), prevent large-scale conventional construction, and are questionably administered.

The Douglas Commission based its findings on testimony before its members and empirical study by its consultants. The latter included a national survey of code implementation and code requirements. It found that many communities, even those nominally adhering to model codes, prohibited cost-saving materials and technologies (for example, use of plastic pipe and preassembled plumbing units) that, generally, were allowed by the model codes. These communities added prohibitions of their own or did not adopt the latest version of the model codes. The Commission's analysis concluded that these excessive requirements—over and above the model code and other benchmarks, such as the standards contained in the Federal Housing Administration's Minimum Property Standards—could potentially add $1,838, or 13 percent, to the price of a basic home (then estimated at $12,000) (U.S. National Commission on Urban Problems, 1969).

Field and Ventre (1971) surveyed building codes and their administration in 1,100 communities in the United States for the International City Management Association. They developed a local building code "prohibition score" based on the prohibition of 14 construction materials and procedures earlier identified by the Douglas Commission as innovative (and usually allowed by the model codes). On the plus side, Field and Ventre found a decline in the share of jurisdictions prohibiting innovations since the Douglas Commission survey. Nonetheless, many communities surveyed by Field and Ventre, even those nominally under an enlightened model code framework, still resisted cost-saving materials and procedures—echoing the Douglas Commission's findings. Field and Ventre concluded that the building code had a "disastrous impact…on the efficiency of the construction industry" (Field and Ventre, 1971: 139).

Muth and Wetzler (1976) examined the effects of four constraints on housing costs: (1) union restrictions, (2) building supplier restrictions, (3) small size of building firms, and (4) restrictive building codes. The authors measured the restrictiveness of the building code by such factors as the code's substantive basis (the authors assumed that construction costs would be less expensive in jurisdictions nominally governed by a model code), as well as the code's timeliness (the authors assumed that more recently adopted building codes would be more likely to allow cost savings).

Muth and Wetzler studied, via multiple regression analyses, the relationship of the price of new single-family houses to the characteristics of these houses (for example, number of bedrooms and baths) and measures of the four constraints. The authors found that the constraints, overall, had only a minor effect on the cost of single-family housing. Regarding the building code, Muth and Wetzler concluded "the effect of constraints upon the costs of one-family houses is so small. Local building codes probably add no more than two percent, while the impact of unions on construction worker wages would appear to increase housing costs only by about 4 percent" (Muth and Wetzler, 1976: 57).

Seidel (1978) analyzed the extent to which seven types of government regulations, including building codes, added to housing costs. The author found that for a $50,000 single-family home (as an example), the following excess costs from government regulations amounted to $9,844, or about 20 percent of the total cost:

Development stage[4]	$5,115
Construction stage[5]	$4,129
Occupancy stage[6]	$600
Total	$9,844

Of that total, excessive costs related to restrictive building codes were estimated at about $1,000, or roughly 1 percent of the total cost of the house. Seidel's study of the building code contribution to excessive cost included a survey of whether localities prohibited innovations typically allowed by model codes (for example, plastic pipe) or required "nice but not necessary" provisions (for example, ground fault interrupters). His work paralleled earlier research done by the Douglas Commission (U.S. National Commission on Urban Problems, 1969) and Field and Ventre (1971). Just as previous researchers had discovered, Seidel found that even jurisdictions nominally following national or state building codes often had excessive standards.

Noam tapped the Field and Ventre prohibition score information (that is, the degree to which 14 innovative construction materials and procedures were disallowed) and then weighted these prohibitions by their relative costliness to builders to construct an "index of restrictiveness" (1983: 398). He developed a model in which the value (V) of housing is a function of the restrictiveness of its local building codes:

$$V = f(R,X_1)$$

where R, is a continuous variable measuring strictness (that is, the index of restrictiveness) and X_1 is a vector of other factors that contribute to housing price, such as median household income and population increase. Noam further hypothesized that higher income areas might likely adopt more restrictive codes to keep housing prices high and exclude the poor. In other words, a simultaneous relationship between housing prices and a restrictive building code might exist.

Using multiple regressions, Noam applied the described model in the 1,100 communities originally surveyed by Field and Ventre and found that restrictive codes raised housing values:

> If we define a strict code as one with all 14 code restrictions in place, and compare it with the mean strictness of codes prevailing nationwide, R = 4.37, the difference in housing prices is V = $1,060, *certis paribus*. This figure is not insignificant, comprising as it does a percentage of 4.90 in housing values over the national mean (Noam, 1983: 399).

Noam also found that the strictness of codes is, in turn, affected by housing values (that is, areas with high-priced housing are more likely to adopt restrictive housing codes, thus maintaining their exclusiveness), as well as by the strength of labor unions (that is, areas with strong, organized labor unions are more likely to have stricter codes).

Contemporary with Noam's research was the release of a report by the President's Commission on Housing, which noted the following:

> Building codes were created to provide special protection for…health and safety. Over the years, state and local governments have tended to add extra elements of protection…. State and local governments have not acted uniformly, thereby creating differences not only among states, but also among adjoining communities…. A further problem is that enforcement and interpretation of identical code requirements vary greatly from community to community….Estimates of the cost of all unwarranted variations range from 1.5 percent to 8 percent of the selling price of the average house (McKenna, 1982: 216–217).

A decade later, another housing commission considered the impact of building codes and other housing regulations on housing cost and development (Advisory Commission on Regulatory Barriers, 1991) and reported the following:

> Since the early 1900s…significant steps have been taken in the development of uniform standards. But code problems continue. Major problem areas include antiquated codes, poor administration, and duplicate regulations.
>
> Building and housing codes often represent major barriers in housing affordability…. Not only can codes raise costs within a given jurisdiction, but differences among jurisdictions within a metropolitan area can also create frustrating problems for architects and builders (Advisory Commission on Regulatory Barriers, 1991: 3–6).

The Advisory Commission's 1991 study—"*Not in My Back Yard": Removing Barriers to Affordable Housing,* known as the "NIMBY report"—did not put a price tag on the many regulatory barriers to affordable housing (Advisory Commission on Regulatory Barriers to Affordable Housing, 1991). One of its prominent members, however, later suggested that the cumulative cost increase from building codes and many other barriers could be as high as 50 percent (Downs, 1991).

The NIMBY report evoked considerable interest in regulatory barriers. The consolidated plans[7] of numerous states (for example, Colorado, Maryland, Montana, Oregon, and Texas) cite building codes as a governmental constraint to affordable housing. These references tend to be of an anecdotal and undocumented manner, as is illustrated in the Montana Consolidated Plan:

> In recent years the cost of new home construction in Montana has greatly outstripped personal income growth. The result has been a rapid creation of a housing affordability crisis…. One potential element of these cost factors is the uniform building code standards adopted by the Montana Department of Commerce (State of Montana, 2000: 56).

The impact of building codes has been considered in much greater depth in a series of state and local community case-study reports on housing costs and regulatory barriers in Colorado (Colorado Department of Local Affairs, 1998), Minnesota, (State of Minnesota, Office of the Legislative Auditor, 2001), Massachusetts (Commonwealth of Massachusetts, 2000; 2002), New York City (Salama, Schill, and Stark, 1999), and Boston (Euchner,

2003). The Minnesota study, for example, surveyed 1,106 developers, builders, and local housing organizations on impediments to housing construction. While the cost of land, labor, and materials—particularly land—was most often cited as a "significant limitation," code constraints were also noted.[8] Minnesota building code issues included alleged "excessive" requirements (for example, regarding energy conservation and sprinklers in certain apartment buildings), administrative issues (for example, inconsistent local interpretation), and fees in excess of the costs to administer the codes (State of Minnesota, Office of the Legislative Auditor, 2001). Excerpts from other state and local studies regarding building codes and new housing construction are reported in Exhibit 6.

Exhibit 6

Excerpts of Alleged Building Code Impacts in Selected Recent State-Local Housing Studies

Jurisdiction	Building Code Description/Impact
New York City	"New York City's building code is stringent, voluminous, detailed, complex and arcane" (Salama, Schill, and Stark, 1999: xvii).
	"The current code is outdated and archaic. The current code is 8,000 pages long. It has not been overhauled since 1968; it requires building technologies that are woefully out of date; and it doesn't permit cost saving technologies that have recently come into being" (Schill, 2002: 5).
Boston/Massachusetts	"A set of boards and commissions, each promulgating its own specialty codes regulates building…. Because of limited manpower…lack of common training…and the vagaries of local political culture, local implementation is uneven…. Idiosyncratic interpretation introduces a level of risk that gets translated into added costs" (Euchner, 2003: vii).
Colorado	Housing costs could be reduced via the following code changes: modifying requirements for materials and construction, modifying quality standards (for example, allow single room occupancies, and develop rehabilitation sensitive codes (Colorado Department of Local Affairs, 1998).
Oregon	"Building codes have been criticized for: a) Lack of uniform interpretation, which contributes to difficulty obtaining plan review and permits, expensive contract corrections, and increases construction time; b) Penalizing owners of older buildings for renovations by requiring expensive upgrades; c) Lack of a benefit-cost analysis when code changes are adopted and implemented; and d) Difficulty changing specific code standards when new technologies, building techniques and building materials could be used to reduce costs while maintaining safety" (Metro Council, 2000: 55).
Montana	Enhanced building code interpretation and substantive code changes (for example, concerning basement wall insulation and stairway lighting) could reduce costs of an average home by $5,300 (State of Montana Affordable Housing/Land Use Initiative, 2000).

Literature on Building Codes and Rehabilitation

Numerous investigations also considered code impacts on rehabilitation.

The U.S. National Commission on Urban Problems (1969) criticized new-construction-based building code standards as being unsuitable for housing renovation. In 1977 and 1978, Metz (Metz, 1977; Metz et al., 1978) concluded that building codes, premised on new building standards, were a hindrance to renovation. These themes were repeated in the National Bureau of Standards (1979) report *Impact of Building Regulations on Rehabilitation—Status and Technical Needs*, which focused on the ways in which building codes hampered renovation, such as requiring unreasonable new-construction-level improvements. The President's Commission on Housing (1982) similarly pointed to the

additional costs imposed by strict building codes in the renovation of older units and the dampening effect of the codes on innovation. Other reports focused on similar issues: Building Technology Inc. (1981a, 1981b, 1981c, 1982, 1987); Ferrera (1988); Ferro (1993); Holmes (1977); Kaplan (1988); Kapsch (1979); and Shoshkes (1991). In response to the identified building code problems, HUD released *Rehabilitation Guidelines* that covered both administrative and technical subjects in the early 1980s (National Institute of Building Sciences, 1981a, 1981b, 1981c).[9]

Some of the impetus for housing rehabilitation stems from growing appreciation of historically preserved older neighborhoods, and many studies have pointed out the difficulty of satisfying new-construction-based building codes in effecting historic renovation. In 1988, a report to the West Virginia Task Force for Historic Preservation Legislation (Harper and Hopkins, 1988) recommended greater flexibility in building code requirements, because the requirements often make rehabilitation more expensive than demolition and new construction. The 1989 report *Building Codes and Historic Preservation* (Coleman, 1989) identified the following code-related impediments to rehabilitation: strict egress requirements, lack of fire ratings for existing materials, overly strict code officials, extensive approval time, and officials unaware of code provisions.

Hearings before the Advisory Commission on Regulatory Barriers to Affordable Housing (1990a; 1990b) noted many barriers to rehabilitation, including the use of prescriptive, rather than performance-based, building codes; building inspectors who were overly strict in enforcing the building code because they feared liability; and building code restrictions that increased construction costs. The Commission's report reached the following conclusion:

> Chief among the urban regulatory barriers are building codes geared to new construction rather than to the rehabilitation of existing buildings. The codes often require state-of-the-art materials and methods that are inconsistent with those originally used. For example, introducing newer technologies sometime requires the wholesale replacement of plumbing and electrical systems that are still serviceable (Advisory Commission on Regulatory Barriers, 1991: 6).

Studies on regulatory barriers performed after the Advisory Commission report often referenced building code barriers to rehabilitation. The Maryland Consolidated Plan (State of Maryland, 2000) cited building codes as an impediment to rehabilitation because they conflict, overlap, and vary from jurisdiction to jurisdiction—a sentiment echoed in the consolidated or comprehensive plans of Connecticut (State of Connecticut, 2000); Colorado (State of Colorado, 2000); Massachusetts (Commonwealth of Massachusetts, 2000) Tampa, Florida (City of Tampa, 1998); Knoxville, Tennessee (City of Knoxville, 2000); and San Antonio, Texas (City of San Antonio, 2000). The detailed state case studies considering regulatory barriers cited in the previous section on new construction also often considered the building codes' impact on rehabilitation. For example, the Massachusetts rehabilitation building code, once considered a national model, was deemed a barrier because of conflict in administration between fire, building, and other departments, and added requirements related to seismic and sprinklers (Euchner, 2003. Commonwealth of Massachusetts, 2000, 2002).

The administrative code conflicts of Massachusetts were not unique. *A National Survey of Rehabilitation Enforcement Practices* contacted 223 code officials and found that more than 80 percent reported code review by two or more city agencies that often failed to communicate during the approval process (University of Illinois at Urbana-Champaign, 1998). This survey also found lingering field-level application of the 25–50 percent rule and "change-of-use rules"—even though the model codes had done away with or significantly moderated these archaic principles.

As noted, the 1990s witnessed efforts to adopt "smart codes," driven by supporting studies demonstrating that traditional, or "unsmart," building codes could add to costs. A number of case studies in Trenton, New Jersey, before the adoption of a smart code found that questionable code administration and unreasonable improvement requirements added thousands of dollars in cost and months of delay (Listokin, 1995). New Jersey ultimately adopted a smart code in 1998, and various initial estimates were made on the impact of this change. The New Jersey Division of Codes and Standards estimated that its smart code shaved between 10 and 40 percent from the cost of building renovation (Fisher, 2001). A spurt of rehabilitation activity in New Jersey occurred, from $176 million in 1996 and $179 million in 1997 to $287 million in 1999; part of that increase was attributed to the code reform and the potential savings it allowed (Forest, 1999). For example, the rehabilitation and adaptive reuse of a building in Jersey City cost $1,145,000 under the new smart code, or 25 percent less than the $1,536,222 it would have cost under the former New Jersey code (Forest, 1999).

Many studies found similar results. The National Association of Home Builders Research Center (NAHB Research Center, Inc., 1999) compared the material and labor costs of an illustrative New Jersey rehabilitation project before and after the smart code. The NAHB report concluded, "the total cost of the project under the old code could have come in as much as 20 percent over the total project cost" (NAHB Research Center, Inc., 1999: 20). A Michigan State University study claimed that New Jersey's new rehabilitation code decreased rehabilitation costs in the state by 25 percent and increased rehabilitation activity by approximately 25 percent (Syal, Shay, and Supanich-Goldner, 2001).

The most comprehensive study on the impact of smart codes is currently being conducted at the University of North Carolina at Chapel Hill for the Fannie Mae Foundation (Burby, Salvesen, and Creed, 2003). This analysis considers rehabilitation activity and investment in New Jersey and other jurisdictions, and statistically examines the effect of smart codes reform, as well as "facilitative" code enforcement (that is, flexible/reasonable application of regulations). This detailed analysis has not yet been released, but it concludes that smart code reform and facilitative code enforcement both have a moderate effect in promoting rehabilitation activity.

Purported Building Code Impact on Housing Costs

Our review of 50 years of literature on this subject is admittedly cursory. We have not cited, for instance, numerous brief, anecdotal reports of how building codes supposedly influence housing costs. For example, an interview conducted by Babcock and Bosselman (1973) reports a builder claiming that building codes increased housing costs in Ohio by as much as 250 percent. Another example is a *Chicago Tribune* article based on a developer interview that attributed an increase in housing costs in Chicago to the city's antiquated building code (*Chicago Tribune*, 1999).

While disparate in type and quantitative rigor, the literature on the subject of building codes and new housing costs has claimed that codes increase the cost of new housing from roughly 1 percent to more than 200 percent. The more quantitative studies such as Maisel (1953), Muth and Wetzler (1976), and Noam (1983) find code-related housing cost increases of 5 percent or less.

Only a few reports have attempted to quantify the impact of building codes on the rehabilitation of existing housing. Focusing on the potential savings of smart codes as opposed to traditional regulations, these reports indicate, at the high end, a savings of about 20 to 40 percent (Syal, Shay, and Supanich-Goldner, 2001; NAHB Research Center, Inc., 1999; Forest, 1999; Fisher, 2001). Some report a much lower "moderate effect" (Burby, Salvesen, and Creed, 2003).

Because some of the literature examined the impact of an array of regulations on housing cost, we can report on the relative effect of building codes compared to other requirements. Seidel (1978) found that all excessive regulations added about $10,000 to the cost of a $50,000 home. Of that $10,000, restrictive building code requirements added about $1,000, compared to a roughly $5,000 premium exacted by excessive zoning and subdivision requirements. Thus, the building code added to expenses, but not to the same degree as land use and improvement requirements. In a similar vein, the Minnesota survey of ranking of impediments to single-family housing placed the building code below zoning and impact fee requirements as barriers (State of Minnesota, Office of the Legislative Auditor, 2001: 27–28).

Analysis of and Gaps in the Literature

In analyzing the literature, we consider such characteristics as *timeliness*, *conceptual basis*, *methodology*, and *scope*.

Timeliness

Timeliness refers to how current the literature is.

Ideally, the literature would focus on the contemporary situation. In fact, the opposite is the case. The vast majority of the most empirical and statistically rigorous studies, such as the U.S. National Commission on Urban Problems (1969). Field and Ventre (1971) and Noam (1983) are based on the code world of two generations ago. While we can still learn from this literature in terms of conceptual framework and methodology, their findings are inherently archaic.

The most contemporary of the literature concerns the adoption of the rehabilitation codes and includes studies by Burby, Salvesen, and Creed (2003); NAHB Research Center, Inc. (1999); Listokin and Listokin (2001); and Forest (1999). The rehabilitation code, however, is only one component of the larger subject of building codes and housing costs. We suffer from a lack of research on this larger dimension, specifically studies considering how codes affect new construction.

Conceptual Basis

The *conceptual basis* addresses the benchmark standard of code regulation and administration (the top left quadrant of Exhibit 5), above which regulation is considered inappropriate and, therefore, contributing to excess housing costs. In developing this benchmark standard, studies ideally would conduct an analysis of the costs of various potential building code regulations, as well as the benefits ensuing from these regulations.

How does the literature fare in developing the benchmark standard and conducting cost-benefit analyses? For the most part, the literature earns a middling grade on the first count and fails on the second.

Numerous studies do not consider the issue of a baseline standard (such as Babcock and Bosselman, 1973; *Chicago Tribune*, 1999) or implicitly refer back to one of the model codes as the standard against which local building code requirements should be judged (such as President's Commission, 1982; Advisory Commission, 1991). Other studies explicitly refer to the model codes as their baseline (such as Muth and Wetzler, 1976) or develop a list of building innovations, which themselves are often model-code-based, for testing their acceptance at the local level (such as U.S. National Commission on Urban Problems, 1969; Field and Ventre, 1971; Seidel, 1978; and Noam, 1983).

Given the comprehensive consensus basis leading to the adoption of model codes, as well as the technical expertise and experience of the entities participating in the development process, turning to the model codes as a benchmark is reasonable. As Muth and Wetzler argue, "construction should be less expensive under less restrictive building codes (presumably under any of the four 'national' codes)" (1976: 60). This thinking underlies HUD's denoting local adoption of a current version of one of the model codes as a "marker" for effective local regulatory reform.[10]

Others, however, take a less sanguine view. Colwell and Kau (1982) consider the model codes as anything but model and take a particularly dim view of the extant code enterprise:

> Codes have been subverted by special interest groups in and out of government to accomplish a number of purposes, from selling more lumber to reducing the liability of code officials. In fact, there is no body of evidence that shows that building codes add to health and safety in any way (Colwell and Kau, 1982: 77).

Developing a building code benchmark from a list of innovative practices or perceived excessive requirements presents another challenge. This list is subject to changing priorities and perspectives. For example, Seidel (1978) included smoke detectors in homes as an excessive building code requirement. Would a smoke alarm be so viewed today?

In an ideal world, deliberation of the building code benchmark would consist of review of requirements, which inevitably have costs, analyzed against their benefits.

Some studies have addressed this subject. A 1978 report by the National Bureau of Standards suggested an evaluation approach for considering the costs versus benefits of building code standards, and illustrated this approach by analyzing the implications for ground fault circuit interrupters (GFCIs) in residences (McConnaughey, 1978). This report estimated how much it costs society to save a life through the GFCI provision and found this cost to range (depending on the assumptions) from $2.5 million to $4 million.

Hammit et al., (1999) conducted a more recent cost-benefit investigation. This study found that building codes that increase housing costs have societal implications from "income effects" (that is, households that purchase a new home have less income remaining for spending on other goods that contribute to health and safety) and "stock effects" (that is, suppression of new home construction leads to slower replacement of less safe housing units). The study estimated that a code change that increases the nationwide cost of constructing and maintaining homes by a small measure (for example, a $150 expense, or 0.1 percent of the average cost to build a single-family home) would induce offsetting risks yielding between 2 and 60 premature fatalities or, including morbidity effects, between 20 and 800 lost quality-adjusted life years (Hammit et al., 1999).

The two studies cited above illustrate the type of cost-benefit analysis that would inform determination of the benchmark for building code requirements. A study would have to further determine if, say, the GFCI cost-benefit of roughly $3 million per life saved warranted the universal requirement of GFCIs. As we can see from Exhibit 7, however, studies rarely conduct cost-benefit analyses.

Exhibit 7

Analysis of Selected Literature on Building Codes and Housing Costs

Selected Studies	Study Characteristics							
	Methodology				Conceptual Basis		Scope	
	A	CS	SU	ST	Benchmark Standard	Cost Benefit	Standards	Administration
Babcock and Bosselman (1973)	X				NS	No	X	No
President's Commission (1982)	X				Model?*	No	X	Limited
Advisory Commission (1991)	X				Model?	No	X	Limited
Comprehensive Plans (1990s–2000s)	X				NS	No	X	Limited
Commonwealth of Massachusetts (2000, 2002)		X			Model?	No	X	Extensive
Salama, Schill, and Stark (1999)		X			Model?	No	X	Moderate
Euchner (2003)		X			Model?	No	X	Extensive
Douglas (1968)			X		Model-Other	No	X	Moderate
Field and Ventre (1971)			X		Model-Other	No	X	Moderate
Seidel (1978)			X		Model-Other	No	X	Moderate
University of Illinois (1998)			X		Model	No	X	Extensive
Muth and Wetzler (1976)				X	Model	No	X	Limited
Noam (1983)				X	Model-Other	No	X	Limited
Burby, Salvesen, and Creed (2003)				X	Model-Other	No	X	Extensive

A = anecdotal.
CS = case study.
SU = survey.
ST = statistical.
NS = not specified.
* Presumes benchmark standard is a model code; however, this linkage was not specified in the study's text.

Methodology

Methodology can include various qualitative approaches, such as gathering testimony from builders and other informed parties (an anecdotal, impressionistic approach) or conducting focused, indepth case studies related to the building code (for example, the rehabilitation situation in New Jersey before and after its smart code). The methodology also might include more quantitative-oriented information gathering and data analysis. For example, structured surveys of builders or building inspectors could be conducted. Another example is statistical analysis drawing on the survey data or considering other subjects (for example, are local restrictions significantly linked with higher local housing costs?).

While these methods inform the association between building codes and housing costs, ideally the more rigorous quantitative study would be emphasized. In fact, the opposite is the case (see Exhibit 7). Much of the literature, including some of the most widely quoted reports, such as the Advisory Commission study, rely on qualitative and often anecdotal evidence (Hartman, 1991). Only a handful of statistical regression analyses of how housing codes affect costs (Muth and Wetzler, 1976; Noam, 1983) have been done, and these studies are now quite dated. Much more recent statistical analysis has been accomplished on other regulatory barriers such as zoning and impact fees.

Scope

Scope encompasses many considerations, such as the studies' comprehensiveness in considering the extant literature (and relating their findings to that literature), studying building codes in context with other regulations, and examining both the substantive and administrative aspects of the building requirements.

Our review considers only the last characteristic of scope. We believe that considering the administration of the building code to be particularly important (Burby, May, and Paterson 1998).[11] Yet, this ideal of holistically examining both the substance and administration of the code is more often the exception. While many investigations do touch on some aspects of building code administration, the research is typically of a limited, anecdotal fashion as opposed to a more empirical, in-depth study (for example, the 1998 University of Illinois survey of building code enforcement).

In sum, the following gaps are found in the extant literature:

- *Timeliness.* Much research is dated.
- *Conceptual basis.* Limited benchmark and cost-benefit study has been done to define appropriate and inappropriate or excessive regulations.
- *Methodology.* More quantitative investigation is needed.
- *Scope.* More wide-ranging analysis is needed.

Our suggestions for future research are aimed at addressing these gaps.

Conclusions: Future Research

Study of the Contemporary Application of Codes

Study of the contemporary scene is needed, and the following are offered as examples.

As discussed earlier, the model building codes have shifted from three (formerly four) regional-oriented codes to two national codes promulgated by the International Code Council and National Fire Protection Association. We need to understand how these

national codes differ from one another, how the two national codes depart from the standards of the former regional-oriented codes, and the cost implications of moving from the old to the new codes.

Exhibits 8 and 9 start these lines of inquiry. Exhibit 8 focuses on how new construction is regulated by the International Building Code 2003 and the NFPA 5000, 2003 edition. Exhibit 9 considers how rehabilitation is regulated by the IBC (Chapter 34 and International Existing Building Code), NFPA (Chapter 15), as well as smart codes developed by New Jersey (Rehabilitation Subcode) and HUD (Nationally Applicable Recommended Rehabilitation Provisions). (Interrelationships exist between the above, such as the NFPA's Chapter 15 being based on the NARRP and Maryland's smart code.) In addition to comparing the respective regulations, both the new construction and rehabilitation exhibits contain a column briefly noting potential cost implications. In brief, the following national requirements may result in significant cost increases in new construction when compared to the earlier regional-oriented model codes:

- Increased sprinkler requirements in multifamily housing in both IBC ([F] 903.2.7) and NFPA 5000 (25.3.5) in comparison to earlier model codes. Potential added cost impact could also result from the NFPA 5000 sprinkler requirement for townhouses, which in some cases may be considered as apartment buildings under that code.
- Introduction in both IBC (1609.1.4) and NFPA 5000 (35.9) of glazed opening impact requirements in hurricane regions, which existed previously only in southern Florida and along the coast of Texas.
- Increased seismic requirements in IBC (1613–1621) and NFPA 5000 (35.10) that affect regions of moderate seismicity.
- Increased live loads on sloped roofs affecting multifamily housing (IBC 1607.11, NFPA 5000 35.7).
- Increased complexity of structural design, primarily because of structural load standards, which may have more impact for NFPA 5000 in its effect on wood frame construction than for IBC.

The following national requirement may result in significant cost savings in the regulation of building rehabilitation when compared to earlier model codes:

- The adoption of a modern rehabilitation code is intended to improve the predictability of the applicable regulations while establishing proportionality between voluntary and mandated work. The differences between the four prototypes—New Jersey, NARRP, IEBC, and NFPA 5000, Chapter 15—is subject to further study. New Jersey and NARRP may have the greatest impact on cost reduction, while IEBC may have less impact than NFPA.

The following requirements may result in significant cost impacts from differences *between* the current national codes:

- Potentially different sprinkler requirements for townhouses between the IBC (International Plumbing Code) and NFPA 5000 (Uniform Plumbing Code), with the latter being more restrictive.
- Different plumbing requirements under the IBC and NFPA 5000, with the latter being more restrictive.

Further empirical research, as described below, is needed to understand better the potential cost impacts cited above.

Exhibit 8

Analysis of Contemporary National Model Building Code Regulation of New Construction

Provisions	International Building Code (IBC) 2003	National Fire Protection Association (NFPA) 5000, 2003 Edition	Cost Impacts
Applicability	New buildings in all occupancies. Detached one- and two-family dwellings and townhouses referred to the International Residential Code (IRC).	New buildings in all occupancies.	
Fire and life safety	Expansion of requirements for sprinklers, especially in residential construction. Sprinklers required in all residential occupancies except those designed to the IRC (one- and two-family dwellings and townhouses).	Expansion of requirements for sprinklers, especially in residential construction. Sprinklers required in all residential occupancies except one- and two-family dwellings and some townhouses. Note that many townhouses are considered apartment buildings under NFPA 5000.	Both have added sprinklers to the cost of housing in comparison to earlier model codes. NFPA may have added impact for townhouses.
Loads:			
Wind	Wind load requirements refer extensively to American Society of Civil Engineers (ASCE) 7. They are evolving and becoming more complex, while increasing in some respects and decreasing in others. A significant new requirement is the addition of window impact protection in hurricane areas.	Wind load requirements refer almost entirely to ASCE 7. They are evolving and becoming more complex, while increasing in some respects and decreasing in others. A significant new requirement is the addition of window impact protection in hurricane areas, but buildings designed on basis of wind tunnel tests inadvertently omit the impact protection (due to ASCE 7 inadvertent omission).	Both have added impact protection requirements to windows in hurricane areas in comparison to earlier model codes. No significant difference between IBC and NFPA.
Seismic	Seismic requirements, based on National Earthquake Hazards Reduction Program provisions, have increased in both complexity of analysis and severity (based on changes to the seismic map).	Seismic requirements refer entirely to ASCE 7. They have increased in both complexity of analysis and severity (based on changes to the seismic map).	Both have significant added cost in moderate and lower seismic zones, and possibly significant added cost to wood frame buildings in comparison to earlier model codes. No significant difference between IBC and NFPA.
Snow	Snow load requirements refer extensively to ASCE 7. They are evolving and becoming more complex, while increasing in some respects and decreasing in others.	Snow load requirements refer almost entirely to ASCE 7. They are evolving and becoming more complex, while increasing in some respects and decreasing in others.	For both, possibly no significant added costs, except for the added complexity of engineering design.
Vertical (live)	Live load on sloped roofs increased significantly in IBC but not in IRC. (For a slope of 4/12, load increased from 16 to 20 pounds per square foot.)	Live load on sloped roofs increased significantly.	For both, significant added cost in multifamily housing compared to earlier codes.

Exhibit 8 (continued)

Analysis of Contemporary National Model Building Code Regulation of New Construction

Provisions	International Building Code (IBC) 2003	National Fire Protection Association (NFPA) 5000, 2003 Edition	Cost Impacts
Materials	References to consensus standards.	References to consensus standards.	
Accessibility	Dwelling units must comply with American National Standards Institute (ANSI) A117.1, except for detached one- and two-family dwellings.	All buildings must comply with ANSI A117.1.	For both, no added cost compared to earlier model codes.
Energy conservation	Reference to the International Energy Conservation Code. One- and two-family dwellings and townhouses may meet requirements of Chapter 11 of IRC.	Multifamily buildings must meet requirements of American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 90.1. One- and two-family dwellings must meet requirements of Chapter 51 or ASHRAE 90.2.	NFPA may possibly impose greater cost than IBC and IRC.
Plumbing	Reference to the International Plumbing Code. One- and two-family dwellings and townhouses must meet Part VII of IRC.	Reference to 2000 Uniform Plumbing Code. Reportedly more restrictive than IPC.	By being more restrictive, NFPA may impose greater cost than IBC and IRC.
Mechanical	Reference to the International Mechanical Code. One- and two-family dwellings and townhouses must meet Part V of IRC.	Reference to 2000 Uniform Mechanical Code.	Different cost impact must be determined by further analysis.
Electrical	Reference to the ICC Electrical Code. One- and two-family dwellings and townhouses must meet Part VIII of IRC.	Reference to National Electrical Code.	Probably no difference between the two, and significant cost increase.
Housing Requirements:			
Multifamily	Compliance with fire safety, structural loads, and materials requirements.	Essentially same as IBC, with minor differences in heights and areas, sprinkler and standpipe triggers, etc.	See fire and life safety, seismic loads, vertical loads, and plumbing above.
Single-room occupancies	Classified as R-1 (hotels) if transient and R-2 (apartments) if nontransient.	Classified as lodging or rooming house if occupied by 16 or fewer people on transient or nontransient basis. Larger occupancies are classified as hotels.	See fire and life safety, seismic loads, and vertical loads above. Differences require further analysis.
One- and two-family housing and town-houses	Reference to IRC that recognizes industry standard for conventional wood frame construction. Cost impact of new seismic requirements (NEHRP) still unknown.	Reference to IRC for structural design of one- and two-family only; townhouses must be engineered and cannot use conventional construction, but this depends on interpretation. Cost impact of new seismic requirements (ASCE 7) still unknown.	Potentially greater cost impact of NFPA in case of townhouses.

Exhibit 8 (continued)

Analysis of Contemporary National Model Building Code Regulation of New Construction

Provisions	International Building Code (IBC) 2003	National Fire Protection Association (NFPA) 5000, 2003 Edition	Cost Impacts
Modular	Treated like site-built, except for acceptance of offsite inspection in the enforcement.	Treated like site-built, except for acceptance of offsite inspection in the enforcement.	See seismic loads, wind loads, and plumbing above.
Manufactured	In IBC, regulated only in Appendix G, Flood-Resistant Construction. In IRC, Appendix E, Manufactured Housing Used as Dwellings.	Generally not addressed, except for energy efficiency, flood resistance, and electrical systems modifications.	Differences between IBC and NFPA require further analysis.

Exhibit 9

Analysis of Contemporary National-State Model Building Code Regulation of Rehabilitation

	NJ Rehabilitation Subcode	NARRP 1997	IBC Ch. 34 2003	IEBC 2003	NFPA 5000 Ch. 15 2000	Cost Impacts
Applicability	All work in existing buildings.	All work in existing buildings.	All work in existing buildings, unless IEBC is adopted.	All work in existing buildings, if adopted.	All work in existing buildings.	
Format	The bulk of the subcode addresses reconstruction and is organized by occupancy classification.	Chapters organized by rehabilitation category of work.	Small chapter organized into sections.	Chapters organized by rehabilitation category of work.	Sections organized by rehabilitation category of work.	Some argue NJ format more user friendly.
Regulations governing alterations	Alterations divided into three categories, as a function of the extent and nature of the work: • Renovation. • Alteration. • Reconstruction. Requirements increase respectively. At lower end, existing conditions that violate the building code may be continued, but not made worse. Reconstruction triggers specified life safety improvements within the work area, and when the work area exceeds specified percentages, the life safety improvements extend beyond the work area to other parts of the building.	Alterations divided into three categories, as a function of the extent and nature of the work: • Renovation. • Alteration. • Reconstruction. Requirements increase respectively. At lower end, existing conditions that violate the building code may be continued, but not made worse. Reconstruction triggers specified life safety improvements within the work area, and when the work area exceeds specified percentages, the life safety improvements extend beyond the work area to other parts of the building.	Alterations must conform to new construction requirements and not cause building to be in violation of code. Parts of buildings not affected by alteration not required to comply, except “substantial improvements” to buildings in flood plain, which trigger full compliance of building with flood design requirements for new construction. Nonstructural alterations may be made using same materials if no adverse effect on structural memberor fire resistance.	Alterations divided into three categories, as a function of the extent and nature of the work (similar, but not identical, to NARRP): • Alterations Level 1. • Alterations Level 2. • Alterations Level 3. Requirements increase respectively. Levels 2 and 3 trigger specified life safety improvements within the work area, and when the work area exceeds specified percentages, the life safety improvements extend beyond the work area to other parts of the building. “Substantial improvements” to buildings in flood plain trigger full compliance of building with flood design requirements for new construction. Extensive structural upgrades triggered by structural damage.	Alterations divided into three categories, as a function of the extent and nature of the work: • Renovation. • Modification. • Reconstruction. Requirements increase respectively. At lower end, existing conditions that violate the building code may be continued, but not made worse. Reconstruction triggers specified life safety improvements within the work area, and when the work area exceeds specified percentages, the life safety improvements extend beyond the work area to other parts of the building. Structural provisions “reserved” for the most part. “Substantial improvements” to buildings in flood plain trigger full compliance of building with flood design requirements for new construction (Ch. 39).	IBC not predictable; other four are. All but NJ and NARRP apply FEMA’s “substantial improvement” trigger, and will have significant cost impact in the flood plain. IEBC has extensive cost impact from its structural damage repair requirements. Some argue the order of growing cost impact as follows: 1. NJ. 2. NARRP. 3. NFPA 5000. 4. IEBC.

Exhibit 9 (continued)

Analysis of Contemporary National-State Model Building Code Regulation of Rehabilitation

	NJ Rehabilitation Subcode	NARRP 1997	IBC Ch. 34 2003	IEBC 2003	NFPA 5000 Ch. 15 2000	Cost Impacts
Regulations governing additions	Additions must conform to new construction requirements and not create or extend a nonconformity. Existing building plus addition to comply with height and area requirements, with up to an additional 25% for one- and two-story buildings.	Additions must conform to new construction requirements and not create or extend a nonconformity. Existing building plus addition to comply with height and areas requirement, with up to an additional 25% for one- and two-story buildings.	Additions must conform to new construction requirements and not cause building to be in violation of code. Existing building plus addition to comply with height and area requirements.	Additions must conform to new construction requirements and not create or extend a nonconformity. Existing building plus addition to comply with height and area requirements.	Additions must conform to new construction requirements and not create or extend a nonconformity. Existing building plus addition to comply with height and area requirements.	All are essentially the same, except that NJ and NARRP allow up to a 25% increase in allowable area for one- and two-story buildings.
Regulations governing change of use	Use groups categorized into six hazard category tables. Compliance with selective requirements based on specific increases in hazards. Minimal requirements when hazards are equal or reduced in all categories. New construction structural live load must be met when moving to a higher hazard category.	Use groups categorized into four hazard category tables (including seismic). Compliance with selective new construction requirements based on specific increases in hazards. Minimal requirements when hazards are equal or reduced in all categories. New construction structural requirements (wind and snow) must be met when moving to a higher importance factor.	Buildings must comply with all new construction requirements for the new occupancy. The building official may accept less, provided the new use is less hazardous "based on life and fire risk."	Use groups categorized category tables (not including seismic). Compliance with selective new construction requirements based on specific increases in hazards. Minimal requirements when hazards are equal or reduced in all categories. New construction structural requirements (wind and snow) must be met when moving to a higher importance factor (except when the change is to less than 10% of building area). Seismic requirements similar to NARRP with a few more exceptions.	Use groups categorized into three hazard category tables (not including seismic). Compliance with selective new construction requirements based on specific increases in hazards. Minimal requirements when hazards are equal or reduced in all categories. New construction structural requirements (wind and snow) must be met when moving to a higher occupancy category. Seismic requirements similar to NARRP.	IBC not predictable. The rest are essentially the same.

Exhibit 9 (continued)

Analysis of Contemporary National-State Model Building Code Regulation of Rehabilitation

	NJ Rehabilitation Subcode	NARRP 1997	IBC Ch. 34 2003	IEBC 2003	NFPA 5000 Ch. 15 2000	Cost Impacts
Compliance alternatives	Owners may request a variation when compliance would result in practical difficulties.	Equivalent alternatives may be authorized by building official. Other alternatives may be accepted if compliance is infeasible.	Section 3410 provides a safety scoring system for 18 parameters.	Equivalent alternatives may be authorized by building official. Ch. 12 reproduces Section 4310 of the IBC.	Equivalent alternatives may be authorized by building official. Other alternatives may be accepted if compliance is infeasible or would impose undue hardship.	NJ, NARRP, and NFPA allow for "infeasibility" alternatives.
Regulations governing repairs	Repairs may be made using like materials, except for a limited number of plumbing and electrical repairs, and replacement glass must comply with safety glazing requirements.	Repairs may be made using like materials, except for a limited number of plumbing and electrical repairs, and replacement glass must comply with safety glazing requirements.	No specific regulation, except that replacement glass must comply with all new construction requirements.	Repairs may be made using like materials, except for a limited number of plumbing and electrical repairs, and replacement glass must comply with safety glazing requirements. New construction structural requirements are triggered as a function of the extent of repair of structural damage.	Repairs may be made using like materials, except for a limited number of plumbing and electrical repairs, and replacement glass must comply with safety glazing requirements.	IEBC may have significant cost impact for repair of structural damage. Others are essentially the same.
Regulations governing historic buildings	Special variations may be granted to historic buildings when compliance will damage historic fabric.	Alterations and change of use may comply with reduced requirements based on filing a report demonstrating that compliance will damage historic fabric.	Alteration and change of use regulations do not apply if building official judges them "to not constitute a distinct life safety hazard."	Alterations and change of use may comply with reduced requirements based on filing a report demonstrating that compliance will damage historic fabric.	Alterations and change of use may comply with reduced requirements based on filing a report demonstrating that compliance will damage historic fabric.	All are essentially the same technically, but may vary in terms of administrative requirements for submissions.
Retroactive regulations governing all existing buildings	Not in scope of NJ, but recognizes currently existing fire code, housing code, and other retroactive regulations.	Not in scope of NARRP, but recognizes currently existing retroactive regulations.	Compliance with Property Maintenance and Fire Codes.	Compliance with Property Maintenance and Fire Codes.	Section on retroactivity in Ch. 1 is "reserved." Use of Ch. 15 requires building to be legally existing.	All are essentially the same. None are retroactive, but they recognized locally adopted retroactive requirements.

NARRP = Nationally Applicable Recommended Rehabilitation Provisions.
IEBC = International Existing Building Code.
IBC = International Building Code.
NFPA = National Fire Protection Agency.

New Construction-Related Research

Identification and analysis of the impact of the latest seismic provisions on housing. Compare costs of new and older (for example, former regional-oriented codes) provisions in mid-rise and low-rise apartment buildings in four seismic zones (California, Pacific Northwest, Memphis, and Maryland/Virginia); compare costs of new and older provisions in wood frame buildings.

This research will involve the identification of regionally typical building plans (a task requiring participation of contractors and homebuilders) and analysis by engineers experienced in seismic design of the reengineering of these prototypical buildings to meet the new seismic requirements. Cost estimators will be employed to estimate the costs of the various reengineered designs.

Identification and analysis of the effects of the latest impact protection requirements in hurricane regions. Compare costs of new and older provisions in mid-rise and low-rise residential buildings in selected areas of the gulf coast, Florida, and the Atlantic coast.

This research will be based on prototypical building plans to be developed. It will involve the participation of window and shutter manufacturers, curtain wall consultants, and architects knowledgeable in the field of impact of windborne debris, and experienced in building design in the aforementioned regions.

Identification and analysis of the impact of the latest sprinkler requirements in multifamily housing. Compare the costs of new and older sprinkler requirements in the three regions (West, South, and Midwest/East Coast) of the former model codes.

This research will be based on prototypical building plans to be developed. It will involve participation of sprinkler manufacturers, fire protection engineers, and architects knowledgeable in the design and construction of garden apartments and other multifamily housing configurations.

Identification and analysis of the impact of different plumbing codes. Compare costs of plumbing under NFPA 5000 (Uniform Plumbing Code) with those under the IBC's International Plumbing Code.

This research will begin with a detailed comparative analysis of the two codes in question. The geographical cost variables will be addressed by selecting several different regions of the country within which comparative cost analyses of the different required plumbing systems will be made.

Rehabilitation-Related Research

Identification and analysis of the impact of the adoption of a rehabilitation code. Analyze the impact of rehabilitation code adoption on the removal of barriers to rehabilitation; analyze the impact of rehabilitation code adoption on the cost of housing rehabilitation; compare the rehabilitation code impacts in New Jersey, Maryland, New York, and Rhode Island.

This research will begin by identifying locations where rehabilitation codes have been adopted and enforced for at least 2 years. Of the four states mentioned, New Jersey and Maryland are definitely in this category. The other two states, along with other possible states and local jurisdictions, will be surveyed to determine if they meet the criteria. Prior or current rehabilitation code studies performed in New Jersey and elsewhere (for example, NAHB/Research Center and University of North Carolina) will be reviewed. Potential measures of the removal of barriers to rehabilitation and cost impacts will be generated, tested, and validated. If possible, differential impacts related to specific rehabilitation code differences among the jurisdictions will also be identified and analyzed.

Identification and analysis of the impact of the Federal Emergency Management Administration National Flood Insurance Program criteria on the rehabilitation of low and moderate cost housing. Survey and analyze the impact of the FEMA National Flood Insurance Program (NFIP) criteria on substantial improvement, which have found their way into both the IEBC and NFPA 5000's Chapter 15, on the rehabilitation of housing in the floodplain.

This research will begin with a survey of a representative sample of local jurisdictions located in floodplains. Jurisdictions that participate in the FEMA NFIP and those that have opted out of it will be included in the sample. The purpose of the survey is to verify or refute some anecdotal evidence from Florida that basic improvements to low-cost housing in the floodplain, such as re-roofing and lead-based paint abatement, have been prevented from being implemented because of the high costs for added flood mitigation work imposed by the substantial improvement criteria of the FEMA NIFP. If the survey confirms the existence of this problem, its extent will be quantified through an indepth study. Recommended changes to the FEMA criteria, or at least to the way they are mandated in the building codes and rehabilitation codes (for example, IBC and IEBC), may be generated such that FEMA's actuarial responsibilities and local low-cost housing policies can be harmonized.

Benchmarks and Cost-Benefit Analysis

Admittedly, establishing consensus on the benchmark for appropriate building code standards and administration is difficult, but more work must be done in this area.

One possibility is simply to compile a list of innovative building materials and procedures, and then examine if communities accept or reject the listed items. This method was used successfully by the U.S. National Commission of Urban Problems (1969), Field and Ventre (1971), and Seidel (1978); we need a contemporary version. The list of today's innovations could draw on the cutting-edge building materials and practices already identified by Koebel et al. (2003) in *The Diffusion of Innovation in the Residential Building Industry*. Another possibility is to draw from the innovations identified by the Joint Venture for Affordable Housing (JVAH). Although the JVAH dates from the 1980s (National Association of Home Builders, 1982a, 1982b), it remains one of the most extensive efforts to date in examining how affordable housing could be produced by changing land use and construction practices. It would be interesting to examine if the JVAH's construction recommendations are allowed by local building codes. In a related vein, it would be interesting to study if the innovations first identified by the U.S. National Commission on Urban Problems (1969) and then reexamined by Field and Ventre (1971) are allowed today.

Another tack for developing a benchmark for appropriate standards is to work backward from the desired end model of the affordable housing unit. We can agree that the most affordable types of shelter consist of reinventing the single room occupancy (SRO) dwelling (Downs, 1991) and allowing accessory housing, such as granny flats or other affordable configurations (for example, the Boston triple decker or a four-story combustible building in New York City). If and how the building codes restrict production of these affordable units should also be analyzed.

The identification of benchmark standards for building codes, however accomplished, would benefit from cost-benefit study. Only a cost-benefit comparison can determine if the new national code requirements for seismic design, hurricane region impact protection, and sprinklers are appropriate.

Other observers similarly call for cost-benefit study of the building code. After considering more stringent proposed seismic standards in the New Madrid seismic zone,[12] Stein and Tomasello argued that

> over its approximately 50-year life, a building in Memphis (located in New Madrid) loses about one percent of its value because of earthquakes, while the new code could increase a building's cost five percent to 10 percent…. An objective assessment by outside analysts…could realistically estimate the hazard and the costs and benefits of various earthquake codes (2004: A13).

We acknowledge the challenges to such benefit-cost investigations.[13] Who receives the benefits is not clear. Data are limited (for example, the insurance industry guards relevant incidence and loss information). Researchers are confronted with a host of methodological and calculation issues (for example, costs and benefits occur at different points in time, raising issues of life-cycle analysis). In many cases, the benefits are probabilistic (for example, the benefits of reduced earthquake losses will not be realized if the earthquake does not occur). Still, the groundwork for cost-benefit study has been established (McConnaughey, 1978).

This type of investigation can benefit from data and models developed for other purposes. For example, FEMA has developed a Natural Hazard Loss Estimation Methodology (HAZUS) risk assessment software program that estimates losses from natural disasters, such as earthquakes, floods, and storms. Perhaps, HAZUS could be used in a cost-benefit study on the new national building code requirements regarding seismic design and windborne debris impact protection.

The following are examples of such research:

1. Life-cycle cost-benefit analysis of natural disaster mitigation provisions in International Codes and NFPA 5000:

   - Develop a life-cycle benefit-cost model that accounts for the probabilistic nature of the benefits.
   - Apply the model to current seismic and/or hurricane design provisions in the codes.

   This research would build on life-cycle cost-benefit analysis performed by the Applied Economics Division of the National Institute of Standards and Technology's Building and Fire Research Laboratory, and the standard models developed by them at the American Society for Testing and Materials (ASTM).

2. Application of HAZUS to analysis of the regional impacts of the current code requirements for seismic design, flood design, and/or wind design:

   - Determine the applicability of HAZUS to this type of analysis.
   - If applicable, use this software in regions where seismic data and building inventory data are recognized as being reliable.

   This research will require a variety of assumptions. Because HAZUS models the effect of a specified natural disaster on a regional inventory of buildings and infrastructure, the effect of assuming that the entire building inventory complies with new code requirements may be unrealistic. Assumptions will have to be made regarding the diffusion rates of new building design into an existing inventory. Nevertheless, HAZUS is a powerful tool, and sensitivity analyses of various sets of assumptions may be useful and enlightening.

Empirical Data and Quantitative Analysis

We need more empirical data on the subject, as well as quantitative analysis on how codes affect housing.

For example, contemporary information is needed on the local implementation of building regulations, including whether a local jurisdiction has a code, the basis of that code, the profile of officials implementing the regulations (for example, background, education, and civil service status), as well as other details (for example, prohibited and permitted materials and procedures). The last national comparable survey of that type dates from the late 1960s to the early 1970s (U.S. National Commission on Urban Problems, 1969; Field and Ventre, 1971), and clearly a contemporary equivalent database is needed.

With such data, we can perform a quantitative analysis of how building regulations and their administration affect housing. In essence, we can revisit, with current data, the Noam (1983) regression study. Researchers also might tap existing data to analyze how codes influence housing. For example, Insurance Services Office, Inc. (ISO) has developed a Building Code Effectiveness Grading Schedule (BCEGS) for most communities in the United States. The BCEGS assesses the substantive basis of the building codes in a particular community (for example, are codes based on a current edition of a model code?), as well as how well a community enforces its building codes (for example, code official qualifications, training, and staffing levels). The BCEGS uses a 1 to 10 ranking, with 1 representing "exemplary" achievement.

It may be worthwhile to replicate the essence of the Noam model with BCEGS data. In this model the value of housing (V) is a function of the effectiveness of the building code (E):

$$V = f(E_1, X_1)$$

where E is a continuous variable measuring code effectiveness (using the BCEGS 1 to 10 ranking) and X_1 is a vector of other factors that contribute to housing prices (for example, housing amenities). If an effective local building code, such as one based on the latest version of the model code that is administered by a well-trained staff, is presumably associated with more efficient housing production, communities with lower (that is, better) BCEGS rankings should be characterized by lower housing costs.

The above approach is not without its drawbacks. ISO has thus far only released the distribution of BCEGS rankings on a statewide basis. The analysis sketched above requires the micro, community-level BCEGS rankings. (Perhaps HUD could request ISO to make the community level rankings available.) Also, we need to better understand how the BCEGS rankings are assigned. For instance, if a community adds its own hurricane protections over and above the model code regulations, does that enhance (that is, reduce) the BCEGS score? If so, then a low BCEGS score may not necessarily be associated with lower local housing costs.

These issues can be resolved, and it behooves researchers to examine the potential application of BCEGS data to examine the impact of codes.

Scope of Research

We also need a broader scope of research on building codes and housing. More attention needs to be paid to both the substance and the administration of the code. The latter, unfortunately, has often been shortchanged. For instance, the New Jersey rehabilitation subcode and the NARRP share many similarities (see Exhibit 9). They differ, however, in terms of format. The New Jersey subcode is organized by occupancy classification, while the NARRP is organized by scope of work. Some observers (for example, Kaplan, 2003) have suggested that because of its one-stop organization by occupancy, the New Jersey subcode is easier for code officials to administer. That purported difference can be tested empirically by having code officials work on a series of rehabilitation situations, first using the New Jersey regulations and then the NARRP (or perhaps the Maryland smart code, which is based on the NARRP).

Macro-scale data pertaining to code administration is hard to come by; however, certain potential sources should be explored. As noted, the BCEGS ranking covers numerous administrative characteristics. The multiyear research by the National Conference of States on Building Codes and Standards regarding regulatory streamlining may be another asset for researching code administration. In addition, future research on the topic of code administration would be well served by considering the work by Burby, Salvesen, and Creed (2003), Burby et al. (2000), and Burby, May, and Paterson (1998) on this subject.

An expanded scope of research considering the administrative side of the code also should tap into the literature on the diffusion of innovation. Many extant studies presume that if a cost-saving material or procedure is available, it will be used—but for code restrictions. The literature on diffusion of innovation paints a murkier picture; cost-saving techniques may be resisted because of inefficient information, builder inertia, inadequacy of skills, perceived rejection by housing consumers, as well as because of code barriers (Oster and Quigley, 1977; Koebel et al., 2003). That murkier reality must be acknowledged in future research on how the building code affects housing.

An expanded scope of research on the subject also should include the potential interaction of HUD policies, codes, and housing. For instance, despite many reforms, the 25–50 percent rule remains in use. Because Davis-Bacon requirements (mandating that prevailing wages be paid on certain HUD-funded projects) for subsidized housing increase labor costs, this federal mandate may inadvertently push more subsidized rehabilitations to comply with more stringent requirements. Further, according to Listokin and Listokin (2001), code administrators lean toward a more stringent interpretation of the building code when dealing with subsidized projects. For example, in Florida, building inspectors demanded the replacement of still serviceable roofs and windows in homes being rehabilitated with Community Development Block Grant funds (Listokin and Listokin, 2001). The inspectors favored a strict interpretation of the housing code because they felt that with a HUD subsidy, “the money is then available and the job can be done right” (Listokin and Listokin, 2001: 93). Thus, the very fact that housing is subsidized may exacerbate code problems.

As is evident from the above discussion, many overdue and fruitful areas exist for studying how building codes affect housing costs. As researchers, we remain true to our calling by recommending more research. At the same time, perspective is needed. Many regulations other than building codes affect the cost of new housing, including zoning and subdivision requirements, as well as impact fees. Past research suggests, and we would concur, that these other regulations are more consequential than building codes with respect to new construction. (This may not be the case with respect to rehabilitation of existing housing). Future research efforts and funding should reflect the differential impact of the various regulations; consequently, building codes constitute a high, but not the highest, priority for regulatory study.

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Authors

David Listokin is Co-Director of the Center for Urban Policy Research at Rutgers University and is a professor at Rutgers' Edward J. Bloustein School of Planning and Public Policy. Dr. Listokin has authored numerous studies on housing, land use, and public finance.

David B. Hattis is one of the founders and is President of Building Technology Inc. (BTI). His work at BTI includes projects related to the building regulatory system; performance analysis of buildings, both new and existing; the economic and financial implications of decisions related to building performance on a life-cycle basis; and the study and use of historic properties. Mr. Hattis has authored numerous reports and delivered technical papers on these subjects. He is a recognized expert in the field of building performance and regulation.

Notes

1. Includes states with regulations governing any structure, including government buildings.

2. Michael Schill, 2004, letter to author, February 16.

3. Zoning may increase the value of land and "high land values may themselves create regulation" (Glaeser and Gyourko, 2003: 23).

4. Impacts from zoning ordinances, environmental controls, growth controls, and subdivision regulations.

5. Impacts from building codes, energy conservation regulations, and zoning ordinances (minimum floor area).

6. Impacts from settlement practices and regulations.

7. Consolidated plans must be filed by the state and localities to receive federal funding for housing and community developments. The consolidated plans include a section of "governmental constraints."

8. Although the Minnesota state building code only requires sprinklers when buildings are at least three stories high and have at least 16 units, many Minnesota communities require sprinkler systems in all apartment buildings with dwellings on three or more floors (Minnesota Office of the Legislative Auditor, 2001: 43–44).

9. This was part of a broader effort at regulatory reform; see National Association of Home Builders (1976, 1982a) and Weitz (1982).

10. Examples of such markers include local adoption of a rehabilitation code, land use regulations that permit manufactured and modular housing, and "use of a recent version (i.e., published within the last five years) of one of the nationally recognized model building codes…without significant amendment or modification" (Fed. Reg., 66291, Nov. 25, 2003).

11. While all housing regulations involve "administration," administrative challenges may be especially critical with respect to the building code because so many agencies are charged with some aspect of building regulations, and administrative discretion (for example, granting a variance) is so vital to the process.

12. An area of more than 100,000 square miles, including parts of Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee.

13. For example, the issue of seismic risk in moderate and lower seismic regions of the country is not a simple one. Everyone recognizes the risk in California because of the frequency of damaging earthquakes that occur. In other parts of the country, damaging earthquakes are much less frequent, but great earthquakes may still occur. The strongest earthquake in recorded American history, the New Madrid Earthquake, started in December 1811 and affected the central part of the country—including the New Madrid seismic zone. During this earthquake, large areas sank, new lakes were created, and the Mississippi River reversed and changed its course. If this earthquake were to occur today, it would devastate St. Louis and/or Memphis, and cause extreme economic disruption to the nation.

    In recent years, earthquake risk has been better understood, which has led to changes in the building code requirements for seismic design in such locations as the New Madrid seismic zone. The requirements are not as severe as in California, but they represent significant increases when compared to earlier codes.

    A cost-benefit study was conducted to support these seismic provision changes. In the early 1990s, the insurance industry's Earthquake Project analyzed new construction and rehabilitation in Los Angeles and Shelby County (Memphis) that adhered to more stringent seismic provisions. This study demonstrated large favorable cost-benefit ratios for new construction in both Los Angeles and Memphis for all building types examined. The cost-benefit ratios for rehabilitation in Memphis were more ambiguous, depending on building type, structural materials, and whether and how deaths and injuries were to be accounted for in the analysis.

    At about the same time, FEMA developed a cost-benefit model for seismic rehabilitation and published four reports, two on commercial applications and two for federal applications. In a case study of a Veterans Administration hospital in Memphis, the cost-benefit ratio of rehabilitation was less than 1.0 for property damage. When adding the benefits of deaths and injuries avoided, the cost-benefit ratio became significantly larger than 1.0.

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The Effects of Land Use Regulation on the Price of Housing: What Do We Know? What Can We Learn?

John M. Quigley
University of California, Berkeley

Larry A. Rosenthal
University of California, Berkeley

Abstract

Effective governance of residential development and housing markets poses difficult challenges for land regulators. In theory, excessive land restrictions limit the buildable supply, tilting construction toward lower densities and larger, more expensive homes. Often, local prerogative and regional need conflict, and policymakers must make tradeoffs carefully. When higher income incumbents control the political processes by which local planning and zoning decisions are made, regions can become less affordable as prices increase. Housing assistance programs meant to benefit lower income households could be frustrated by limits on density and other restrictions on the number and size of new units.

The empirical literature on the effects of regulation on housing prices varies widely in quality of research method and strength of result. A number of credible papers seem to bear out theoretical expectations. When local regulators effectively withdraw land from buildable supplies—whether under the rubric of "zoning," "growth management," or other regulation—the land factor and the finished product can become pricier. Caps on development, restrictive zoning limits on allowable densities, urban growth boundaries, and long permit-processing delays have all been associated with increased housing prices. The literature fails, however, to establish a strong, direct causal effect, if only because variations in both observed regulation and methodological precision frustrate sweeping generalizations. A substantial number of land use and growth control studies show little or no effect on price, implying that sometimes, local regulation is symbolic, ineffectual, or only weakly enforced.

The literature as a whole also fails to address key empirical challenges. First, most studies ignore the "endogeneity" of regulation and price (for example, a statistical association may show regulatory effect or may just show that wealthier, more expensive communities have stronger tastes for such regulation). Second, research tends

not to recognize the complexity of local policymaking and regulatory behavior. For example, enactments promoting growth and development, often present in the same jurisdictions where zoning restrictions are observed, are rarely measured or analyzed. Third, regulatory surveys are administered sparsely and infrequently. Current studies are often forced to rely on outdated land use proxies and static observations of housing price movements. Fourth, few studies utilize sophisticated price indexes, such as those measuring repeat sales of individual properties. Such methods correct for well-known biases in price means and medians typically reported.

An agenda for future research in the area of regulatory effects on price should address these shortcomings and generate replicable findings relevant for policy reform efforts. Ideally, a national regulatory census would measure at regular intervals municipal enactments and implementation patterns. The most demanding aspect of this task is the development of standard regulatory indexes facilitating comparison at the municipal level and allowing for aggregation to the metropolitan and state levels. Over time, this survey should help describe changes in antecedent law and resulting land policy behavior so that time series encompassing regulation and price can be compiled. Existing building permit surveys can be adapted to facilitate this effort. Regular reporting from developers and builders regarding their experiences with local regulatory processes should then complement the census of laws and behaviors. An additional source of information would be a regularly refreshed, national land use survey, mapping in some detail the ever-changing patterns of residential and other development in metropolitan areas.

Early efforts to improve and expand research should focus primarily on the deliberate, painstaking development of better, more current data. When better data are available, the existing community of scholars will develop methods providing more reliable tests of hypotheses about the link between regulation and the well-being of housing consumers.

Introduction

Measuring the effect of local land use regulation on housing prices is a formidable empirical challenge. Land use rules are intended to recognize local externalities, providing amenities that make communities more attractive and housing prices higher. Restrictive zoning and growth controls, however, also tend to slow expansion and reduce net densities of the housing stock. We would expect these supply constraints to increase home prices. Distinguishing between these various impacts is complicated in practice. Local homeowners seeking to maximize home values and minimize tax burdens typically control the politics underlying land use enactments. In addition, many localities combine restrictions on new development with a range of economic incentives meant to spur it along. Measuring the economic constraints imposed by actual regulatory behavior and decisionmaking, as opposed to merely observing formal rules as adopted, is a difficult empirical problem, and comparisons across metropolitan areas are frustrated by the sheer variety of local practices.

This article offers some background on land use regulatory practices, particularly in terms of their history and legal basis. A review of these practices leads to a taxonomy describing the incidence and effects of land regulation in housing markets. The review of empirical literature provides a detailed framework for evaluating and understanding the available data about effects and magnitudes. In the conclusion, we recommend fruitful areas of inquiry to reduce our uncertainty about the importance of land use regulation in the housing market.

Historical Background[1]

Although casual observers presume that local land use authority arises from the police powers of cities and towns, in the American system local control is, in fact, entirely derivative. Under the traditional "Dillon's Rule," municipalities have no more power over their land than their state governments have delegated them (see Briffault, 1990; Frug, 1980).

Before the 1920s, experimentation with planning and zoning in U.S. cities and towns was sparse and arose primarily as a consequence of the desires of large-tract residential developers to eliminate industrial and commercial activities in their path. With the common law "coming to the nuisance" defense to such property tort claims still intact, developers turned to city councils for relief in the form of authorizing ordinances clearing the way. One such measure adopted in Los Angeles outlawed the operation of a brick kiln in place long before any of the nearby residences were built. The ordinance was upheld in the face of constitutional challenges in the U.S. Supreme Court's 1915 decision in *Hadacheck v. Sebastian* (239 U.S. 394). Answering the kiln owner's claims of wrongful confiscation of his business, the court remarked, "There must be progress and if in its march private interests are in the way they must yield to the good of the community."

A watershed moment in the history of city zoning was New York City's 1916 adoption of its trendsetting comprehensive ordinance. With numerous older cities facing drastic changes in land use and neighborhood character as a result of rapid industrialization, the U.S. Department of Commerce adopted and circulated in 1922 its Standard State Zoning Enabling Act, which within 3 years had spawned hundreds of conforming city zoning ordinances around the country. Key constitutional challenges brought by developers argued that the value of their investments had been so damaged by the regulation as to constitute an uncompensated taking in violation of the 5th Amendment or perhaps a violation of substantive due process in contravention of the 14th Amendment. The lower courts cursorily set these arguments aside, particularly after the zoning ordinance in the Cleveland-area suburb of Euclid, Ohio, was upheld in the U.S. Supreme Court's landmark 1926 decision in *Village of Euclid v. Ambler Realty Co* (272 U.S. at 394–395).

The *Euclid* case signaled the general legal validity of zoning ordinances aimed at segregating various land uses in a town plan. More specifically in terms of housing markets, so-called "Euclidean" zoning thereafter could permissibly separate single-family and duplex developments from multifamily apartment buildings. The court endorsed the view that apartments legally stood as commercial operations having less social value than detached homes. In *Euclid*, the landowner's claim to lost property value turned largely on a desire to build higher density residential structures, hoping to collect commensurately higher per acre returns. The high court practically equated such development with noxious industrial activities having deleterious effects on single-family neighborhoods:

> [A]partment houses [have] sometimes resulted in destroying the entire section for private house purposes….[T]he apartment house is a mere parasite, constructed in order to take advantage of the open spaces and attractive surroundings created by the residential character of the district. [The court then enumerated numerous evils accompanying multi-family development, such as noise, traffic, loss of open space, and loss of safety for children.] Under these circumstances, apartment houses, which in a different environment would be not only entirely unobjectionable but also highly desirable, come very near to being nuisances. (272 U.S. at 394–395.)

The court's blessing of local zoning prerogatives in *Euclid* led to expansive exercise of such authority in ways plainly biased toward protecting single-family home values.

Zoning and planning practices evolved into widely recognized professional disciplines as the American suburb came of age in the post-World War II period. Where developers and buyers would have reached identical arrangements of well-segregated uses, such ordinances were simply legal formalities rather than binding constraints. But as the inner cities deteriorated and federal urban renewal policy foundered, suburban arrivistes grew increasingly defensive of their property values. In the fragmented metropolis, the capture of a sustainable property tax base came to be viewed as a zero-sum game, and large-lot zoning became a tool for smaller governments to exclude low-income residents.

Lawyers and policy reformers during the civil rights era deemed such practices "exclusionary" zoning. Local land use practice was criticized for exacerbating segregation, not simply by consistency of land use and housing stock characteristics, but in more blatant ways by income and even racial characteristics (Danielson, 1976). Additionally, with adjacent towns essentially colluding in their land use policies to keep property values high, regions recognized the implicit tradeoff between, on the one hand, parochial development control through strict zoning, and, on the other hand, the resulting decline in overall housing production as vacant urban land supplies dwindled. A number of states experimented with land use reform, most notably in judicial form in the famous *Mount Laurel* exclusionary zoning cases in New Jersey.[2]

By the time suburbanization slowed substantially in the 1970s, land use practice turned to address a slightly different malady—the town that perceived new housing and population growth of any kind to be a threat to quality of life and household property value. Growth control regulations, which introduced such land use measures as numerical permit caps and outright moratoria on new residential construction, are largely a creature of sprawl in metropolitan areas in the West, where substantial open space still remains along corridors within tolerable commute distances of job centers (Lewis and Neiman, 2000; Landis, 1992). The exurban San Francisco Bay Area town of Petaluma, California, enacted one early cap on building permits.

Environmental advocates for smart growth, compact development, and infill reuse of parcels in central cities sponsored the adoption of urban growth boundaries (UGBs), such as those mapped around metropolitan Portland, Oregon, in the late 1970s. Modern land use regulation of the type that might conceivably affect housing prices comprises traditional zoning and more recently developed devices grouped under the aegis of growth control.

Taxonomies of Land Use Regulation

The sheer variety of local land use enactments makes it difficult to untangle the link between regulation and its economic effects. Such measures can be grouped into the five rough categories Deakin (1989) proposed:

1. Limits and geographic preferences on the density and intensity of development.
2. Design and performance standards for lots and buildings.
3. Cost shifting from the locality to the developer.
4. Withdrawal of land from developable supplies.
5. Direct and indirect controls on growth, applied against buildings and population.

Downs (1991) lists several kinds of regulation (for example, land use restrictions, building codes, environmental protection, and process requirements) that add delay and cost to housing production, thereby reducing the affordability of housing. Downs classifies three separate types of cost-increasing effects: (1) direct restrictions on the supply of housing units and land usable for housing purposes, (2) direct cost increases, and (3) delay. Reducing the supply of affordable housing also removes price competition which might lower the price of existing housing.

Exhibit 1 lists a detailed taxonomy of observed land use regulations. Its categories are derived from a 1992 planning survey of municipal development authorities in California (see Levine, 1999). Presumably, empirical models relating land use regulation to house prices would recognize this dimensionality; however, this level of comprehensiveness is typically infeasible in practice. In synthesizing existing research on this topic, we seek to identify the measures of regulation actually used in a variety of credible studies and suggest the strengths and limitations of the body of professional literature.

As a way of categorizing types of regional growth strategies, Nelson (2000a) introduced a category of land use regulation he called "urban containment." Such policies are borne of desires to make development more compact and to preserve agriculturally and environmentally rich sources of open space beyond exurban areas.[3] Nelson distinguished among three containment systems: (1) "closed regions," outside of which development is substantially curtailed and within which it is encouraged; (2) "open regions" not proscribing development beyond them; and (3) "isolated" containment lacking within-boundary incentives and leading to displaced construction beyond the metropolitan region (Nelson, 2000b; see also Downs, 2002). A recent survey of containment by Nelson and colleagues (Nelson, Dawkins, and Sanchez, 2003) analyzed a variety of regulations to ascertain the following information:

- If any "boundary" had been established.
- If all urban areas within the boundary were surrounded.
- How frequently land is added to the circumscribed area.
- If techniques, such as the following, are used to prevent development outside the boundary:
    - Large-lot (greater than 10-acre minimum) zoning.
    - Farm, forest, or open-space exclusive use.
    - Development right purchase/transfer.
    - Land banking.
    - Land suitability evaluation systems.

(See also Dawkins and Nelson, 2002.) The urban containment approach isolates land use regulation within an identified regional context at the expense of mapping intrametropolitan variation in any great detail.

Exhibit 1

Land Use Regulatory Categories

Residential development	Building permit cap Population cap Floor area ratio limit Downzoning to open space/agricultural use Reduction in permitted residential density Referendum for density increase Supermajority in legislative body for density increase
Commercial/industrial development	Square footage cap (commercial) Square footage cap (industrial) Rezoning to lower intensity Height reduction
Land planning	Growth management element Moratoria Urban growth boundary Tiered development Subdivision cap Other growth control
Adequate public facilities (APF) requirements	Roads Highways Mass transit Parking Water supply Water distribution Water purification Sewer collection Sewer treatment Flood control Other APF measures
Service capacity restrictions	Roads Water supply Water distribution Wastewater collection/treatment capacity Wastewater treatment quality Flood control
Development impact fee coverage	Administration Traffic mitigation Mass transit Parking Water: Service Treatment Sewer Flood control Parks/open space Natural resources Schools Libraries and arts Other development fees

Glickfeld and Levine's monograph (1992) reports the results of an exhaustive study of 907 growth control measures in 443 California jurisdictions, including specific measures affecting pace, intensity, infrastructure quality, and spatial extent of new residential, commercial, and industrial development: (1) population growth caps, (2) housing permit caps, (3) adequate public facilities ordinances, (4) residential downzoning, (5) required voter approval for upzoning, (6) required council supermajority for upzoning, (7) commercial square footage limits, (8) industrial square footage limits, (9) commercial/industrial infrastructure limitations, (10) commercial/industrial downzoning, (11) commercial height restrictions, (12) growth management elements of general plans, and (13) UGBs or greenbelts. Three factors explain the boom in growth control: (1) sheer population growth, (2) changing patterns of growth toward edge cities, and (3) the popular identification of growth as the cause for traffic, congestion, and declines in quality of life.

Differences in the average number of restrictive measures were associated with jurisdiction size. Jurisdictions lacking such measures tend to have a smaller population, have lesser education attainment, are only slightly poorer, and do not vary significantly by race or ethnicity. The authors tested prevailing assumptions about means of adoption and found that enactment of growth control via popular vote (so-called "ballot box planning") was far less prevalent than believed. Glickfeld and Levine found little association between growth control and actual local growth, leading to the possibility that adoption is largely symbolic or rhetorical. Actual development permits show some correlation with growth control, but this is an artifact of population size. Factor analysis of adoption patterns showed six rather distinct patterns:

1. Population control (permit and growth caps, UGBs).
2. Floor space control (commercial and industrial).
3. Infrastructure control (residential and commercial/industrial).
4. Zoning control (rezoning, downzoning).
5. Political control (voter approval, supermajority requirements).
6. General control (growth elements and others).

Reasons stated for growth control fell into three categories: (1) rural land preservation, (2) urban population growth containment, and (3) urban infrastructure protection. Greater numbers of measures adopted actually corresponded with increased adoption of pro-housing programs, but this, too, was apparently a population size effect. For overall construction trends, Glickfeld and Levine detected a strong quadratic relationship between a 3-year lag of nonresidential permit valuation and growth control adoption. The overall conclusion is that local growth control is a response to regional growth more than to local social or fiscal conditions. Theories why growth control does not stem growth include the following:

- Regulations are local; growth is regional.
- Regulation cannot compete with exogenous population pressures.
- Leakage occurs, and nearby growth bleeds across jurisdictional boundaries.
- Political compromise leads to strong talk in ordinances and plans but a "weak walk" in enforcement, variances, and permits actually negotiated.

Constructing a Framework

The traditional rationale for the regulation of land uses in urban areas is the promotion of economic efficiency through the control of external effects. Early litigation and judicial decisions describe these externalities in physical terms, for example, smoke and vibration from a manufacturing operation interfering with basic enjoyment of residential property (cf. *Hadacheck*). Numerous commercial activities, such as professional office practices in medical clinics and hospitals, are costlier if not adequately insulated from the disruptions caused by incompatible neighboring uses.

The economic prescription for limiting these external effects is the segregation of land uses—the partitioning of urban space so that these externalities are contained spatially. The particulates from industrial smokestacks are inoffensive when placed in an area zoned for heavy industry, but may cause economic losses in an area zoned for laundries.

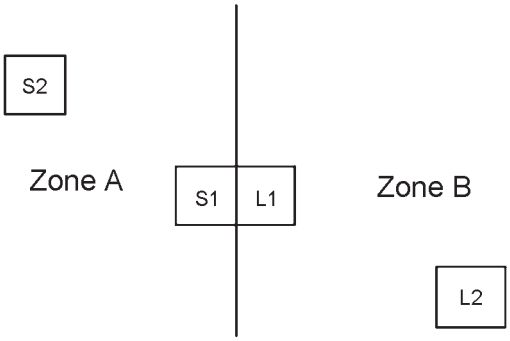
Exhibit 2, adapted from Bailey (1959), illustrates the effects of zoning regulations on the price of land put to different uses. In equilibrium, adjacent parcels of identical uses command equal prices, and this condition is not altered by drawing an administrative boundary between them. Adjacent parcels of land as inputs at S1 and L1 are priced identically due to their proximity to one another. If S parcels (with "smokestacks") provide a negative externality to L parcels (with "laundries"), L parcels further from the boundary (for example, L2) will be more valuable. As long as L parcels provide no externality to S parcels, the latter will be priced identically (for example, S2 = S1). For any pattern of externalities, it is easy to show that segregation of land uses maximizes land values and enhances efficiency.

Clearly, a large body of land use regulation in urban areas is intended to enforce this efficiency principle. The location of industrial activity is heavily regulated, and retail sites are allocated, at least in principle, recognizing the adverse consequence that might affect residences.

As land use regulation has evolved, however, the fiscal externalities between land uses may have become more important than the physical externalities that originally motivated the introduction of zoning. Suppose instead of laundries and smokestacks in exhibit 2, S refers to "snob" or high-income housing, and L refers to low-income housing, located in adjacent bedroom communities (in this instance, treating zones on either side of the diagram's main boundary as separate towns), each lacking a substantial nonresidential tax

Exhibit 2

Neighboring Zones: Boundary and Interior Parcels



base. Suppose further that taxes on housing finance public expenditures enjoyed on an equal per-household basis. Under these conditions, it is not hard to show that the segregation of housing illustrated in exhibit 2 is efficient (for example, Hamilton, 1976).[4] Taxes paid by residents on parcel S1 in Town A (that is, Zone A) in exhibit 2 are returned to them as public expenditures, as are the taxes paid by residents in parcel L1. Introducing a few units of L housing into Town A provides a negative externality to other residents of Town A and a positive externality to the residents of those units of L housing in Town A. (S households now pay more in taxes than they receive in public expenditures; L households are in the opposite circumstance.) Given sufficient coercive authority, land use regulators in towns dedicated to S housing can price development licenses to require builders of new L units to pay for the cost of the fiscal externality those units impose on existing residents (see, for example, Courant, 1976; Cooley and LaCivita, 1972).

Absent zoning regulation or other forms of development licensing, this spatial pattern of residences is inherently unstable. Those consuming S housing will always want to form an exclusive enclave, yet it will always be in the interests of those consuming L housing to locate in the midst of that higher income enclave. Zoning, thus, is a mechanism that permits a stable equilibrium in residential patterns and can promote efficiency in the urban region. Zoning laws chosen to limit the ability of builders to produce L houses in S communities create an artificial scarcity resulting in differences in the price of otherwise identical land as an input into L and S housing. If the price of land in L housing, thereby, is increased to reflect the capitalized value of the fiscal externality, the allocation is efficient. Households choose efficiently between L and S housing; all households pay for the public services they consume, and some residential integration between consumers of L and S housing is possible in equilibrium.[5]

These stylized models of land use regulation are far removed from zoning in practice and do not reflect real-world political and distributional considerations. It may be impossible to separate fiscal externalities from physical or social ones, for example, if lower income residents of L housing make a neighborhood of S housing less “desirable” to its residents. Town officials and land-use reformers alike cannot easily gauge whether neighborhood opposition is rational or rather arises from simple prejudice against residents of L housing who may be members of minority groups or, perhaps, are just poor. It may also be infeasible or socially undesirable to distribute local public expenditures efficiently, for example, if schools or health facilities redistribute resources to lower income households in ways residents of S housing cannot tolerate.

Finally, the political considerations of fiscal or social externalities may not lead planners to seek efficiency in resource allocation at all. If local governments can act as monopolists, then it will be in their interest to zone out less valuable houses or less desirable neighbors. Moreover, as a political matter, characterizing these actions as eliminating physical externalities will be expedient. As inflation increases home prices and the cost of providing local public service, local demand for restrictive zoning controls also will increase (Thorson, 1996; Cooley and LaCivita, 1972). Fischel (1985) points out that even where monopoly power is associated with higher home prices, other motivations (for example, wealth and endowment effects, preferences for segregation, and locked-in effects) may drive demand for regulation.

Exhibits 3 and 4 illustrate externality zoning and monopoly zoning. Exhibit 3 illustrates how the imposition of a restriction on land available for housing may increase social welfare when the incremental social cost per unit exceeds the private cost borne by the incremental resident. The imposition of a supply restriction, reducing available housing from Q_u to Q*, improves welfare by the amount of the shaded area.

Exhibit 3

Zoning Causing Welfare Gain

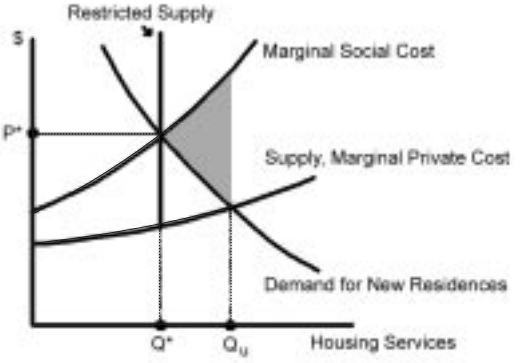
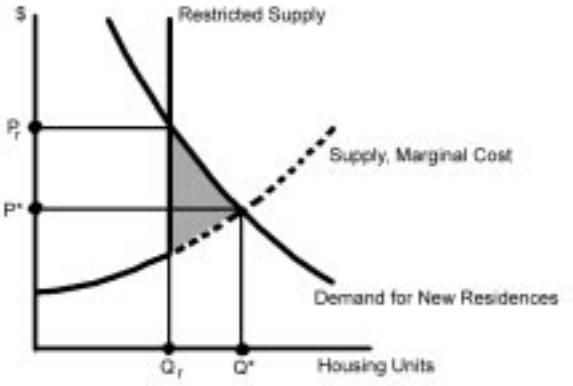


Exhibit 4

Zoning Causing Welfare Loss



In contrast, exhibit 4 illustrates the effects of zoning in the absence of these externalities. Restricting supply from Q* to Q_r reduces social welfare by the amount of the shaded area. Importantly, the exercise of monopoly power increases the housing prices paid by new residents from P* to P_r. With property tax finance, this arrangement enriches current residences at the expense of new residents (Fischel, 1992). Even in the absence of parcel-based taxation systems, localities use development impact fees and other mechanisms to capture the economic benefit of new construction (Gyourko, 1991; Ohls, Weisberg, and White, 1974).

Importantly, the most stringent forms of monopoly control in this setting arise if neighboring jurisdictions cannot undermine the supply restrictions imposed by the price-discriminating town. Monopoly control would be easiest to exercise if one regulatory body governed an entire housing market. If, instead, sets of fragmented localities are in perfect

competition with one another, long-run metropolitan supply levels could remain relatively unaffected, depending on the demographic composition of demand, among other factors. In the most competitive environment, standard house prices might remain essentially unchanged, and the total price of housing locations would differ primarily by the variable amenity packages produced in each place through land use regulation and local spending on public goods (see Thorson, 1996; Pollakowski and Wachter, 1990).

In the exercise of this kind of monopoly power over local development, town authorities may act as promoters seeking profit in league with private developers (Stoker, 1995). Local governments are likely to act strategically and even cooperatively with one another to maximize private returns on their regulatory decisions (Brueckner, 1998). Many commentators argue that the regulatory regimes observed are excessively restrictive even for fiscally protective purposes (for example, Downs, 1991), suggesting that exclusion rather than efficiency is the outcome of monopoly regulation.

When neighbors pose threats rather than opportunities, a vision of municipal competition for households on fiscal and other fronts seems quite credible. Some of the preferences that individual housing market actors and their local government representatives seek to vindicate are plainly discriminatory against minorities and the poor (Rolleston, 1987; Yinger, 1986), and they contribute to the well-documented race and income segregation in metropolitan areas (Massey and Denton, 1993).[6]

Fiscal zoning theory thus contemplates that exclusionary zoning has efficiency advantages relative to unregulated markets. According to this view, collectively charted land use controls ensure that public services will be provided only to those who pay their full costs. This kind of system has regressive tendencies. Incumbents and applicants for entry have varying demands and capacities to pay the marginal cost of the public services they consume. Thus, residents are tempted to discriminate not just on a first-come, first-served basis up to some density limit, but also through sifting among potential entrants by their ability to pay and their expected consumption of publicly provided goods.

If town residents could exercise total control over growth, we would expect the median voter to reject projects that engender losses in utility, financial, or quality of life considerations (Cooley and LaCivita, 1972). Zoning and property taxation are the methods by which voters or public officials force newcomers to increase their contributions to the fisc. Given congestion costs and externalities, and the political impracticability of price discrimination using taxes, growth controls may be an attractive solution to the local fiscal challenge. Property tax limits, such as California's Proposition 13, effectively make new residents less attractive and support growth control.[7] The determination of whether proposed new development, however, is profitable to the community depends on the details of financing and the cost characteristics of local service packages. With average-cost pricing and decreasing-cost conditions, new residents are welcome. The linkage between demands for housing and public services, the cost conditions for public services, and regulation and house prices makes it unlikely that the optimal zoning arrangement will be identified by planners or local politics.

Mills (1979) observed that most externalities involve only the exteriors of structures and increase with density. Such costs can be internalized through common ownership, as in some multifamily developments, but the high transaction costs of property assembly make this solution infeasible. On fiscal considerations, property taxes play the familiar role of prices in the exchange of goods: they pay production costs and deter consumption by those valuing the goods less. A head tax would be most efficient, but its regressiveness makes it implausible and undesirable. Mills characterized growth caps and permit moratoria as rather blunt instruments because new households are excluded regardless of the capacities to pay the private and external costs their entries engender.

Beyond the social mischief land use rules may cause, they also undermine the efficiency advantages of the unregulated, competitive land-housing market. In a later work, Mills (2002) grouped various land use barriers under the rubric of "urban density control," identifying the general impact irrespective of the precise regulatory tactic employed. Mills argued that competitive markets in housing services, neighborhood density, and the desirability of locations (proxied by commute distances from the urban center) should sort households efficiently according to their varying tastes. Excessive land regulation in exurban areas, driven by unreasonable fear of unwanted density, distort these markets and cause sprawl.

Private Bargaining as Substitute for Regulation

An alternative to coercive government regulation is a private covenant among neighbors. Fischel (1990, 1985) characterizes zoning as a reformation of private property rights. He distinguishes zoning from the private land covenants described above, and from arrangements in homeowners' associations (HOAs) in which each member specifically agrees, as a condition for entry, to be governed by a set of deed conditions and restrictions. By contrast, zoning systems involve government coercion and affect the fortunes of those who may not have explicitly agreed to the rules in advance. When disputes arise, individuals in HOAs must bargain with neighbors one-on-one or seek small-number political solutions before the HOA governing board. Market institutions may settle such disputes better than political or even judicial institutions, given that only markets can take any account of the interests of outside demanders as proxied by the interests of developers.

Numerous commentators have questioned whether local land use regulation is preferable to private contractual arrangements among neighboring landowners. Static zoning restrictions constrain land development in predictable ways, but fixed rules are unlikely to efficiently resolve spillover problems in changing local economies. In an important early law review article, Ellickson (1973) pointed out zoning's shortcomings in this regard. He argued that a more flexible and responsive system of restrictive covenants augmented by liberalized nuisance law and carefully modulated administrative fines would offer efficiency advantages. Siegan (1972) pointed out that zoning-free Houston, Texas, adequately manages spillovers by adopting deed restrictions and establishing informal neighborhood-based expectations. Another example of this kind of governance by neighborly agreement is the written set of covenants, conditions, and restrictions typically agreed to by purchasers of homes in common interest developments as part of their membership in local HOAs (Gordon, 2004; McKenzie, 1994). In this setting, regulation is made a self-implementing, endogenous system in which conflicts are vetted and settled within the HOA under its operating rules. Were the entirety of a town's housing stock composed of units with HOAs, the situation would be equivalent to substituting the rules within such fragmented subdivisions for the aggregate governance system of the town's plans and ordinances.

This internal governance, however, has its own costs. Spreyer (1989) showed that these covenants are costly or politically difficult to install where zoning is already in place or when neighborhoods are already developed. Drawn to Houston as a test bed, Spreyer sampled prices for single-family homes in areas of Houston that were (1) zoned, (2) governed by covenants, or (3) governed by neither zoning nor covenants. Spreyer found no significant difference between values in zoned and covenanted areas, but found values in both areas were significantly higher than those in areas lacking both zoning and covenants.

Recent studies show that unwanted neighborhood effects reduce land values only marginally and disappear over small distances. Kenyon (1991) summarizes six hedonic studies of the effects of unwanted land uses, such as power plants and pollution sources, on neighboring property values. Depressed property values are rarely as pronounced as feared, and economic effects dissipate quickly as a function of distance. Such "field effects" of

spillovers are rarely identified in local political battles, where bandwagons form to oppose not only the specific project under consideration, but all future ones as well.

Survey of Empirical Evidence

This section provides a survey of empirical evidence on land use regulation and its effects on housing prices. The claim that zoning and growth control effectively raise housing prices, thereby shaping development and demographic patterns, is far from conclusively established in empirical research. This section will review studies, developing a taxonomy for further comparison and analysis.

Methodological Issues

A critically important feature of the literature is the generally weak and indirect measure of regulatory variables. Given the lack of uniform national standards for measurement of land regulation as adopted and variably enforced, generalizing findings from the literature as a whole is difficult, if not impossible, to accomplish. The best studies are those that manage measurement uncertainty adeptly, such as by confining the analysis to a reasonable geographic scope. Others that depart from simple, palpable measures of regulation appear elegant and creative, but may end up trading off careful explanation for strained conclusions.

In a stylized setting of the problem, the researcher asks a set of local regulators to describe their land regimes. Given the wide variety of local enactments and enforcement patterns, no suitable method for summarizing regulatory behavior is obvious. Some surveys err on the side of completeness, posing an exhaustive list of possible enactments and asking each respondent which have been adopted, sometimes with a Likard-style scale attempting to measure the importance of each enactment (for example, Levine, 1999). These longer surveys often generate an undifferentiated set of dummy variables, and assigning weights in a summary measure is largely guesswork. Shorter survey instruments attempt to capture only those enactments deemed important beforehand so that prior hunches about their relative significance create possible selection bias in the results.

In a pure experimental sense, the a priori observation of legal restrictions would measure regulation in isolation, without regard for its observed impacts. Alternatively, an a posteriori approach would attempt to detect the effects of a regulatory framework based on outcomes such as the local authority's actual approval, rejection, and alteration of proposed residential construction projects. The latter approach is often frustrated by the developer's endogenous prior knowledge of the relative restrictiveness of a set of jurisdictions. The builder's savvy awareness of where new construction is welcome will influence where land is purchased and the number and size of new units to propose.

Malpezzi (1996) identified a number of possible regulatory indicators, most featuring a mixture of these theoretical perspectives on measurement. Several studies used surveys of local planning officials, identifying the presence or absence and sometimes the relative importance, of various land use enactments (for example, Levine, 1999; Glickfeld and Levine, 1992; American Institute of Planners, 1976) and even rent control (for example, HUD, 1991; National Multi Housing Council, 1982). The problems of constructing summary indexes aside, such surveys have the advantage of capturing an "on the books" state of local legal conditions at a particular time. At the same time, relying on such measures risks overestimating the stringency with which written enactments control local development decisions; without actual implementation, observed regulation may be largely symbolic. Another strategy employed in some early studies involved polling experts regarding their subjective assessments of the relative restrictiveness of an area's land use controls (for example, Segal and Srinivasan, 1985). Geophysical limits, such as the presence of water (Malpezzi, 1996) and ratios of vacant and buildable land by planning area (Pollakowski

and Wachter, 1990), also have been employed. Surveys of regulatory effects (for example, Linneman et al., 1990) asked local officials to estimate, frequently with artificial Likard scales, such factors as approval rates and application processing delays.

Another key aspect in assessing models of regulation and housing price is an evaluation of the choice of covariates that may influence real estate markets independently of land use restrictions. Several controls make repeated appearances in the literature. Income and income change directly affect aggregate home prices because housing and housing service are normal goods in most circumstances and across most income ranges. Income and other demand proxies, such as population, demographic change, and density factors, provide additional ways to isolate price variation not directly related to land use strictures. Variables attempting to capture regional macroeconomic conditions, such as those measuring trends in employment levels or general health of local business and commerce, are typically employed. Capital costs, as they vary by metropolitan area, may be tracked via proprietary data sources available through, for example, Boeckh or Means. Median age of housing stock and state of home repair are alternative measures. Indicators of municipal land use patterns, such as vacant land proportions, presence of geophysical barriers or impediments, and proximity to mass transit corridors, are often included. Researchers and analysts must ensure that land use features and regulatory constraints are not collinear. Finally, variations in home quality need to be tracked to control how differences in size, age, maintenance, and amenities influence transaction prices. This is a key point: the more sophisticated the analysis of housing prices—a formidable empirical challenge on its own—the more credible estimates of regulatory effects on prices become.

Monopoly Zoning Studies

One strand of empirical work attempts to evaluate the monopoly zoning hypothesis directly. These studies posit that the more fragmented the governance structures of an urban area, the less monopoly power any one town will have due to entry price competition from its neighbors. White (1975) and Hamilton (1978) theorized that larger suburban towns, like any market firm enjoying the prerogatives of concentrated supply, would be more able to exploit market power in pricing entry for housing and public service bundles than smaller jurisdictions in more fragmented regions. In political terms, this version of land supply behavior amounts to capture of regulatory decisionmaking by higher value landowners, seeking to ensure property values via protectionism. Hamilton's paper offered affirmative but weak evidence that less fragmented urban areas would be more prone to price discrimination driven by local land use controls. He sampled median home prices in only 13 metropolitan areas, and his rudimentary measures of zoning controls were number of municipalities per capita and a dummy variable for areas having more than four local governments. Estimated in two separate equations, the coefficients on these proxies for monopoly regulatory power were negative as expected, but statistically insignificant.

In a challenge to Hamilton, Fischel (1980) cast early doubt on the supposed effect of regulatory power concentrations. Fischel retested Hamilton's house price models using a more precise measure of metropolitan fragmentation. In a home price sample from the 1970 Census for 10 large urbanized areas, Fischel compiled more refined counts of local governments (for example, townships and villages) having control over development. An indicator variable capturing Baltimore and Washington, D.C.—the only areas in the sample with low fragmentation—had an insignificant coefficient, even having the wrong sign in one of the two specifications. Diluting the results even more, pairwise comparisons of the two relatively unified areas with all others in the sample yielded an abundance of insignificant results, again with mixed signs. Fischel's contrary findings in this regard represent an early example of the interesting but ultimately baffling methodological variety in this literature.

Later work on monopoly regulation and land price by Rose (1989) generated important innovations in measurement and estimation. Notably, Rose distinguished between "natural" (that is, geophysical) and "contrived" (that is, regulatory) constraints on developable land, and his models credibly tested their independent effects. Geographic variation was measured by the proportion of an urbanized area's surface occupied by water; the calculation included population density gradients meant to proxy for the radial fall in bid rents under the standard Alonso-Muth-Mills "flat city" price models. Rose used three different land price indicators; one measure was taken from Federal Housing Administration site price data and the others from Urban Land Institute (ULI) data on raw and improved land. In addition to governments per capita, Rose constructed two concentration ratios measuring the proportion of a region's area contained within its four largest jurisdictions. (One of these ratios used a denominator including the central city and the other accounted for total area net of downtown.)

These innovations failed to yield a clear resolution of the monopoly zoning hypothesis. Rose's regulatory measures all had the expected sign, but only one of nine models resulted in a statistically significant coefficient. The study is slightly more persuasive on the price-elevating impacts of so-called "natural," geophysical constraints on development, both in terms of strength of result and proportion of variance explained. Later work by Hendershott and Thibodeau (1990) probing how income influenced aggregate constant-quality home prices and the extent they differed from regional median prices reported quarterly by the National Association of Realtors, used Rose's concentration ratio as a control, finding no significant association with housing price.

More recently, Thorson (1996) examined monopoly zoning using decennial census data at the place level from 1970 through 1990 to analyze reported median home values. Unlike Rose, Thorson's more complex models included a multitude of housing and neighborhood quality controls, a number of which eluded Fischel's (1980) specifications (for example, age, size, commuting distance, units per square mile, and energy prices). Across all three census surveys and varied specifications of the model, Thorson's concentration ratio was significantly related to increased home values. The analysis also captured a significantly greater proportion of the variation in home price than earlier authors.

Thorson's more robust findings lend credibility to claims that government concentration is associated with higher home prices, particularly in more recent census years. The monopoly zoning literature as a whole, however, does not even attempt to evaluate the regulatory mechanisms by which this might occur. Such investigation requires detailed measures of actual local behavior beyond simply mapping the physical arrangement of jurisdictions.

Early Surveys and Place-Specific Studies[8]

From the mid-1970s, significant litigation relating to the effects of zoning and growth control in places like Ramapo, New York; Mount Laurel, New Jersey; and Petaluma, California, led to heightened attention to these phenomena in urban economic and other literatures. Before that time, studies such as Crecine, Davis, and Jackson (1967) and Rueter (1973)—denominated by Fischel (1990) as "zoning-does-not-matter" studies"—had not identified any systematic land price effects of various local zoning regimes. This literature has questioned whether the market follows regulation or vice versa, contending at times that the lack of confirmable impacts substantially weakened the case for zoning as a tool in the management of local externalities. This section will explore some of the studies published during the 1970s, 1980s, and early 1990s. In the aggregate, this work questions but fails to nullify the earlier empirical case against zoning. Zoning and growth controls may merely tend to verify and reproduce existing price differences in communities formed as households are sorted according to income, public service, and other dimensions.

Peterson (1974) sampled 1,500 single-family home sales in communities along Boston's circumferential highway, Route 128, during 1971. He found that increasing home construction densities (from one house per acre to four) increased the value of unbuilt land more than 30 percent. A supplemental sample of 68 vacant land sales similarly affected by varying density allowances produced nearly identical price differences. From the similarity between home and vacant land transactions, Peterson concluded that zoning effects are largely capitalized into land values, affecting housing prices relatively little. He posited that net housing price changes are a function of three different facets of downzoning, that is, increases in minimum lot size (in his study, from one-quarter to one acre). First, large-lot regulation likely induces more costly homes, which in turn increases prices of neighboring lots awaiting construction. Second, larger lots ease per-acre demands on public services such as education. Third, such density reductions effectively eliminate three homes per acre. The net effect of these impacts, Peterson argued, would actually force long-run housing prices downward, so long as the net value of lost housing construction exceeded the sum of neighborhood amenities and tax savings.

Mark and Goldberg (1986) compiled single-family home sales data from 1957 to 1980 for two separate Vancouver neighborhoods, one affluent and the other blue-collar. For each transaction, the authors observed a variety of housing quality features. At the parcel level, they also measured zoning characteristics, neighboring land uses, and history of zoning changes. Estimated in the aggregate and in separate annual regressions, their models could not confirm with any statistical reliability that zoning increased price, nonconforming uses reduced market value, or changes to less restrictive land controls increased market value. Zoning impacts on price were sometimes positive, sometimes negative, and sometimes completely insignificant.

Fischel (1990) used Mark and Goldberg's paper to launch an overarching criticism that still beleaguers much of the literature to this day: few analysts recognize, or compensate for, the inherent endogeneity of observed land uses and the regulations ostensibly dictating them. Counter to the intuitive causal story—of regulations regulating—tight zoning may instead be induced politically by the predilections of high-income households living in high-price homes. Econometric models that do not address this joint determinacy issue are inherently suspect.

Thus, a portion of early research in this area questions if adoption of such regulations has any real effect on prices, development patterns, or growth rates. In their 1988 survey findings on California land use practice, Glickfeld and Levine (1992) argued that regulation is local, but growth patterns are regionally determined. Their lagtime model suggested that regulatory adoption followed increased building permit activity. But nearby increases in demand cross jurisdictional boundaries, and political compromise leads to the appearance of strict standards that are often considerably weaker in enforcement. The regulation itself had a price; variances and conditional use permits represented negotiated buyouts of supposedly ironclad restrictions. The net effect of adopting development restrictions may ultimately be symbolic only, meant to appease "not-in-my-backyard" (NIMBY) and other constituencies, but generally lacking the will or ability to implement true growth management in the face of population pressures.

Landis (1992) also questioned whether growth controls work. Using California data in a quasiexperimental setup, he compared seven growth-controlled towns with six similar towns without such controls. Only three of the seven controlled cities grew slower than their uncontrolled counterparts, and prices were not appreciably higher as a result. Landis could not find systematic differences in municipal debt levels or fiscal condition indicators. He suggested that either the regulation is symbolic or uncodified constraint activity is

occurring in the control group jurisdictions. Growth control measures are usually adopted in response to high growth rates during market booms, and these subside due to natural economic cycles.

Numerous other studies question how binding land use enactments—and growth controls, in particular—are in practice. Warner and Molotch's (1992, 1995) survey of several localities in Southern California confirmed that growth continues unabated in cities adopting various growth control measures.

On the other side of the ledger, Segal and Srinivasan (1985) relied on interviews with regional governmental staff to develop a measure of the proportions of regulated and unregulated developable land from 1975 to 1978. A model of housing supply and demand included 51 metropolitan areas. Their results suggested that towns in which more than 20 percent of vacant land was regulated had significantly higher housing prices by a factor of about 6 percent. An intermetropolitan measurement problem arises, requiring that structural differences between housing sectors must be controlled. The authors recognized this challenge, but used precious few such variables. A growth restraint index (percent of land withdrawn from buildable supplies) was highly significant, capturing 40 percent of the variance in observed, home sales prices alone.

Similarly, Black and Hoben (1985) generated a scalar measure (running from + 5 [most growth-oriented] to – 5 [most growth-restricted]) summarizing a ULI survey of local planning officials in 30 metropolitan areas. Their dependent variables comprised experts' estimates of average land values in single-family-zoned and unimproved acreage on the urban fringe. Their restrictiveness indicator was quite significantly associated with higher land prices as measured in 1980, but less so for price increases observed from 1975 to 1980. An unpublished analysis based on an updated version of the ULI survey by Chambers and Diamond (1988) reported mixed results. Average project approval time was significantly and positively associated with higher land prices measured in 1985, but the same variable was negative and insignificant as a determinant of land prices measured just 5 years earlier.[9]

In a study of land prices across the country, Shilling, Sirmans, and Guidry (1991) used state-level land use and environmental data compiled during the 1970s by the American Institute of Planners (AIP) (AIP, 1976). Cities in states with stronger land controls were found to have slightly higher prices; the authors estimated the regulation/price elasticity to be about 0.16. The same authors (Guidry, Shilling, and Sirmans, 1991) used expert opinion data compiled by ULI; 11 experts in real estate ranked the land use restrictiveness of 30 metropolitan areas on a 10-point scale. The authors found that average 1990 lot prices in the 15 least restrictive cities were just less than $24,000, and that sample's most restrictive cities averaged lot prices more than $50,000.

Much of the literature seems to establish that land use regulation increases the price of existing housing while reducing the value of developable land. California studies prominently support this conclusion. For example, Schwartz and Zorn (1988) demonstrated that growth controls in the city of Davis, although not affecting the unit price of housing services, nevertheless increased the average amount of housing consumed, thereby increasing housing payments on average per household.

Dowall and Landis (1982) found that density controls in the San Francisco Bay Area were significantly associated with small increases in average residential land prices. Elliott's (1981) early study of building permit caps showed upward price effects in regions where numerous towns had enacted them; in areas where the control was adopted more sparsely, little effect was shown.

Frech and Lafferty (1984) analyzed the effect of a special program, the California Coastal Commission's restrictions on development in the coastal zone, and determined that withdrawal of developable land forced housing prices higher. Other California studies, like Wolch and Gabriel (1981) and two by Schwartz, Hansen, and Green (1981, 1984), used cross-jurisdictional comparisons to show that artificially restricting the pace of development had definite distributional impacts, namely, higher housing prices.

Land use restrictions may raise housing prices in myriad ways. Levine (1999) provided a taxonomy of these effects in his work. The cost of housing construction can be increased by subdivision requirements, exactions, and other development regulations. Some growth control systems might place numerical limits on the number of permits granted, further restricting supply. The intent often is to encourage higher quality and more expensive housing by increasing its profitability. Finally, when demand for moderately priced units shifts to adjacent areas without such restrictions, prices may rise in those places when supply cannot quickly respond to the shock (Landis, 1992).

More generally, restrictive land use policies add to the costs of housing development by restricting land supply. Towns may impose exactions and other costly requirements as conditions for permit or subdivision approval; they also may create onerous application procedures. Delays in the permitting process can cause developers to incur added interest cost, taxes, inflation, and overhead expenses. Changes in the variety of residences available can slow competition among various housing types. Indirectly, developers' failure to respond to demand quickly may cause an increase in price. Ultimately, these sources of friction in supply markets create barriers to entry for development firms and facilitate the setting of monopoly rents by existing providers (Dowall, 1984).

The net effect of density control on land prices, however, may be indeterminate. When land is withdrawn from a developable base, restricted supply tends to increase the bid price at which the market for such land will clear. But limiting density also makes raw land less valuable per acre as an input into new housing production (Morgan, 1984). These effects of density control run counter to each other, and the total impact of density restrictions on land prices is ambiguous.

The empirical literature on growth control, largely from California evidence, supports the case that supply effects dominate. In many studies, development restrictions are shown to increase price and bar the poor, thus exacerbating income segregation. Zorn, Hansen, and Schwartz (1986) studied price effects in Davis, California. The analysis took into account the imperfect implementation of growth limits and the presence of inclusionary programs meant to counterbalance the policy's effect on the poor. The authors also factored in the extent to which preexisting homes increased in quality. Nonetheless, the study concluded that price increased an average of 9 percent relative to the nearby suburbs of Sacramento, where growth controls had not been adopted.

Earlier studies focused on Petaluma, located north of San Francisco, which found its rural tranquility threatened by the Bay Area's suburban expansion in the early 1970s. In response to the sprawl creeping up the interstate highway, Petaluma adopted a pioneering growth control ordinance allowing only 500 building permits annually. Schwartz, Hansen, and Green (1984) compared Petaluma to the relatively unregulated market in nearby Santa Rosa.[10] Low-priced, small-floor-area homes began to disappear after growth management was imposed, and the housing stock shifted generally away from units affordable to low- and moderate-income households. The transition occurred, the authors concluded, because of the way Petaluma chose to assign its limited building permits among competing applications. Its ordinance used a "beauty contest" point system that rewarded costly design amenities at the expense of moderate-income housing (see also Schwartz, 1982).[11]

In a study of 1,600 home sales in 64 Bay Area communities in 1979, Katz and Rosen (1987) found even more drastic price increases associated with growth controls (permit caps and outright moratoria). Homes in towns with such development restrictions were 17 to 38 percent more expensive than elsewhere. These authors' measurement of land use regulation failed to account for differences in rules among towns in their sample. A single dummy variable identified the presence or absence of a growth management program. The authors' model did not address the likely endogeneity of regulation and housing market indicators, instead explaining:

> [D]ifferences in house prices could possibly be the "illusory" outcome of weakness in the statistical technique resulting from omitted variables, sample selectivity problems, or both. The positive price differential for houses in growth-controlled jurisdictions may reflect structural or neighborhood quality characteristics (not included in the model) that are correlated with the presence of formal growth controls. This is possible but not likely because the addition of extra quality controls as well as other characteristics on the subsample for which additional information was available did not tangibly alter the strength or direction of the results (Katz and Rosen, 1987: 158–159).

Importantly for the consideration of empirical work in the field, the modern view is that land use choices are endogenous, meaning that one cannot estimate their effects (for example, on prices, segregation, or neighborhood and housing quality) without accounting for the ways in which those effects themselves influence the land use choices being studied. The preferable method is to account for the simultaneity of various influences in a more complete model (Colwell and Sirmans, 1993). Ideally, such a model would address:

> the particular ways in which a community restricts growth (the growth-control instrument), the interrelationship between the determinants of land values (the cross-elasticity between implicit markets), and the interrelationship between growth-control and nongrowth-control communities (the cross-price elasticity between implicit markets) (Knaap, 1991: 471).[12]

In practice, however, the scarcity of data measuring each of these factors makes precise measurement problematic.

Portland's experimentation with metropolitan-level land regulation has provided an interesting natural experiment for housing price research. The "urban growth boundary" drawn in the late 1970s between the fringe of the city's exurban areas and surrounding agricultural sectors has drawn particular attention. The twin goals of sprawl prevention and farmland preservation motivate this kind of growth management. Knaap (1985) identified two boundaries: (1) an outer ring drawn to contain all growth until 2000; and (2) an inner ring, with the area between the two demarcated as growth-controlled at local option if desired densities have not been reached in the urban core. Knaap sampled land prices on undeveloped single-family sites located in all three categories: inner city, between the lines, and outside the year 2000 UGB. Controlling for distance from the central city, Knaap's results showed significant land price increments inside and outside the outer UGB. These results were replicated along the inner ring, but were most significant in the most affluent suburbs, perhaps because of the discretionary nature of that boundary. Knaap concluded the market perceived the constraint on new construction and the explicit time restrictions on development outside the exurban UGB to be genuine and binding, with prices falling into line accordingly (see also Phillips and Goodstein, 2000; Nelson, 1988).

More Recent Work on Price Effects of Zoning and Growth Management

Clever model design and data collection strategies can have high payoffs in this area. A thoughtful study by Pollakowski and Wachter (1990) sought to detect housing price effects within and across multiple jurisdictions in Montgomery County, Maryland (suburban Washington, D.C.). The authors generated a hedonically adjusted repeat-sales, housing price time series, measured quarterly across 17 planning areas of the county.[13] The authors constructed indexes of restrictive land use practices based on proportions of developed and vacant land in various zoning categories. To these localized measures, the authors added two additional land use regulatory measures: (1) an index to capture the effects of regulations in one planning area on its neighbors, calculated as a ratio; and (2) a growth control ceiling imposed on each planning area by the county. The models also featured a sophisticated set of covariates, including commute times from a central city hub, a gravity index of employment accessibility, and a construction cost index from standard cost estimator services. In the model combining all three land use regulatory measures, the in-zone and adjacent restrictiveness measures added significantly to home prices over time. Importantly, the effects of the growth ceilings, local regulation, and spillover constraints were greater when considered in the aggregate than when measured independently of one another.[14]

Malpezzi (1996) developed a mixed set of land use measures from the 1990 Wharton survey of planning and policy (see Linneman and Summers, 1993), which he combined with AIP state indicators and a rent control variable from a ULI survey. Malpezzi's analysis of reported home values and contract rents in the 1990 Census showed a significant association between tighter land restrictions and higher home prices. Only the AIP index had a statistically significant effect on rents. Malpezzi estimated the premium paid for moving from a liberal to strictly regulated environment to be 17 percent for rents, but more than 50 percent for house values. Later, Malpezzi, Chun, and Green (1998) estimated a more complex, two-stage model based on an updated version of the same regulatory measures and PUMS microdata on rents and home values. For both dependent variables, the linear specifications show positive and significant results for the instrumental regulatory index, with coefficients ranging from 0.02 to 0.08. The effect of moving from less stringent to more stringent regulation is estimated to be a 13- to 26-percent increase in rents or a 32- to 46-percent increase in asset prices for the quadratic models, or 9- to 16-percent and 31- to 46-percent increases, respectively, for the linear models.

In a more recent sample of 37 Milwaukee suburbs, Green (1999) traced the effects of six land use indicators: (1) the permitting of mobile homes, (2) minimum lot sizes in new subdivisions, (3) minimum frontage setbacks, (4) minimum street widths, (5) sidewalk requirements, and (6) curb and gutter requirements. The mobile home prohibition increased home prices between 7.1 and 8.5 percent; requiring an additional 10 feet of setback caused price increases of between 6.1 and 7.8 percent. Green also traced the effect of these land use measures on housing affordability, finding both the permitting of mobile homes and the imposition of street-width minima to significantly reduce the proportion of homes then priced below $75,000.

In a study of post-World War II growth patterns in the United Kingdom, Simmie, Olsberg, and Tunnell (1992) found that so-called urban containment policies tend to increase the long-run price of buildable residential land and finished housing. The authors noted that during slow economic times such land use policies are not a true constraint, but during periods of growth they may unwisely deflect job creation and housing investment to neighboring regions. The authors' focus was on regional and national open space and agriculture reservations, such as the London Green Belt, the designation of travel-to-work

area, and environmental protection of "areas of outstanding natural beauty" (Simmie, Olsberg, and Tunnell, 1992: 39). Based on other work on Britain by Evans (1988) and Cheshire and Sheppard (1989)—the latter comparing growth-controlled Reading and growth-oriented Darlington—Simmie and his colleagues asserted that the containment of growth had forced prices higher. Thus, they advocated reexamining the prevailing "garden city" design assumptions underlying sprawl containment policies in favor of forward-thinking land use planning that allowed for changing technologies in construction and transportation. Similar work on the United Kingdom by Monk and Whitehead (1999) bemoans the lack of experimental settings in Britain, where national standards broadly govern all local development-approval processes. Based on anecdotal opinion about behavioral differences in planning offices among three small towns outside London, however, these authors identified strong price-increase effects in the most restrictive town, with less difference observable among the other two (despite observed differences in regulatory flexibility).

Other authors have used the Far East as test beds for theories on land control's price effects. Malpezzi and Mayo (1997) calculated price and supply elasticities for Malaysia, South Korea, and Thailand and found that supply was more responsive to market signals in less regimented environments (see also Mayo and Sheppard, 1996). Fu and Somerville (2001) developed a methodology for assessing how floor area ratios distort builders' design choices, and then tested their methodology on a sample of 1992–93 land lease data for redevelopment sites in Shanghai, China. The authors concluded that allowable intensity of land use significantly affects price, as did neighboring population densities and related costs of resettling households displaced by the redevelopment projects under study.

Recent work by Glaeser, Gyourko, and Saks (GGS) (forthcoming) provides further evidence on the linkage between regulation and housing prices. The authors analyze data from Manhattan, a place where housing prices soared in the decade of the 1990s but additions to the housing supply were quite modest. Economic theory predicts that competition among builders will ensure that prices equal average costs. In unregulated markets, building heights will increase to the point where the marginal costs of adding an additional floor will equal average costs (which will equal the market price). If regulations limit sizes of buildings, free entry of firms will still keep price equal to average cost. With increasing marginal costs, however, both prices and average costs will exceed marginal costs. Using observations on prices and engineering data on costs, the authors measured the gap between prices and marginal costs in this most dense housing market in the United States. The analytical approach is straightforward, but it produces only indirect evidence. Moreover, if the construction industry is not fully competitive, the GGS procedure will overestimate the impact of regulation on market prices. This ambitious empirical analysis, combining information on market prices and supply costs, suggests that regulations, at least in New York City, have an important effect upon the cost of housing to consumers (see also Glaeser and Gyourko, 2003.

Conclusions and Recommendations for Further Research

Exhibits 5 and 6 present a summary of selected empirical work conducted before and after 1990, including studies reviewed in this article and others. As we have documented, despite many careful and thorough empirical analyses, drawing firm general conclusions about the linkage between local regulations and housing prices is not possible. Many careful analyses report some effect of regulation on housing prices, but many exceptions exist. For example, the measurement of housing prices in aggregate studies is often crude, relying on owners' estimates of house values from the decennial census; quality adjustments are ad hoc as well. In microeconomic studies, house prices also are measured crudely.

Exhibit 5

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Adams, Milgram, Green, and Mansfield	1968	Northeast Philadelphia, PA	Zoning (single-family, apartment, or row houses)	More than 1,000 sale transactions for undeveloped but zoned and subdivided lots, 1945–62	Transit accessibility, parcel location, expected time until development	Mixed Log-Semilog in OLS[a]	Sales prices for land zoned for single-family homes were lower per acre than for land zoned for row houses or apartments.
Downing	1970	Milwaukee, WI	Maximun units allowed per acre	Undeveloped residential land values	Crowding, distance to amenities, race & education	OLS[a]	Larger minimum lot sizes reduced the price per acre of land (permitted higher density increased land values).
Downing	1973	Milwaukee, WI	Commercial zoning	Commercial parcel sales prices	Distance from downtown, parcel size	OLS[a]	Land zoned for commercial uses was significantly more valuable than residentially zoned land.
Peterson	1974	Fairfax County, VA	Zoning (minimum lot size); also a sewer moratorium imposed in 1972	Sale price of residentially zoned parcels, 1969–73	Included interactions between zoning and other variables	OLS[a]	As distance from Washington, DC, increased, the impact of zoning restrictions on price per acre decreased. Also, by 1973, sewer moratorium impacted lot values; grandfathered, permissible sewer connection pushed lot value higher and decreased significance of other variables (including zoning).
Hushak	1975	Urban-rural boundary, Columbus, OH	Commercial zoning	1972 raw land transactions	Parcel size, distance from downtown, presence of transit links	OLS[a]	Land zoned for commercial uses was significantly more valuable than other classifications. Lot size restrictions impose artificial supply contraints.
Gleeson	1979	Brooklyn Park, MN	Growth management program	Assessors' estimates of land values for raw land and farmed parcels in developable and nondevelopable sectors of growth management map	Sewer and water service types, soil quality, zoning	OLS[a]	Segmenting of market in growth management program depressed land values in restricted areas relative to unrestricted areas. Finding was only significant as to large farmed parcels.
Gabriel and Wolch	1980	50 San Francisco Bay Area jurisdictions, CA (exclusive of	Extent of development fees and exactions, proportion of land zoned for minimum lot size of one acre, and a dummy variable indicating presence of pro-growth attitudes on city council	Home sales prices from Society of Real Estate Appraisers (city means)	Property tax rates, school finance, racial segregation in education, vacancy rates	Semilog OLS[a]	Communities with pro-growth attitudes had house values $4,200 (8% of mean home value) lower than in anti-growth communities. Higher tax rates reduced home values, while school spending and racial segregation were associated with higher prices.

[a]OLS = ordinary least squares.

Exhibit 5 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Chicoine	1981	central cities) Will County, IL	Zoning classification	1970–1974 unimproved land transactions	Annexability (abutment to town boundary), septic systems, road types	OLS[a] (log-log)	Land zoned for commercial uses priced higher than parcels in other classifications.
Elliott	1981	Selected California communities	Various regulations on rate and quality of new home construction	Average housing price increases reported in mortgage banking data	Neighboring population growth, regulation imposed by surrounding county	OLS[a]	Housing prices grew faster when neighboring communities also restricted growth. Housing price increases were 35% higher in rate-controlled communities and 20% higher in quality-controlled communities than in no-control communities.
Schwartz, Hansen, and Green	1981	Petaluma, Rohnert Park, and Santa Rosa, CA	"Petaluma Plan," limiting new residential permits to 500/year and rationing them based on design features and developer-provided amenities and services to community	Reported and constructed housing prices	Size, home amenities (e.g., fireplaces, appliances)	Quasi-experimental OLS[a] with derived prices for "standard" homes	Petaluma prices rose significantly faster than one comparison city (Santa Rosa); no significant price difference found with respect to other comparison city (Rohnert Park). However, building permit activity in Rohnert Park increased.
Asabere and Colwell	1984	Champaign-Urbana, IL	Presence of single-family-only zoning	Raw land sales transactions	Time of sale, transit impacts, traffic, cul-de-sac and corner locations	Log-log OLS[a] with numerous interaction terms	Non-residentially zoned land had values 80% above average; residentially zoned land had values 50% below average.
Schwartz, Hansen, and Green	1984	Petaluma and Santa Rosa, CA	Petaluma Plan	Home sales prices from Society of Real Estate Appraisers		Simple differences in home sales volumes by price class	Sales volumes for small, low-priced homes dropped significantly below that of the Santa Rosa control group.
Black and Hoben	1985	30 MSAs[b]	Index of restrictiveness from ULI[c]; based on rankings by a panel of experts	Land prices for suburban quarter-acre and inner-ring unimproved parcels, appraised by local real estate experts (ULI[c] survey)	Growth in population, employment, and income	OLS[a] stepwise regression	Index of restrictiveness accounted for a significant amount of variation in price of developable land; significance of index's impact on lot price was unreported. Because of impacts of greenbelt restrictions on exurban sites, studies using ULI[c] land survey may understate effects of growth policies on metro fringe land prices.

[a]OLS = ordinary least squares.
[b]ULI = Urban Land Institute.

Exhibit 5 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Knapp	1985	Portland area, OR	Urban growth boundaries (inner and outer ring)	455 sales of undeveloped sites zoned for single-family homes	Included variable for distance from Portland CBD[d], also lot size zoning	Hedonic price model in OLS[a]	Land outside outer boundary sold for significantly less than land inside. Mixed results for inner boundary—in affluent county, boundary was a constraint, but not in less-affluent county; lot size zoning was only significant in affluent county regressions.
Segal and Srinivasan	1985	51 large MSAs[b]	Index of growth restrictions, based on survey of metro-area planners, estimating percent of developable suburban land withdrawn from market by growth controls	Federal Home Loan Bank Board's weighted average of current dollar prices for sales of new and existing single-family homes	Mortgage rates, population and income	2SLS[e] (simultaneous supply-demand test)	Index was highly significant, explaining about 40% of variation in housing prices. Also, areas that withdrew 20% of land from development had housing price inflation of 6% compared with unrestricted cities. Growth-restricted cities had price inflation of 17% compared with unrestricted. The effect was nonlinear; cities with larger percentages of land withdrawn had higher inflation rates.
Vaillancourt and Monty	1985	Montreal suburban fringe, QC	Exclusive agricultural zoning imposed in 1978 (by provincial law)	1,200 sales of land, 1975–81	Water/sewer, location, neighborhood quality	OLS[a] semilog	Parcels subject to new zoning lost 15–30% of value compared with similar unrestricted land.
Chressanthis	1986	Lafayette and West Lafayette, IN	Adoption of unified zoning ordinance, mobile home regulation, and stringent building codes	Home sales prices from multiple listings and settlement-contract sources provided by local realtor board, covering 1960–80	Mortgage transaction costs, inflation, property tax rates	Time-series OLS[a] models incorporating adjustments for first-order serial autocorrelation, and joint estimation procedures	Adoption of unified comprehensive zoning scheme depressed prices in West Lafayette, with ambiguous effect in Lafayette itself. Mobile home regulation and building codes did not significantly affect price levels.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.
[d]CBD = Central Business District.
[e]2SLS = two-stage least squares.

Exhibit 5 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Mark and Goldberg	1986	Two neighborhoods in Vancouver, BC: one affluent, one poor	Three zoning-related measures: zoning of the home itself, nearby land uses that might affect value of home, and whether a rezoning occurred, 1957–1980	Sale price of single-family homes, 1957–80	Age of home, number of rooms, and lot size	OLS[a]; seperated regressions for affluent and poor neighborhoods and for each of the 23 years	Effects of zoning and land use variables are inconsistent over time; they vary in sign, magnitude, and significance.
Zorn, Hansen, and Schwartz	1986	Davis, CA, and three control suburbs: Woodland, Roseville, and Rancho Cordova, CA	Before-after adoption of building permit allocation scheme encompassing inclusionary requirements	House sales prices from Society of Real Estate Appraisers	Condition, age and quality of home; property tax assessments	Hedonic price model in OLS[a] stratifying sample by before-after variable and jurisdiction	Prices under growth control grew more rapidly than those in control sample. Price-mitigating aspect of regulation reduced net effect on affordability.
Katz and Rosen	1987	64 communities in San Francisco Bay Area, CA	Location within jurisdiction with building permit moratorium or rationing system in effect for at least 1 year during study period	Home sales prices from Society of Real Estate Appraisers	Density, local public spending, home quality characteristics	Hedonic semilog OLS[a]	House prices in growth-controlled communities 17.3% higher. Authors observe results may be driven by low proportion of sales-sample in regulated jurisdictions (11%) or by higher-priced places having preferences for regulation.
Chambers and Diamond	1988	30 MSAs[b]; updated data from same sample used by Black and Hoben	Index of restrictiveness from a ULI[c] survey based on rankings by a panel of experts, delay time, and general availability of zoned lots	Price of a standard quarter-acre suburban lot zoned for single-family and price of unimproved acreage near developing fringe of metro area suitable for single-family development; both obtained from ULI[c] survey of local real estate experts		OLS[a] stepwise regression	Mixed results, but authors conclude that delay and zoning did increase land prices.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.
[c]ULI = Urban Land Institute.

Exhibit 5 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Nelson	1988	Portland area, OR	Urban growth boundaries	Vacant land sales	Waterfront location, view, soil quality, location	Hedonic log-log OLS[a]	Confirms Knapp's (1985) results; showing that greenbelt boundary resulted in high land values near Portland, low values in greenbelt, and high values in exurban sector.
White	1988	Ramapo, NY	Zoning regulations (minimum lot size)	Tax assessor reports of 200 sales of vacant lots zoned for residential use, 1977–80	Neighborhood location, summary negative externality dummy, local amenities index, adjacent home values (structure only)	Log-log OLS[a] with numerous interaction terms	Subdivision-cost effect accounted for 25% of difference in sale price for quarter-acre and 1-acre lots; zoning accounted for 3/4 of difference (1-acre lots sold for less per ft^2). According to Fischel (1990), lot-size restrictions mimicked growth management scheme, so that reported cost effects should be considered lower-bound estimate.
Cheshire and Sheppard	1989	Darlington and Reading, UK	Comparison of the two cities—Darlington being the least restrictive and Reading the most—based on planning applications, acceptances, and appeals	Asking sale prices (from real estate agents) and sample survey of households	Structural characteristics of housing, school districts, and proximity to transportation and countryside amenities	Hedonic price function OLS[a]	House price-to-income ratio for four housing types was consistently higher in Reading than Darlington. Reading's policies area estimated to increase housing prices by 2.3–17.3% (depending on housing type and distance from city center), with the highest impact of policies on low-density dwellings close to city center (older units), and the lowest impact on higher density development far from center (newer units), which the authors attribute to developers' ability to change housing type in response to restrictions.
Rose	1989	MSAs[b]	Index of potential monopoly in metro areas (e.g., number of local governments); based on Hamilton (1978)	Developable land prices—from ULI[c] survey and FHA[f] data	Included variables to account for existence of natural barriers to development	OLS[a]	About 10% of variation in intermetro land prices is accounted for by index of potential monopoly; natural barriers accounted for 30% of variation.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.
[c]ULI = Urban Land Institute.
[f]FHA = Federal Housing Administration.

Exhibit 5 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (pre-1990)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Spreyer	1989	Houston, TX (which has no zoning) and nearby municipalities (which do)	Three categories: zoned, unzoned but covenanted (mainly Houston properties), or unzoned and uncovenanted	House values for single-family homes	Location, amenities, home size and quality	OLS[a]	Unzoned but covenanted land (in Houston) had values not statistically different from properties in zoned cities, but properties that were unzoned and uncovenanted had values less than those in the other two categories. The results indicate that covenants are an alternative to zoning in relatively undeveloped areas where developers can acquire and impose covenants on large areas of land; i.e., a larger transaction cost exists for covenants in developed areas.

[a]OLS = ordinary least squares.

Exhibit 6

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (post-1989)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Cho	1991	10 magistral districts of Fairfax County, VA	Percent land vacant, zoning restrictiveness index, use restrictiveness index (ratio of land designated for residential use to that designated for commercial use), relative zoning restrictiveness of adjacent areas, and relative use restrictiveness of adjacent areas	Housing price indexes constructed from transaction prices and structural characteristic data collected by the county	Real per capita income, distance to Federal Triangle (in Washington, DC), change of housing price index over 2 years, and population density	OLS[a]	Impact of vacant land measure was negative in sign but not significant; all four restrictiveness indexes had significantly positive impacts on housing price, indicating an increase in housing prices due to both intradistrict restrictiveness and the spillover effects of nearby jurisdictions.
Pollakowski and Wachter	1990	17 planning areas that constitute Montgomery County, MD	Percent land vacant, development ceiling, zoning restrictiveness index of vacant and developed land, and relative restrictiveness of adjacent planning areas	Longitudinal housing price indexes for the 17 planning areas	Real per capita income, distance to Federal Triangle, gravity employment index, real mortgage rate, and real construction cost index	OLS[a]	The index of vacant land and the development ceiling had negative but not significant impacts on housing price. Restrictiveness index had a positive significant impact (price elasticity: 0.275). Housing prices in districts adjacent to more restrictive districts were higher (price elasticity: 0.093). The authors interpret the results as a spillover effect of zoning, caused by scarcity in restrictive districts.
Malpezzi	1996	MSAs[b]	Two aggregated indexes: one composed of variables from the Wharton study and the other from AIP[c] state regulatory variables	Median contract rent and median house value from the 1990 Census	Natural geographic constraints, demographic variables, and a rent control dummy	OLS[a]	For rents, only the state regulatory index was significant (and positive), but for house values, both aggregated indexes were significant. The impact (increase in rent/value) of moving from lightly to heavily regulated environment is estimated to be 17% for rents and 51% for house values.
Mayo and Sheppard	1996	Malaysia, Thailand, and South Korea (country-level)	Comparison of the three countries that have varying levels of restrictiveness: South Korea is the most restrictive; Thailand, the least; and Malaysia is intermediate	Housing price indexes for each country	Income, factor prices for housing production, and the price of other goods	OLS[a] and autoregressive least squares to find price elasticity of supply for housing. Also uses a recursive model to estimate the change in price over time.	Malaysia and Korea had low elasticities of supply, and Thailand had a high elasticity. Recursive model showed that although Korea and Thailand were relatively stable over time, Malaysia had a high elasticity in the years immediately after adoption of more restrictive planning system, but over time supply became less elastic.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.

Exhibit 6 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (post-1989)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Thorson	1996	10 urbanized areas in the Northeast United States	The zoning "concentration ratio"—a measure of monopoly zoning—which is the proportion of suburban land controlled by the four largest suburban governments, as presented in Fischel (1981) and Rose (1989)	Median housing value for each town with population over 10,000 (from 1970, 1980, and 1990 Census years), adjusted for regional differences in cost	A number of variables to reflect town characteristics, including population, competing land use prices, and amenities	OLS[a]	Concentration ratio had a positive significant impact on housing value.
Malpezzi and Mayo	1997	Malaysia, Thailand, and South Korea (country-level)	In cost-benefit analysis of Malaysia, considered its regulatory environment: strict land use and infrastructure standards (road size, setback, community facilities requirements), approval procedures, and requirements for construction of low-cost units. Malaysia was also compared with Thailand (less restrictive) and South Korea (similar restrictiveness).	National housing price indexes	Similar to Mayo and Sheppard (1996)	Cost-benefit model using present value analysis and model similar to Mayo and Sheppard (1996) for the three-country comparison	The cost-benefit analysis indicates that interventions add about $4,000 (Malaysian) to developers' cost. The cross-country comparison indicates that Malaysia and Korea have inelastic housing supply curves and Thailand has an elastic curve, similar to the United States.
Malpezzi, Chun, and Green	1998	MSAs[b]	Two aggregated indexes: one composed of variables from the Wharton study and the other from AIP[c] state regulatory variables; these indexes are used in first stage of 2SLS[d]	Rent and house value variables determined by hedonic modeling of Census PUMS[e] data	Natural geographic constraints, demographic variables, and a rent control dummy.	Linear and quadratic 2SLS[d]	For both dependent variables, the linear specifications show positive and significant results for the instrumental regulatory index, with coefficients ranging from 0.02 to 0.08. The effect of moving from less stringent to more stringent regulation is estimated to be a 13–26% increase in rents or a 32–46% increase in asset prices for the quadratic models, and 9–16% and 31–46% increases, respectively, for the linear models.
Green	1999	Waukesha County, WI (39 municipalities)	Six regulatory variables (zoning and permitting) constructed from a University of Wisconsin survey of land use controls in the county (municipal level)	Median housing prices and rents from 1990 Census (at tract level)	1990 tract level demographic and economic information from Census	OLS[a]	Two of the regulation variables had a positive, significant impact on housing prices; not permitting mobile homes increased prices by 7–8%, and an additional 10 feet of required frontage increased prices by 6–8%. Only the subdivision requirement for curbs and gutters had a significant impact on rents, increasing them by 10–12%. Both frontage requirements and mobile home permitting also had a positive significant impact on the share of housing that was affordable.

[a]OLS = ordinary least squares.

[d]2SLS = two-stage least squares.

Exhibit 6 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (post-1989)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Monk and Whitehead	1999	Three districts outside London, UK	Comparison of the three districts that have varying levels of restrictiveness; Fenland has little restriction, and both North Hertfordshire and South Cambridgeshire have significant restriction	Land prices, housing production, and house prices		Comparative statics	Land prices were higher in the most constrained areas, but the change in prices was similar between the least restrictive (Fenland) and the less restrictive of the constrained cases (South Cambridgeshire). All saw increases in housing prices which did not seem to be affected by the level of constraint.
Mayer and Somerville	2000	44 MSAs[b]	(1) Number of months for subdivision approval, (2) number of growth management techniques (in MSA[b]), and (3) whether use development fees are imposed (all from the Wharton Urban Decentralization Project survey)	Supply measure—the quarterly number of number single family building permits	Quarterly changes in house prices (from repeat sale price index, including lags for 5 periods); change in real prime rate; time trend for each city; and 1980 population	Four types: OLS[a], GLS[f], PCSE[g], and IV[h] quasi-differential	Regulation has a consistently negative effect on steady-state level of construction, with housing starts estimated to be 45% lower in cities with more regulation. Although delays in the approval process and number of management techniques both had negative significant impacts, development fees did not show a significant effect. Modeling the dynamic effects indicates that more highly regulated MSAs[b] have price elasticities that are more than 20% lower than in less regulated cities.
Phillips and Goodstein	2000	37 MSAs[b] and primary MSAs[b]	Number of municipalities (proxy for regulation as per Ozanne and Thibodeau [1983]); and regulatory index as constructed by Malpezzi (1996). Also considered impact of Portland, OR's UGB[i] by giving it the highest index value in some models.	Median housing price	Population, median income, unemployment rate, construction cost index	OLS[a]	Regulation index has a positive significant effect, and weak evidence indicates that the UGB[i] has increased median housing prices, but impact is low (less than $10,000 per unit).
Downs	2002	86 major MSAs[b] (including Portland, OR)	Dummy variable for Portland's UGB[i] adopted in 1979	NAR[j] median-price series and Freddie Mac price index for repeat sales Rent and house	City and population characteristics	OLS[a] for five panels between 1990 and 2000	For 1994–2000 and 1996–2000 periods, UGB[i] had no significant impact on the change in housing prices, but during 1990–2000, 1990–94, and 1990–96, the effect was positive and statistically significant. UGB[i] alone does not increase housing prices, but the UGB[i] combined with factors stimulating demand for housing (e.g., an increase in population or income) can increase prices.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.
[f]GLS = generalized least squares.
[g]PCSE = panel corrected standard errors.
[h]IV = independent variable.
[i]UGB = urban growth boundary.
[j]NAR = National Association of REALTORS®.

Exhibit 6 (continued)

Summary of the Empirical Literature Linking Land Use Regulation and Housing Prices (post-1989)

Author(s)	Year	Geography Covered	Regulatory Measure	Housing Price Measure	Other Variables	Type of Model	Results
Malpezzi	2002	MSAs[b]	Two aggregated indexes: one composed of variables from the Wharton study and the other from AIP[c] state regulatory variables	value variables determined by hedonic modeling of Census PUMS[e] data and 2000 NAR[i] median, existing house sale price (for more recent data)	Same as Malpezzi, Chun, and Green (1998), but also included "high-tech locational quotient" in the second stage regression	2SLS[d]	Regulation has a positive, significant impact when using two different measures of housing prices: the hedonic index constructed in MCG[k] and the 2000 NAR[i] median existing house sale price (coefficients of 0.085 and 0.068, respectively).
Gyourko and Glaeser	2003	Central cities of 45 MSAs[b]	From the Wharton Land Use Control Survey; measure is an index (ranging from 1 to 5, 1 being brief) indicating the average length of time between an application for rezoning and the issuance of a building permit	Share of the city's housing stock priced more than 40% above the cost of new construction (constructed from the AHS[l] data and RS Means estimation of construction costs)	Population growth and median income	OLS[a]	A unit increase in the index indicates 15% more of the stock priced at more than 40% more than the cost of new construction. When controlling for population growth and median income, the relationship is still positive and significant, although the impact has a lower magnitude. The authors also consider the impact of the zoning measure on the implicit zoning tax (as calculated using AHS[l] data), and find a significant positive result, indicating a nearly $7/ft.^{2} price increase per unit increase in the regulatory index.

[a]OLS = ordinary least squares.
[b]MSA = metropolitan statistical area.
[c]AIP = American Institute of Planners.
[d]2SLS = two-state least squares.
[e]PUMS = public-use microdata sample.
[i]NAR = National Association of Realtors®.
[k]MCG = Metropolitan Consulting Group.
[l]AHS = American Housing Survey.

Perhaps the most important reason why empirical research is not definitive is the difficulty of measuring the regulatory environment facing households and builders in a satisfactory manner. As we suggested in the section on taxonomies of land use regulation, statutory regulations vary along a variety of dimensions, and the enforcement of these rules may vary systematically. As exhibit 5 indicates, important and unresolved issues of measurement exist in characterizing local land use regulation across jurisdictions. Thus, much of the research reported in exhibit 6 is based on observing natural experiments provided by the regulatory environment of a single city or perhaps a single neighborhood in a city.

Accordingly, we believe that the most promising strategy for improving our understanding of the economic effects of zoning and land use restrictions would be to devote resources to measuring regulatory conditions systematically in a large cross-section of cities and metropolitan areas. At least two precedents exist for measuring regulations through a broad cross-section survey of regulations and behavior. Glickfeld and Levine (1992) designed and implemented two successive surveys (Levine, 1999) of land use restrictions and planners' proclivities in California. These surveys elicited high response rates, in part due to close collaboration among the authors, the League of California Cities, and the California State Association of Counties. Appendix A contains the instrument from the first survey conducted by these authors.

The 1992 Glickfeld and Levine survey reported detailed information on the revenues and expenditures of each jurisdiction in California, documenting the types and magnitudes of public revenues and the capital outlays and operating expenses made by governments. The survey also documented expenditures by category for each jurisdiction. The heart of Glickfeld and Levine's study, however, is two sets of questions: one posed to land use officials about the importance of public incentives in fostering growth and the other designed to document the regulatory environment in each city. Researchers have used the survey to analyze regional housing production (Levine, 1999), the regional distribution of single-family and multifamily housing (Glickfeld and Levine, 1992), residential segregation (Rosenthal, 2000), and changes in demographic conditions in California cities (Quigley, Raphael, and Rosenthal, 2004).

In another example, Linneman and his associates at The Wharton School (Buist, 1991; Linneman et al., 1990) designed a survey that was administered across a broad cross-section of municipalities, with the cooperation of the International City Managers Association. The Wharton survey asked local officials their opinions about factors affecting the development process and the management of economic growth. This survey also asked officials about the presence and magnitudes of impact fees and exactions and posed a companion set of questions to county officials. The survey resulted in a profile of about 1,000 local jurisdictions and the counties in which they were located.

Linneman and Summers (1993, 1999) used the Wharton survey to analyze patterns of decentralization in the United States. Malpezzi (1996) generalized the determinants of a summary index of the detailed Wharton measures. This "Malpezzi Index" of land use regulation was used to characterize the regulatory environment across U.S. metropolitan areas in 1999. This generalization has proven valuable in characterizing and comparing regulatory environments. For example, Malpezzi, Chun, and Green (1998) used these measures to explore the determinants of variations in house prices across the metropolitan areas, and Greulich, Quigley, and Raphael (2004) used them to analyze the effects of immigration on housing prices. More recently, Mayer and Somerville (2000) utilized several items from the Wharton survey in models explaining variable issuance of building permits across metropolitan areas. These authors concluded that regulatory stringency in the form of approval delays and growth management measures reduces the supply of new single-family units and corresponding price elasticities (see also Gyourko and Glaeser

2003 [utilizing a Wharton-based index to show upward pressures on an implicit zoning tax the authors base on American Housing Survey data]). Appendix B includes the original Wharton survey instrument.

We believe that a systematic update and extension of this work would have a high social and scientific payoff. Note that we are proposing a research program, not merely a measurement effort. As described by Malpezzi and his colleagues, and as is surely well known to the authors of these two comprehensive planning and regulatory surveys, many unresolved issues arise in the design of a survey instrument and the characterization of a regulatory environment that spans local governments in different states. But the wide variation in regulation that could be measured in a national survey would be invaluable in assessing the effects of these differences on housing outcomes and prices in U.S. metropolitan areas.

In our view, a useful survey of local land use regulation would have four components. First, the survey would be national with representation from stagnating as well as growing regions and large and small political jurisdictions. Second, it would sample metropolitan areas and localities to permit analysis of the interplay among political jurisdictions and between localities and regional authorities. Third, such a survey would measure the outcomes of regulatory processes at the local level. Fourth, it would sample builders, developers, and government officials to establish, as far as possible, the linkage between regulation on the one hand and the supply and price of housing on the other.

Ideally, the lessons learned from developing a survey of regulation could be implemented in revising and extending the ways in which residential construction and building permits are reported through the U.S. Census Bureau. Currently, the Census Bureau requires annual reporting of residential building permits. (Residential building permits are reported on form C-404, which is included with other construction-census instruments in Appendix C.) Modest changes to these reporting requirements may provide a body of data that could be valuable in measuring the linkages between restrictive regulations, the enforcement of regulations, and the cost of housing across the United States.

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Authors

John M. Quigley is I. Donald Terner Distinguished Professor and professor of economics at the University of California, Berkeley. He also holds appointments in the Goldman School of Public Policy and the Haas School of Business. He directs the Berkeley Program on Housing and Urban Policy.

Larry A. Rosenthal serves as Executive Director of the Berkeley Program on Housing and Urban Policy and as Lecturer at the Goldman School of Public Policy at the University of California, Berkeley.

Notes

1. This section draws, in part, on materials compiled by Dwyer and Menell (1998).

2. The trilogy of Mount Laurel decisions is *Southern Burlington County NAACP v. Township of Mount Laurel*, 67 N.J. 151, 336 A.2d 713, appeal dismissed and cert. denied,

423 U.S. 808 (1975) (referred to as "Mount Laurel I"); *Southern Burlington County NAACP v. Township of Mount Laurel*, 92 N.J. 158, 456 A.2d 390 (1983) ("Mount Laurel II"); and *Hills Dev. Co. v. Township of Bernards*, 103 N.J. 1, 510 A.2d 621 (1986) ("Mount Laurel III").

3. Historically, urban containment was also intended to keep inferior public health conditions from migrating toward the suburbs (Simmie, Olsberg, and Tunnell, 1992).

4. A review by Fischel (1992) opined that the stability and pervasiveness of fiscally driven land use regulatory regimes was strong evidence of their overall efficiency. According to this point of view, studies showing strong upward pressures on home price due to land use restrictiveness are entitled to a presumption of validity.

5. Viewed in Coasean terms, zoning is not the only technique by which the fiscal externality can be incorporated into an efficient pricing mechanism. Instead of assigning the property right ab initio to the S residents, society can just as easily assign it in the first instance to the L residents desiring entrance. So long as Coasean bargaining requirements are fulfilled concerning the necessary transfers, the efficient level of L housing in S zones will still be attained (Fischel, 1985). Such a reassignment of initial property rights undermines judicial efforts to undo zoning regimes deemed overly "exclusionary" (for example, Kirp, Dwyer, and Rosenthal, 1995).

6. Some argue, however, that discriminatory fiscal policies alone, in the absence of land controls, segregate neighborhoods by income through the voluntary actions of individual households (Epple and Plant, 1998).

7. Known as the "taxpayer revolt" initiative passed by the voters in 1978, California's famed Proposition 13 slashed property tax revenues by setting a 1-percent maximum tax rate, rolling back assessable values to 1975 levels, limiting tax-bill increases to 2 percent per year, and allowing reassessment only when property changes hands. Proposition 13 also required a two-thirds legislative vote for state tax increases.

8. The discussion that follows makes use of an excellent survey of the early literature by Fischel (1990).

9. Perceptions of real estate experts, such as those relied on by Black and Hoben (1985) and Chambers and Diamond (1988), seem inherently remote and subjective. The relative merit of such indicators, however, comes from careful comparison to the often clumsy attempt to translate more thorough, sophisticated surveys of regulatory behavior into useful summary indices.

10. A previous Petaluma study by the same authors showed an average housing cost increase of 8 percent over Santa Rosa due to the regulation (Schwartz, Hansen, and Green, 1981). The earlier paper also provided useful background on the federal legal challenge brought by the housing industry against Petaluma's growth control ordinance. The trial court in San Francisco held that the permit cap effectively prohibited entry by would-be residents of the town, thereby infringing on their constitutionally protected right to travel. In 1975, the U.S. Court of Appeals for the Ninth Circuit reversed this decision in *Construction Industry Association v. City of Petaluma*, holding that plaintiff builders and landowners lacked standing to raise the right to travel claim on behalf of outsiders (*Construction Industry Association v. City of Petaluma*, 375 F. Supp. 574 (N.D. Cal. 1974), *rev'd on other grounds*, 522 F.2d 897 (9th Cir. 1975), *cert. denied*, 424 U.S. 934 [1976]).

11. The Petaluma Plan did assign positive "beauty contest" points for multifamily units, and this factor was deemed important by federal judges reviewing the scheme. Because the addition of symbolic inclusionary features helped Petaluma's growth control ordinance withstand constitutional muster, other growth-restricting communities around the country used similar tactics (Fischel, 1992: 222; Ellickson, 1981).

12. An even more ambitious approach was suggested by Navarro and Carson (1991), who added to the land-use analytical agenda the following list of collateral issues:

    - Degree of "spillover" effects into neighboring jurisdictions in the region.
    - Degree of subsidization of growth by incumbents.
    - Rates of development and population growth consistent with the city's ability to provide facilities and infrastructure.
    - Extent of "doubling up" (i.e., overcrowding).
    - Link between rates of job creation and population growth.
    - Efficiency properties of various commercial and industrial growth controls.
    - Target rate of job creation.
    - Effect of differing rates of population growth on tax base and per capita income.
    - Effectiveness of various affordable housing provisions.

13. The repeat-sales housing price index adjusts for the quality imbalance biases inherent in simple means and medians, given the infrequency of transactions and the shift in the composition of sales over time (Bailey, Muth, and Nourse, 1963; see Redfearn and Rosenthal, 2001).

14. Additional evidence of interjurisdictional effects in the Washington, D.C. metropolitan area may be found in work by Wachter and Cho (1991).

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Appendix A: Glickfeld/Levine Survey

League of California Cities
1400 K STREET • SACRAMENTO, CA 95814 • (916) 444-5790

Sacramento, CA.
November, 1988

TO: City Managers (City Clerks in Non-Manager Cities)

RE: SURVEY ON LOCAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

The League of California Cities is sending this survey on local growth control and growth management measures to all cities in the state. The results will provide a database that describes the scope and nature of growth control and growth management measures being undertaken in local jurisdictions in California. This data base will be used to assist individual cities now considering growth control and growth management measures by providing information on the types and impacts of such measures. This information will also be considered by the League's Growth Control Task Force in developing policies on growth control and growth management. In addition, we anticipate that the next legislative session will be focused on growth control and growth management restrictions.

This survey asks for information on all growth control or growth management measures undertaken in your jurisdiction, whether adopted as an ordinance by the city council or through the initiative ballot process. While people may have different definitions of growth control and growth management measures, for the purposes of this questionnaire such measures are those that control the rate, intensity, type and distribution of development in the jurisdiction.

We would like you to identify measures that are applicable citywide, or have an impact on the entire jurisdiction even though it may be limited to a particular geographical area. Advisory measures, short-term restrictions (such as a zoning moratorium to prepare a community plan), single site or project restrictions which do not have a jurisdictionwide effect, or measures which are no longer in effect should be excluded.

Only one survey per jurisdiction should be completed. Please have the staff person who is the most knowledgeable on the purpose, content and impacts of your city's growth control and growth management measures complete this survey. In many jurisdictions, the Planning Director would probably be the appropriate person.

Please fill out and return this survey even if you do not currently have any growth control or growth management measures. It is extremely important that every jurisdiction respond to this survey. We apologize for the length of this survey, but please respond to all of the questions. Please return this survey as soon as possible, but no later than December 30.

Thank you for your assistance. The results of this survey should be available in February, 1989.

Appendix A: Glickfeld/Levine Survey (continued)

LEAGUE OF CALIFORNIA CITIES
SURVEY ON GROWTH CONTROL

RETURN BY DECEMBER 30.

GENERAL INFORMATION

1. NAME OF JURISDICTION: _____

2. NAME OF RESPONDENT: _____

3. TITLE OF RESPONDENT: _____

4. POPULATION: not coded;replaced with standardized data

5. GEOGRAPHIC LOCATION: not coded; replaced with standardized data

Check one of the following:

a._____	Northern Coastal	g._____	Central Inland
b._____	Northern Foothill/Mountain	h._____	Central Desert
c._____	Northern Inland	i._____	Southern Coastal
d._____	Northern Desert	j._____	Southern Foothill/Mountain
e._____	Central Coastal	k._____	Southern Inland
f._____	Central Foothill/Mountain	l._____	Southern Desert

6. DEVELOPMENT CHARACTER

Check one of the following that describes the character of your city:

a._____ Urban/Suburban b._____ Rural

7. GROWTH DEMAND

Check one of the following that best fits your city:

a._____ There is a strong market demand for housing development in our jurisdiction.

b._____ There is a strong market demand for commercial and industrial development in our jurisdiction.

c._____ Both a. and b..

d._____ There is a lack of a strong demand for growth in our jurisdiction.

e._____ Other (Please Explain)_____

_____.

Appendix A: Glickfeld/Levine Survey (continued)

8. PLANNING DOCUMENT STATUS

Please check below <u>all</u> applicable statements regarding the status of your city's required planning documents.

a.______ Our general plan is complete (i.e., includes all state mandated elements).
Please note year of adoption:______________

b.______ We are currently in the process of updating our general plan.

c.______ We are currently in the process of updating one or more state mandated general plan elements.

not coded d.______ Our general plan is incomplete or over 10 years old.

e.______ We have asked for or received a general plan extension from the State Office of Planning and Research.

f.______ We have adopted a general plan growth management element or are currently developing such an element.

not coded g.______ Our housing element is complete and finally adopted.
Please note year of adoption:______________.

not coded h.______ We only have a draft housing element.

not coded i. According to the State Department of Housing, Community Development (HCD), our adopted housing element has been deemed:

(1)______ In compliance. (2)______ Out of compliance.

(3)______ Obsolete (4)______ No determination/unknown.

not coded j. According to HCD, our draft housing element has been deemed:

(1)______ In compliance. (2)______ Out of compliance.

(3)______ Obsolete. (4)______ No determination/unknown.

- -

II. RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

9. POPULATION GROWTH LIMITATIONS

Does your city have a measure* which establishes a population growth limit or restricts the level of population growth for a given time frame (i.e., annual basis)?

"Measure" includes initiatives adopted by the voters or regulatory ordinances adopted by the city council. It excludes resolutions or other policy statements.

Appendix A: Glickfeld/Levine Survey (continued)

a._____ YES b._____ NO

If YES, adopted by (1)_____ initiative or (2)_____ ordinance.
(3)_____ year enacted.

10. HOUSING PERMIT LIMITATIONS

Does your city have a measure which restricts the total number of permitted residential building permits in a given time frame (i.e., annual basis) for:

a._____ YES b._____ NO

If YES, applies to (1)_____ single family or (2)_____ multiple family or (3)_____ both

If YES, total # of permitted units:(4) _____ per (5)_____.

If YES, adopted by (6)_____ initiative or (7)_____ ordinance.
(8)_____ year enacted.

11. HOUSING INFRASTRUCTURE REQUIREMENTS

Does your city have a measure which specifically requires adequate service levels (i.e., road capacity/traffic congestion) or service capacity (i.e., water, sewers, etc.) prior to or as a condition of approval of a residential development?

a. _____ YES b. _____ NO

If YES, adopted by (1)_____ initiative or (2)_____ ordinance.
(3)_____ year enacted.

12. HOUSING DENSITY AND LOCATIONAL RESTRICTIONS

Does your city have a measure which did any of the following (check all applicable responses):

a._____ Reduced the permitted residential density by general plan amendment or rezoning.

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

b._____ Requires voter approval to increase residential densities.

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

c._____ Requires super majority council vote to increase residential densities.

Appendix A: Glickfeld/Levine Survey (continued)

Applicable to: (1)_____ Entire City or (2)_____ Part of City
Adopted by: (3)_____ initiative or (4)_____ ordinance.
Year enacted: (5)_____.

d._____ Redesignated or rezoned land previously designated for residential development to agriculture or open space (i.e., hillside or ridge preservation).

Adopted by: (1)_____ initiative or (2)_____ ordinance.
(3) _____ year enacted.

IF YOU ANSWERED YES TO QUESTIONS 9, 10, OR 11, OR CHECKED A RESPONSE TO QUESTION 12, PLEASE ANSWER THE FOLLOWING QUESTIONS 13 - 15. IF YOU ANSWERED NO OR DID NOT CHECK A RESPONSE TO QUESTIONS 9-12, GO TO QUESTION 16.

13. PURPOSES OF RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable purposes for all of your city's residential growth control or growth management measures as listed below:

a._____ Air Quality
b._____ Water Quality
c._____ Agricultural Land Preservation
d._____ Open Space/Ridgeline Preservation
e._____ Limitation of Urban Sprawl
f._____ Preservation of Sensitive Environmental Areas
g._____ Reduction in Traffic Congestion
h._____ Sewer Capacity Limitations
i._____ Water Quantity Limitations
j._____ Rapid Population/Housing Growth
k._____ Quantity of High Density Housing Developments
l._____ Quantity of Low Income Housing Developments
m._____ Quality of Life Preservation
n._____ Other: (please specify)_____
o._____ Information not available
p._____ Not applicable - no residential growth control or growth management measures

14. IMPACTS OF RESIDENTIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable impacts of all of your city's residential growth control or growth management measures as listed below:

a._____ Increase in housing costs above inflation rates.
b._____ Reduction in the historical level of new housing development.
c._____ Increase in average commute distances.
d._____ Increase in traffic levels/congestion.
e._____ Decrease in projected traffic levels/congestion.
f._____ Reduction in projected population levels.
g._____ Other. (Please specify):_____
_____
h._____ Information not available.

Appendix A: Glickfeld/Levine Survey (continued)

15. LOW-MODERATE INCOME HOUSING EXEMPTIONS

Does your city exempt low and/or moderate income housing units (i.e., affordable to families with an income of 120% or less of the median) from application of your residential growth control/growth management measures?

a._____ YES. b._____ NO. c._____ Not applicable - no residential growth control or growth management measures.

16. LOW-MODERATE INCOME HOUSING INCENTIVES

Does your city provide any incentives (i.e., density bonus, financial subsidies, etc.) for construction of low and/or moderate income housing units?

a._____ YES. b._____ NO.

If YES, please specify: _____

_____.

- -

III. COMMERCIAL AND/OR INDUSTRIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

17. SQUARE FOOTAGE LIMITATIONS

Does your city have a measure that restricts the amount of square footage that can be built within a given time frame for:

a. Commercial (i.e., retail and office): (1)_____ YES (2)_____ NO

If YES, applicable to: (3) _____ Entire City or (4)_____ Part of City
If YES, adopted by: (5)_____ initiative or (6)_____ ordinance
(7) _____ year enacted.

b. Industrial (light industrial/warehouse): (1)_____ YES (2)_____ NO

If YES, applicable to: (3) _____ Entire City or (4)_____ Part of City.
If YES, adopted by: (5) _____ initiative or (6) _____ ordinance
(7) _____ year enacted.

18. COMMERCIAL/INDUSTRIAL INFRASTRUCTURE REQUIREMENTS

Does your city have a measure that specifically requires adequate service levels (i.e., road capacity/traffic congestion) or service capacity (i.e., water, sewer, etc.) prior to or as a condition of approval of commercial and/or industrial development?

a._____ YES b._____ NO

If YES, adopted by: (1)_____ initiative or (2)_____ ordinance
(3)_____ year enacted.

Appendix A: Glickfeld/Levine Survey (continued)

19. COMMERCIAL/INDUSTRIAL LOCATIONAL RESTRICTIONS

Does your city have a measure which redesignated or rezoned land previously designated for commercial and/or industrial development?

a._____ YES b._____ NO

If YES, applicable to: (1) ____ Entire City or (2) ____ Part of City.
If YES, adopted by: (3)_____ initiative or (4)_____ ordinance
(5)_____ year enacted.
If YES, redesignated to: (6)_____ residential (7)_____ agriculture
(8)_____ other, Specify:_____

20. COMMERCIAL BUILDING HEIGHT LIMITATIONS

Does your city have a measure adopted within the last 5 years, which restricts the permitted height of commercial/office buildings?

a._____ YES b._____ NO

If YES, applicable to: (1)___ Entire City or (2)___ Part of City.

If YES, adopted by: (3)_____ initiative or (4)_____ ordinance
(4)_____ year enacted.

IF YOU ANSWERED YES TO QUESTIONS 17, 18, 19 OR 20, PLEASE ANSWER THE FOLLOWING QUESTIONS 21 - 22. IF YOU ANSWERED NO, GO TO QUESTION 23.

21. PURPOSES OF COMMERCIAL AND/OR INDUSTRIAL GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

Please check all of the applicable purposes for all of your city's commercial/industrial growth control or growth management measures as listed below:

a._____ Air Quality Preservation
b._____ Water Quality Preservation
c._____ Agricultural Land Preservation
d._____ Open Space Preservation
e._____ Limitation of Urban Sprawl
f._____ Preservation of Sensitive Environmental Areas
g._____ Reduction in Traffic Congestion
h._____ Sewer Capacity Limitation
i._____ Water Quantity Limitation
j._____ Quality of Life Preservation
k._____ Other (please specify):_____
l._____ Information Not Available
m._____ Not applicable -- no commercial/industrial growth control or growth management measures.

22. IMPACTS OF COMMERCIAL/INDUSTRIAL GROWTH AND GROWTH MANAGEMENT MEASURES

Please check below all of the applicable impacts of all of your city's commercial/industrial growth control or growth management measures as listed below:

Appendix A: Glickfeld/Levine Survey (continued)

a.______ Increase in the average commute distance
b.______ Increase in traffic levels/congestion
c.______ Decrease in projected traffic levels/congestion
d.______ Reduction in the historical level of new commercial/industrial development.
e.______ Loss of projected new commercial, office or industrial developments/employers
f.______ Reduction in projected employment levels
g.______ Reductions in projected sales tax revenues
h.______ Reductions in projected property tax revenues
i.______ Increase in the historical level of residential development
j.______ Other (please specify):______________________
k.______ Information not available
l.______ Not applicable -- no commercial/industrial growth control or growth management measures

23. JOBS/HOUSING BALANCE

Has your city enacted a policy or ordinance which specifies a desired or required ratio of the number of housing units per the number of jobs within a given area or within the entire city?

a.______ YES b.______ NO

If YES, what is that ratio or percentage:______________________

24. JOBS/HOUSING LINKAGE

Has your city enacted an ordinance to require commercial/industrial developers to pay in-lieu fees for housing development or to construct housing units as a condition of development approval?

a.______ YES b.______ NO

- -

IV. OTHER GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

25. URBAN LIMIT LINE/GREENBELT

Has your city established an urban limit line or greenbelt, other than the boundaries of your city, beyond which residential, commercial and/or industrial development is not currently permitted?

a.________ YES b.________ NO

If YES, adopted by: (1)______ initiative or (2)______ ordinance.
(3)______ year enacted.

26. OTHER MEASURES

Does your city have other existing or pending measures which fall under the definition of growth control or growth management which are not covered under the prior questions?

a.________ YES b.________ NO

Appendix A: Glickfeld/Levine Survey (continued)

If YES, please describe: (1)________________________________

If YES, adopted by: (2)______ initiative or (3)______ ordinance or
(4)______ pending and (5)______ year enacted.

- -

V. MONITORING AND EVALUATION OF GROWTH CONTROL AND GROWTH MANAGEMENT MEASURES

27. MONITORING BENEFITS AND IMPACTS

Has your city established a program for monitoring or measuring the benefits and impacts of your growth control or growth management measures?

a.________ YES   b.________ NO

28. EVALUATING BENEFITS AND IMPACTS

Have any studies been conducted by the city or any other public or private agency or group to analyze the benefits and impacts of your growth control or growth management measures?

a.________ YES   b.________ NO   c.________ Don't Know

If YES, please list the titles and authors of these studies below:

____

____

____

- -

VI. GENERAL COMMENTS

29. Please use the space below to write any comments on growth control and growth management measures which were not included in the prior questions or any comments you may have on this survey.

____

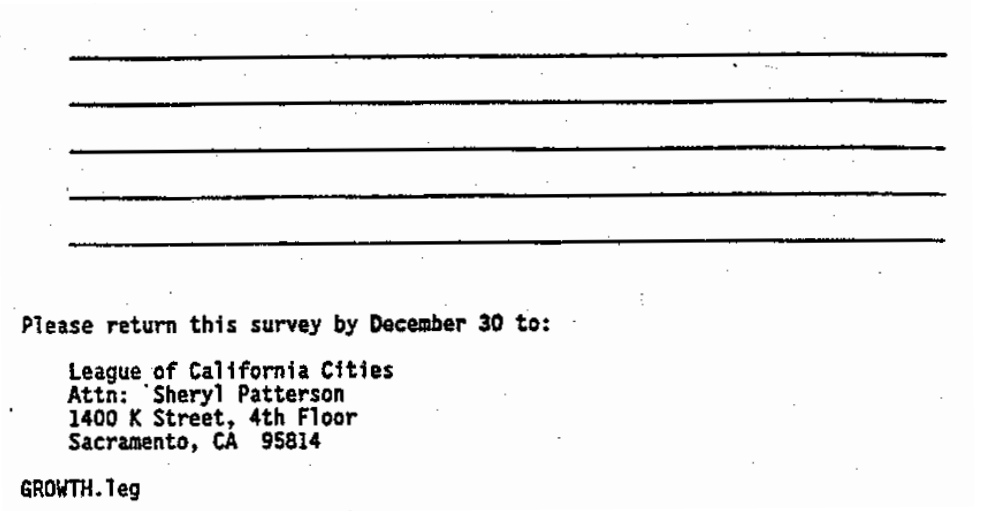
____

____

____

____

Appendix A: Glickfeld/Levine Survey (continued)



Please return this survey by December 30 to:

League of California Cities
Attn: Sheryl Patterson
1400 K Street, 4th Floor
Sacramento, CA 95814

GROWTH.leg

Appendix B: Wharton Survey Instrument

WHARTON URBAN DECENTRALIZATION PROJECT

(with the cooperation of the International City Managers Association)

* * * * * * * * *

DEVELOPMENT REGULATION SURVEY QUESTIONNAIRE

I. JURISDICTION

Name of Jurisdiction _____ Zip Code _____

1. Type of Jurisdiction: [ ] City
   [ ] County
   [ ] Township
   [ ] Town, Village, or Borough
   [ ] Other _____

2. Size of Jurisdiction: _____ Square miles

3. Population

   a) Current Population Estimate _____

   b) Annual Population Growth Rate

   Past 5 years _____ % per year

   Projected next 5 years _____ % per year

II. DEVELOPMENT POLICIES

The following questions concern public policies and actions that affect the supply of land for single-family detached housing. Please give us the benefit of your opinion.

4. What is the main building code utilized by your community?

Building Officials and Code Administrators (BOCA)	[ ]
Southern Building Code (SBCCI)	[ ]
Uniform Building Code (UBC/ICBO)	[ ]
Council of American Building Officials (CABO)	[ ]
Other	[ ]

Appendix B: Wharton Survey Instrument (continued)

5. Please rate the importance of the following factors, on a scale of 1 to 5, to the development process in your community. (1 = not at all important to 5 = very important)

	Not Important 1	2	3	4	Very Important 5	Not Sure
Population Growth	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Population density	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Adequate infrastructure	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Land costs	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Regulation	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Development standards	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Comprehensive planning	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Tax rates	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Quality of life	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other specify	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

6. On a scale of 1 to 5, please rate the effectiveness of each of the following growth management techniques in controlling growth in your community. (1 = not effective to 5 = very effective).

	Not Important 1	2	3	4	Very Important 5	Not Sure
Adequate facilities	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Ordinances	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Building permits	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Population limits	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Exactions/impact fees	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Urban service boundary	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Farm protection	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Zoning ordinance	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other specify	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

7. How did the time to obtain a routine single-family project approval (zoning and subdivision) change during the period from 1983 to 1988?

Shortened considerably	Shortened somewhat	No change	Increased somewhat	Increased considerably	No opinion
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix B: Wharton Survey Instrument (continued)

8. What is the typical amount of time between application for rezoning and issuance of a building permit for the development of:

	Less than fifty single-family units	Fifty or more single-family units	Office building of under 100,000 square ft.
Less than 3 mons.	[ ]	[ ]	[ ]
3 to 6 months	[ ]	[ ]	[ ]
7 to 12 months	[ ]	[ ]	[ ]
13 to 24 months	[ ]	[ ]	[ ]
More than 24 months	[ ]	[ ]	[ ]

9. What is the typical amount of time between application for subdivision approval and the issuance of a building permit (assume proper zoning already in place) for the development of:

	Less than fifty single-family units	Fifty or more single-family units	Office building of under 100,000 square ft.
Less than 3 mons.	[ ]	[ ]	[ ]
3 to 6 months	[ ]	[ ]	[ ]
7 to 12 months	[ ]	[ ]	[ ]
13 to 24 months	[ ]	[ ]	[ ]
More than 24 months	[ ]	[ ]	[ ]

10. How does the acreage of land zoned for the following land uses compare to demand?

	Far more than demanded	More than demanded	About right	Less than demanded	Far less than demanded	No opinion/ not sure
Single Family	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Multi/Family	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Commercial	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Industrial	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

11. How does the current availability of land zoned for the following single-family residential lot sizes compare to demand?

	Far more than demanded	More than demanded	About right	Less than demanded	Far less than demanded	No opinion/ not sure
Less than 4,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4,000 - 8,000 sq.ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8,000 - 10,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
10,000 - 20,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Over 20,000 sq. ft.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix B: Wharton Survey Instrument (continued)

12. How many single-family lots have been approved for development (with full services) for each of the following lot sizes during the past 12 months? If zero, please indicate "0".

	Number of Lots
Less than 4,000 sq. ft.	_____
4,000 - 8,000 sq. ft.	_____
8,000 - 10,000 sq. ft.	_____
10,000 - 20,000 sq. ft.	_____
Over 20,000 sq.ft.	_____

13. How many acres of land have been approved for development (with full services) for each of the following land uses during the last 12 months? If zero, please indicate "0".

	Acreage
Multi-family	_____
Office	_____
Retail	_____
Industrial	_____

14. Approximately what percentage of applications for zoning changes were approved in your community during the past 12 months?

[ ] 100-90% [ ] 89-60% [ ] 59-30% [ ] 29-10% [ ] 10-0%

15. How has the provision of roads and sewers kept pace with growth needs?

Much more than needed	Slightly more than needed	About right	Less than needed	Far less than needed	No opinion/ not sure
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix B: Wharton Survey Instrument (continued)

16. For a typical 2,000 - 3,000 sq. ft. single family home (for example, with 3 bedrooms and 2 baths), please indicate which fees/exactions are imposed in your area and associated characteristics:

	Amount (dollar or set-aside acreage)	Unit of impact (e.g. per sq. ft.)	Assessed at the time of: Zoning	Assessed at the time of: Sub-division	Assessed at the time of: Permit	Paid at the time of: Zoning	Paid at the time of: Sub-division	Paid at the time of: Permit
Schools	___	_____	___	___	___	___	___	___
Parks	___	_____	___	___	___	___	___	___
Sewer	___	_____	___	___	___	___	___	___
Fire Houses	___	_____	___	___	___	___	___	___
Libraries	___	_____	___	___	___	___	___	___
Community Centers	___	_____	___	___	___	___	___	___
Others	___	_____	___	___	___	___	___	___

We do not use fees/exactions _____

17. Which of the following techniques does your community use to regulate the conversion of land from agricultural/open space to residential, commercial or industrial use?

[ ] Agricultural Land Conversion Tax
[ ] Transfer of Development Rights
[ ] Land Banking
[ ] Real Estate Transfer Tax
[ ] Urban Development Boundaries
[ ] Water/Sewer provision Staging Plan
[ ] Historic Preservation Requirements
[ ] Other

18. In your community, how prevalent are the following modes of introducing growth management policies?

	Very prevalent	Somewhat prevalent	Not prevalent	Not sure/do not know
Citizen referendum	[ ]	[ ]	[ ]	[ ]
Legislative action by the municipality	[ ]	[ ]	[ ]	[ ]
Legislative action by the county	[ ]	[ ]	[ ]	[ ]
Legislative action by the state	[ ]	[ ]	[ ]	[ ]
Administrative action by public authorities	[ ]	[ ]	[ ]	[ ]

Appendix B: Wharton Survey Instrument (continued)

19. How much has the cost of lot development, including subdivision, increased from 1983-1988?

[ ] None [ ] 1-9% [ ] 10-19% [ ] 20-29%
[ ] 30-39% [ ] 40-49% [ ] 50% or more

20. How would you describe your jurisdiction?

[ ] High growth area
[ ] Medium growth area
[ ] Slow growth area
[ ] No growth area

21. In your opinion, how do living conditions in this community compare to five years ago?

[ ] Better [ ] Worse
[ ] About the same [ ] Not sure/do not know

22. In your opinion, who should pay for roads, sewers, and schools when a new residential development is built?

[ ] Developers [ ] All residents in the city
[ ] Users [ ] New residents
[ ] Share between developers and new residents

23. Name_____

24. Title_____

25. Organization_____

26. Status: [1] Public
[2] Private
[3] Non Profit

27. Address_____

28. Telephone_____

29. How long have you worked or lived in the community?
_____ years.

30. Check this box if you would like to receive a copy of the results of this survey. [ ]

THANK YOU

November 1989

Appendix B: Wharton Survey Instrument (continued)

WHARTON URBAN DECENTRALIZATION PROJECT

SURVEY OF COUNTY GOVERNMENTS

I. GENERAL INFORMATION

1. Name of County: _____
2. State: _____
3. Size of County: _____ square miles
4. Size of population: _____
5. Number of municipal governments (cities, towns, boroughs, villages, or townships) in county: _____

   Number of school districts in county: _____

   Number of special districts in county: _____

   Number of cities in county with population > 100,000 : _____
6. How would you describe your county? Please check one.

   [ ] High growth area [ ] Medium growth area
   [ ] Slow growth area [ ] No growth area

II. FINANCIAL POLICY AND ADMINISTRATION STRUCTURE

7. TAXATION

   (a) Which governments have the authority to impose a property tax in the county? Please check each that do.

   [ ] County [ ] Municipalities [ ] Special Districts [ ] School Districts

   (b) What is the **effective** county tax rate for each of following types of property? (effective rate = statutory rate x average assessment ratio)

Residential	_____ %	answers should be ≤ 10%
Commercial	_____ %	answers should be ≤ 10%
Industrial	_____ %	answers should be ≤ 10%

Appendix B: Wharton Survey Instrument (continued)

8. IMPACT FEES AND EXACTIONS (set-aside requirements)

(a) Which of the following levels of government impose impact fees or exactions on new residential developments, for each type of service indicated? Please check each government unit that assesses an impact fee.

SCHOOLS:	[ ] County	[ ] Municipalities	[ ] School Districts
PARKS:	[ ] County	[ ] Municipalities	[ ] Special Districts
LIBRARIES/ COMMUNITY CENTERS:	[ ] County	[ ] Municipalities	[ ] Special Districts
PUBLIC SAFETY:	[ ] County	[ ] Municipalities	[ ] Special Districts
WATER:	[ ] County	[ ] Municipalities	[ ] Special Districts
SEWER:	[ ] County	[ ] Municipalities	[ ] Special Districts
ROADS:	[ ] County	[ ] Municipalities	[ ] Special Districts
OTHERS:	[ ] County	[ ] Municipalities	[ ] Special Districts

(b) Please answer this question for only those services financed by impact fees/exactions charged by the county. If there are no county impact fees, then please go on to question 9. Do not include permit fees.

Consider a new development consisting of 100 single family homes (approximately 3 bedrooms, 2 baths, 2500 square feet, half acre lot, 1 car garage). What impact fees or exactions are typically applied? Please fill in 0 if no fees or set asides are required. If dollar fees are substitutable for acreage set-asides, list only the $ amount.

	$ AMOUNT PER UNIT	ACREAGE SET ASIDE PER UNIT
Schools:	_____	_____
Parks:	_____	_____
Libraries/ Community Centers:	_____	_____
Public Safety:	_____	_____
Water:	_____	_____
Sewer:	_____	_____
Roads:	_____	_____
Others:	_____	_____

Appendix B: Wharton Survey Instrument (continued)

9. Debt Structure

(a) General obligation bonds are issued by:

[ ] County [ ] Municipalities
[ ] Special Districts [ ] School Districts

(b) Revenue bonds (pledged against user charges) are issued by:

[ ] County [ ] Municipalities
[ ] Special Districts [ ] School Districts

10. User Fees

(a) Which levels of government impose user charges? Check all relevant levels.

[ ] County [ ] Municipalities
[ ] Special Districts [ ] School Districts

(b) For those user charges utilized by the county, list the item and unit of impact. (Ex. item: Toll roads charge = $.10 per mile)

Item 1: _____ charge = _____
Item 2: _____ charge = _____
Item 3: _____ charge = _____
Item 4: _____ charge = _____

11. To what extent is the financial and production organization of your county influenced by the following factors? On a scale of 1 to 5 (5 = highest grade), please check a number for each factor.

	[1]	[2]	[3]	[4]	[5]
Desire to approximate most cost effective structure	___	___	___	___	___
Desire to mitigate service inequities within county	___	___	___	___	___
Desire to have maximal autonomy by local communities	___	___	___	___	___
Adherence to historical custom	___	___	___	___	___

12. In choosing the county's mix of taxes, fees, debt, user charges and the like, do you consider the relation between your choice and the choices of nearby counties?

[ ] Yes [ ] No

Please comment:

Appendix B: Wharton Survey Instrument (continued)

13. In your opinion, do municipalities within your county and across other counties "compete" for jobs and high income residents by their choice of financing and service provision:

[ ] Yes [ ] No

We would appreciate any elaboration you might make on this point.

14. To what extent do the following characteristics of municipalities influence whether or not they arrange for public services through the county, produce the service in conjunction with other municipalities, or produce the services themselves? (5=highest grade)

	[1]	[2]	[3]	[4]	[5]
Population size	___	___	___	___	___
Average household income	___	___	___	___	___
Access to grants-in-aid	___	___	___	___	___
Desire for autonomy	___	___	___	___	___
Ability to privatize	___	___	___	___	___

II. LAND USE REGULATIONS AND ADMINISTRATION

15. ZONING

(a) Please check the statement below which best describes your county.

[ ] Only the county exercises zoning authority.
[ ] Only municipalities exercise zoning.
[ ] The county zones unincorporated areas only and municipalities exercise separate zoning authority.
[ ] The county zones for some municipalities while other municipalities decide their own zoning.

(b) If your county exercises zoning authority, please check each type of zoning used.

[ ] density restrictions [ ] minimum lot size requirements [ ] allowable use zoning

Appendix B: Wharton Survey Instrument (continued)

16. BUILDING PERMITS

(a) What statement below best describes your county? Please check one.

[ ] Only the county issues building permits.
[ ] Only municipalities issue building permits.
[ ] The county and some (or all) municipalities separately issue building permits.

(b) Please rate the degree to which the following factors influence whether a residential, commercial, or industrial project is awarded a county permit. (1=not important, 5=very important). Please check one number for each.

	[1]	[2]	[3]	[4]	[5]
Quality of building standards	___	___	___	___	___
Traffic impact	___	___	___	___	___
Environmental impact	___	___	___	___	___
Population impact	___	___	___	___	___
Preservation of residential character	___	___	___	___	___

17. LAND CONVERSION

Which of the following techniques does your county use to regulate the conversion of land from agriculture or open space to residential, industrial, or commercial use? Please check all techniques used.

[ ] Agriculture Land Conversion Tax
[ ] Transfer of Development Rights
[ ] Land Banking
[ ] Real Estate Transfer Tax
[ ] Urban Development Boundaries
[ ] Water/Sewer Provision Staging Plan
[ ] Historic Preservation Requirements
[ ] Others _____(Please specify)

IV. ADDRESS INFORMATION

Name: _____

Title: _____

Organization: _____

Street/box: _____

City: _____ State: _____ Zip: _____

Telephone: _____

THANK YOU !

Appendix C: Census Building Permit Survey Instruments

DUE DATE: OMB No. 0607-0094: Approval Expires 02/29/2004

FORM **C-404** (5-24-2002)

REPORT OF PRIVATELY-OWNED RESIDENTIAL BUILDING OR ZONING PERMITS ISSUED

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Please read instructions on the back of this form. For further assistance, call **1–800–845–8244** or **email us at mcd@census.gov**

Please mail OR fax this form to:

U.S. Census Bureau
1201 East 10th Street
Jeffersonville, IN 47132–0001
Fax: 1–800–438–8040

1. PERIOD IN WHICH PERMITS WERE ISSUED –

2. GEOGRAPHIC COVERAGE

If your building permit system had a coverage change, please mark (X) in appropriate box, provide an explanation in Section 6, then continue completing the form in Section 3.

051 ☐ Permits no longer required
052 ☐ Permit office has merged with another permit jurisdiction
053 ☐ Permit office has split into two or more jurisdictions
054 ☐ Permit office is now responsible for additional land outside of its original boundaries

SAMPLE

(Please correct any errors in name, address, and ZIP Code)

3. NEW RESIDENTIAL BUILDINGS

100

a. If no new residential permits were issued during this period, mark an (X) in the box and proceed to Section 4 → ☐

Type of structure (1)	Item No. (2)	Number of Buildings (3)	Number of Housing units (4)	Valuation of construction *(Omit cents)* (5)
b. Single-family houses, attached and detached *[Exclude manufactured (mobile) homes.]*	101			
c. Two-unit buildings	103			
d. Three- and four-unit buildings	104			
e. Five-or-more unit buildings	105			
f. TOTAL – *Sum of 101–105*	109			

4. ADDITIONS, ALTERATIONS AND RENOVATIONS TO RESIDENTIAL STRUCTURES	Item No. (1)	Number of permits (2)	Valuation of construction *(Omit cents)* (3)
	434		

5. INDIVIDUAL RESIDENTIAL PERMITS AUTHORIZING CONSTRUCTION VALUED AT $500,000 OR MORE
(If more space is needed, please attach a separate sheet.)

Description (1)	Name and address of owner or builder (2)	Buildings (3)	Housing units (4)	Valuation of construction (5)
a. Kind of building 110 Site address 111				
b. Kind of building 120 Site address 121				

6. COMMENTS *(Continue on a separate sheet)*
600

7. PERSON TO CONTACT REGARDING THIS REPORT

a. Name 700

b. Telephone 710 — Area code | Number

c. Fax 720 — Area code | Number

d. E-mail address 730

e. Internet web address 740

See instructions on reverse side.

Appendix C: Census Building Permit Survey Instruments (continued)

INSTRUCTIONS FOR COMPLETING FORM C-404, "REPORT OF PRIVATELY-OWNED RESIDENTIAL BUILDING OR ZONING PERMITS ISSUED"

Public reporting burden for this collection of information is estimated to vary from 2 to 30 minutes per response. The average is 10 minutes per response for those that report monthly and 25 minutes for those that report annually. This includes time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Paperwork Project 0607-0094, U.S. Census Bureau, 4700 Silver Hill Road, Stop 1500, Washington, DC 20233-1500. You may e-mail comments to paperwork @census.gov; use "Paperwork Project 0607-0094" as the subject. This agency may not collect this information, and you are not required to complete this form, unless it displays a current valid Office of Management and Budget control number.

GENERAL INSTRUCTIONS FOR EACH SECTION

1. **PERIOD PERMITS WERE ISSUED** – Include all privately-owned residential permits which were authorized during the **month** or **year** shown.

2. **GEOGRAPHIC COVERAGE**

051 **Discontinue** – A building permit is no longer a requirement in your geographic coverage area.

052 **Merger** – Permit office has stopped issuing permits because it has merged with another permit-issuing jurisdiction. That new office has taken over the responsibility of issuing building permits for your office.

053 **Split** – Your permit office no longer covers a particular jurisdiction because that area now issues its own building permits.

054 **Annexed land area** – Permit office is now responsible for additional land outside of its original boundaries.

3. **NEW RESIDENTIAL BUILDINGS** – Summarize information for number of buildings, number of housing units, and valuation of construction as shown on the building or zoning permit. Enter the valuation as shown on the permit. If no valuation is listed, enter your best estimated value.

Item 101 – Single-family houses, attached and detached – Include all new privately-owned attached and detached single-family houses. Include attached single-family houses known commonly as townhouses or row houses where (1) each unit is separated from adjoining units by a wall that extends from ground to roof, (2) no unit is above or below another unit, and (3) each unit has separate heating and separate utility meters.

Item 103 – Two-unit buildings – Include all new privately-owned residential buildings that only contain 2 housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

Item 104 – Three and four-unit buildings – Include all new privately-owned residential buildings that only contain 3 or 4 housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

Item 105 – Five or more unit buildings – Include all new privately-owned residential buildings that only contain 5 or more housing units, and do not meet the definition of attached single-family as shown under Item 101. All units must be stacked or share common utilities.

Item 109 – Total – Sum of the data reported in Items 101 through 105, (101+103+104+105) for housing units, and valuation of construction. **Do not** total buildings.

4. **ITEM 434 – ADDITIONS, ALTERATIONS, AND RENOVATIONS** – Summarize information for number of permits and valuation as shown on the building permit for all additions, alterations and renovations to residential properties. Enter the valuation as shown on the permit. If no valuation is listed, enter your best estimated value.

Also include residential permits for property outside residential structure, such as sheds, fences, decks and pools and replacements, such as reroofing, residing, and new windows.

Exclude repairs that only keep the property in ordinary working condition.

5. **INDIVIDUAL RESIDENTIAL PERMITS AUTHORIZING CONSTRUCTION VALUED AT $500,000 OR MORE** – Please enter data in this section for individual permits valued at $500,000 or more included in Sections 3 and 4 above. If more than two such permits were issued, attach a separate sheet.

6. **COMMENTS** – Enter any explanations from Section 2, miscellaneous notes or questions. Include any revisions to data entered on previous forms.

7. **CONTACT INFORMATION** – Please fill in any blank areas or make any corrections to information already entered in these fields. Enter the Internet web address for your permit office, if applicable.

INSTRUCTIONS FOR CLASSIFYING RESIDENTIAL BUILDINGS

RESIDENTIAL BUILDINGS

Residential buildings are buildings containing one or more housing units. **A housing unit is a house, an apartment, a group of rooms or a single room intended for occupancy as separate living quarters.** Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have a direct access from the outside of the building or through a common hall.

PERMITS TO INCLUDE

- **privately-owned residential buildings**, which include all residential buildings owned by a private company or an individual during the period of construction
- housing for the elderly, such as assisted living facilities, that do not have 24-hour skilled nursing care
- "turnkey" housing, which is housing that will be sold to a local public housing authority when completed
- all housing built by nonprofit organizations
- buildings manufactured partially off-site and transported and assembled at the construction site, such as prefabricated, paneled, pre-cut, sectional and modular (these do not include "mobile-HUD inspected" homes)
- foundation and interior finishing permits only when issued separately and a valuation of construction is shown (Include data on the proper line item depending on the number of housing units in the intended superstructure. Enter zero for the buildings and units in Items 101–105. Enter number of permits issued for additions and alterations to residential buildings in Item 434.)
- additions and alterations to residential buildings and on property outside residential structures
- major replacements, such as roof, siding, doors, and windows

PERMITS TO EXCLUDE

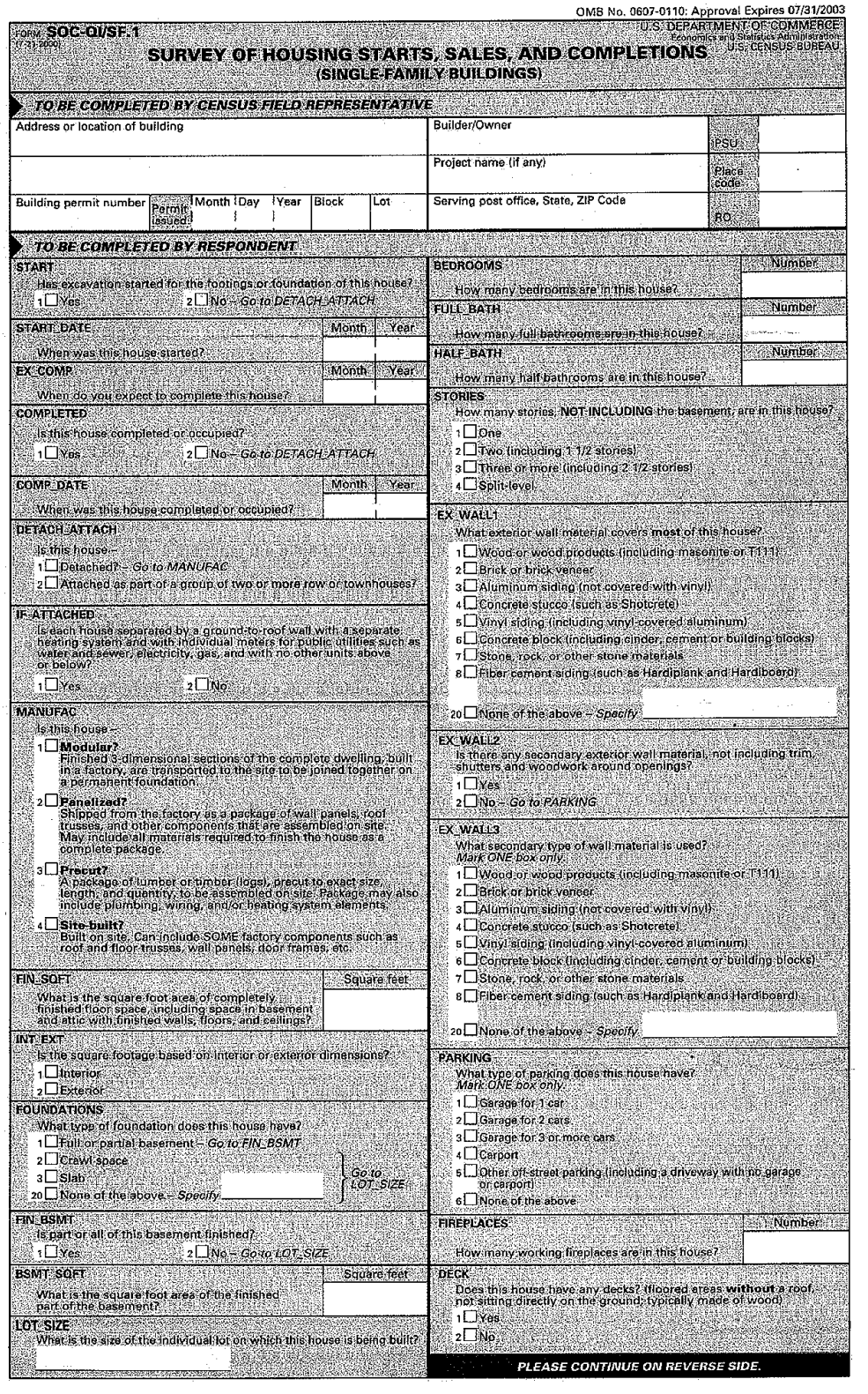
- publicly-owned buildings
- **manufactured (mobile-HUD inspected) homes** including related foundations and pads
- group quarters, such as dormitories, jails, nursing homes, etc.
- hotels/motels
- landscaping
- nonresidential buildings, other than structures on residential property such as sheds and garages which are included in Item 434.
- demolitions
- moved or relocated buildings
- maintenance and repair, which are expenses to keep a property in ordinary working condition
- farm buildings, such as silos, barns, etc.

MISCELLANEOUS CLASSIFICATION INSTRUCTIONS

- Enter a building in only one category. If you cannot determine a category, please call our staff on 1–800–845–8244.
- If a building has mixed residential and nonresidential use, enter the housing units based on the residential portion of the building. Please estimate the valuation based on the residential portion of the building only.
- Classify all buildings that are being totally re-built on an existing foundation as new construction.
- Type of ownership (e.g. condominium, cooperative, timeshare, etc.) is **NOT** considered when classifying a building.

FORM C-404 (5-24-2002)

Appendix C: Census Building Permit Survey Instruments (continued)



OMB No. 0607-0110: Approval Expires 07/31/2003

FORM SOC-QI/SF-1 (7-31-2000)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

SURVEY OF HOUSING STARTS, SALES, AND COMPLETIONS
(SINGLE-FAMILY BUILDINGS)

TO BE COMPLETED BY CENSUS FIELD REPRESENTATIVE

Address or location of building

Builder/Owner

FSU

Project name (if any)

Place code

Building permit number | Permit issued: Month Day Year | Block | Lot

Serving post office, State, ZIP Code

RO

TO BE COMPLETED BY RESPONDENT

START
Has excavation started for the footings or foundation of this house?
1 ☐ Yes 2 ☐ No – *Go to DETACH_ATTACH*

START_DATE Month Year
When was this house started?

EX_COMP Month Year
When do you expect to complete this house?

COMPLETED
Is this house completed or occupied?
1 ☐ Yes 2 ☐ No – *Go to DETACH_ATTACH*

COMP_DATE Month Year
When was this house completed or occupied?

DETACH_ATTACH
Is this house –
1 ☐ Detached? – *Go to MANUFAC*
2 ☐ Attached as part of a group of two or more row or townhouses?

IF_ATTACHED
Is each house separated by a ground-to-roof wall with a separate heating system and with individual meters for public utilities such as water and sewer, electricity, gas, and with no other units above or below?
1 ☐ Yes 2 ☐ No

MANUFAC
Is this house –
1 ☐ **Modular?** Finished 3-dimensional sections of the complete dwelling, built in a factory, are transported to the site to be joined together on a permanent foundation.
2 ☐ **Panelized?** Shipped from the factory as a package of wall panels, roof trusses, and other components that are assembled on site. May include all materials required to finish the house as a complete package.
3 ☐ **Precut?** A package of lumber or timber (logs), precut to exact size, length, and quantity, to be assembled on site. Package may also include plumbing, wiring, and/or heating system elements.
4 ☐ **Site-built?** Built on site. Can include SOME factory components such as roof and floor trusses, wall panels, door frames, etc.

FIN_SQFT Square feet
What is the square foot area of completely finished floor space, including space in basement and attic with finished walls, floors, and ceilings?

INT_EXT
Is the square footage based on interior or exterior dimensions?
1 ☐ Interior
2 ☐ Exterior

FOUNDATIONS
What type of foundation does this house have?
1 ☐ Full or partial basement – *Go to FIN_BSMT*
2 ☐ Crawl space
3 ☐ Slab
20 ☐ None of the above – *Specify* _____
Go to LOT_SIZE

FIN_BSMT
Is part or all of this basement finished?
1 ☐ Yes 2 ☐ No – *Go to LOT_SIZE*

BSMT_SQFT Square feet
What is the square foot area of the finished part of the basement?

LOT_SIZE
What is the size of the individual lot on which this house is being built?

BEDROOMS Number
How many bedrooms are in this house?

FULL_BATH Number
How many full bathrooms are in this house?

HALF_BATH Number
How many half bathrooms are in this house?

STORIES
How many stories, **NOT INCLUDING** the basement, are in this house?
1 ☐ One
2 ☐ Two (including 1 1/2 stories)
3 ☐ Three or more (including 2 1/2 stories)
4 ☐ Split-level

EX_WALL1
What exterior wall material covers **most** of this house?
1 ☐ Wood or wood products (including masonite or T111)
2 ☐ Brick or brick veneer
3 ☐ Aluminum siding (not covered with vinyl)
4 ☐ Concrete stucco (such as Shotcrete)
5 ☐ Vinyl siding (including vinyl-covered aluminum)
6 ☐ Concrete block (including cinder, cement or building blocks)
7 ☐ Stone, rock, or other stone materials
8 ☐ Fiber cement siding (such as Hardiplank and Hardiboard)
20 ☐ None of the above – *Specify* _____

EX_WALL2
Is there any secondary exterior wall material, not including trim, shutters and woodwork around openings?
1 ☐ Yes
2 ☐ No – *Go to PARKING*

EX_WALL3
What secondary type of wall material is used?
Mark ONE box only.
1 ☐ Wood or wood products (including masonite or T111)
2 ☐ Brick or brick veneer
3 ☐ Aluminum siding (not covered with vinyl)
4 ☐ Concrete stucco (such as Shotcrete)
5 ☐ Vinyl siding (including vinyl-covered aluminum)
6 ☐ Concrete block (including cinder, cement or building blocks)
7 ☐ Stone, rock, or other stone materials
8 ☐ Fiber cement siding (such as Hardiplank and Hardiboard)
20 ☐ None of the above – *Specify* _____

PARKING
What type of parking does this house have?
Mark ONE box only.
1 ☐ Garage for 1 car
2 ☐ Garage for 2 cars
3 ☐ Garage for 3 or more cars
4 ☐ Carport
5 ☐ Other off-street parking (including a driveway with no garage or carport)
6 ☐ None of the above

FIREPLACES Number
How many working fireplaces are in this house?

DECK
Does this house have any decks? (floored areas **without** a roof, not sitting directly on the ground, typically made of wood)
1 ☐ Yes
2 ☐ No

PLEASE CONTINUE ON REVERSE SIDE.

Appendix C: Census Building Permit Survey Instruments (continued)

PATIO
Does this house have any patios? – (floored areas with **or** without a roof, sitting **directly** on the ground. – *Do not include small concrete pads at entryways.*)
1 ☐ Yes
2 ☐ No

PORCH
Does this house have any porches? (floored areas **with** a roof, enclosed or open, not sitting directly on the ground. – *Do not include small covered entryways.*)
1 ☐ Yes
2 ☐ No

HEAT_SOURCE
What energy source will be used **most** for heating this house?
1 ☐ Electricity
2 ☐ Natural gas (from underground pipes)
3 ☐ Bottled gas (including propane or tank gas)
4 ☐ Oil (including heating oil or kerosene)
5 ☐ Wood (including pellets)
6 ☐ Solar
7 ☐ Coal
8 ☐ No heat
20 ☐ None of the above – *Specify*: _____

HEAT_SYSTEM
What heating system will be used **most** in this house?
1 ☐ Heat pump, air source (including reverse-cycle air conditioners)
2 ☐ Heat pump, ground source (including closed-loop geothermal systems)
3 ☐ Forced-air furnace **without** heat pump
4 ☐ Hot water or steam (including hydronic systems)
5 ☐ Electric baseboard (including heat strips, wall panels, radiant heat)
6 ☐ Fireplace with insert
7 ☐ Stove that burns coal or wood
8 ☐ Non-portable room heater that burns liquid fuel and is connected to a flue, vent, or chimney to remove smoke/fumes
9 ☐ Passive solar system that uses a "thermal storage wall," "sunspace," or "solar greenhouse"
20 ☐ None of the above – *Specify*: _____

AIR_COND
Does this house have central air-conditioning?
1 ☐ Yes
2 ☐ No

SALES_CATEGORY
Is this house being built –
1 ☐ for sale, or is it already sold? – *Go to CONDO*
2 ☐ for the owner by a single general contractor on the owner's land? – *Go to CONTRACT_PRICE*
3 ☐ on the owner's land entirely by the owner, or by the owner acting as general contractor? } *Go to FINANCING*
4 ☐ for rent? }

CONTRACT_PRICE
What is the contract price for this house?
$ _____ – *Go to FINANCING*

CONDO
Is this house part of a condominium project?
1 ☐ Yes
2 ☐ No

DEPOSIT
Was a deposit taken or a sales agreement signed for this house?
1 ☐ Yes
2 ☐ No – *Go to INTEND_PRICE*
3 ☐ This is a MODEL home – *Go to INTEND_PRICE*

DEPOSIT_DATE
When was the deposit taken or sales agreement signed?
Month: _____ Year: _____

SALES_PRICE
What is the sales price?
$ _____

CLOSING_COSTS
Does the sales price include or exclude closing costs?
1 ☐ Includes
2 ☐ Excludes

LOT_VALUE
What is the value of the individual lot (including improvements such as grading, paving, installation of utilities, etc.)?
$ _____ – *Go to FINANCING*

INTEND_PRICE
What will the sales price be?
$ _____ – *Leave FINANCING blank*

FINANCING
What type of financing was or will be arranged, or will the house be paid for entirely with cash?
1 ☐ Conventional
2 ☐ FHA
3 ☐ VA
4 ☐ Farmer's Home
5 ☐ Pay cash
6 ☐ Habitat for Humanity
7 ☐ Loan from an individual
8 ☐ State or local government mortgage-backed bonds
20 ☐ None of the above – *Specify*: _____

Your Census Representative

NOTES

PLEASE RETAIN THIS FORM FOR YOUR USE WHEN CONTACTED BY YOUR CENSUS REPRESENTATIVE.

FORM SOC-QI/SF.1 (7-21-2000)

FORM **SOC-QI/MF.1**
(7-18-2000)

SURVEY OF HOUSING STARTS AND COMPLETIONS
(Multiunit Buildings)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

TO BE COMPLETED BY CENSUS FIELD REPRESENTATIVE

PSU
Place code
RO

Builder/Owner	Project name (if any)	Serving post office, State, ZIP Code

	1	2	3	4
Address and identification of building				
Building permit number				
TO BE COMPLETED BY RESPONDENT				
START Has excavation started for the footings or foundation of this building?	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*
START_DATE When was this building started?	Month / Year	Month / Year	Month / Year	Month / Year
EX_COMP When do you expect at least half the units to be available for occupancy?	Month / Year	Month / Year	Month / Year	Month / Year
COMPLETED Are at least half of the units in this building available for occupancy?	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*	1 ☐ Yes 2 ☐ No – *Go to UNITS_A*
COMP_DATE When were half of the units in this building available for occupancy?	Month / Year	Month / Year	Month / Year	Month / Year
UNITS_A How many housing units are in this building?	Units	Units	Units	Units
FLOORS_A How many floors are in this building, excluding the basement unless it will contain two or more units?				
ATTACHED_A *(For buildings with 3 floors or less)* Are any of the units attached side-by-side, with no other units above or below?	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*	1 ☐ Yes – *Continue* 2 ☐ No – *Go to BEDROOMS_A*
HOW_MANY How many?	Units	Units	Units	Units
IF_ATTACH_A Is each unit separated by a ground-to-roof wall with a separate heating system, and with individual meters for public utilities such as water/sewer, electricity, gas, etc.?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
BEDROOMS_A How many units will have –				
no separate bedrooms (efficiency)?	Efficiency	Efficiency	Efficiency	Efficiency
one bedroom?	1 bedroom	1 bedroom	1 bedroom	1 bedroom
two bedrooms?	2 bedrooms	2 bedrooms	2 bedrooms	2 bedrooms
three bedrooms or more?	3+ bedrooms	3+ bedrooms	3+ bedrooms	3+ bedrooms
BATHS_A How many units will have –				
one bathroom?	1 bath	1 bath	1 bath	1 bath
one and a half bathrooms?	1 1/2 baths	1 1/2 baths	1 1/2 baths	1 1/2 baths
two bathrooms or more?	2+ baths	2+ baths	2+ baths	2+ baths

Appendix C: Census Building Permit Survey Instruments (continued)

one and a half bathrooms? two bathrooms or more?	1 1/2 baths 2+ baths	1 1/2 baths 2+ baths	1 1/2 baths 2+ baths	1 1/2 baths 2+ baths
FIN_SQFT_A What is the total square foot area of all floors in this building, excluding unfinished basements, laundry or boiler rooms, garage space, etc.?	Square feet	Square feet	Square feet	Square feet
MANUFAC_A Is this building – **1–Modular?** Finished 3-dimensional sections of the complete dwelling, built in a factory, are transported to the site to be joined together on a permanent foundation. **2–Panelized?** Shipped from the factory as a package of wall panels, roof trusses, and other components that are assembled on site. May include all materials required to finish the house as a complete package. **3–Site-built?** Built on site. Can include SOME factory components such as roof and floor trusses, wall panels, door frames, etc.	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built	1 ☐ Modular 2 ☐ Panelized 3 ☐ Site-built
AIR_COND_A Does this building have air-conditioning?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
HEAT_SRC_A What principal energy source will be used for heating this building?	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* *Go to FPLACE_A*	1 ☐ Electricity 2 ☐ Gas (including propane, natural, bottled, tank, or butane gas) 4 ☐ Oil (including heating oil or kerosene) 8 ☐ No heat provided 20 ☐ None of the above – *Specify* *Go to FPLACE_A*
HEAT_PUMP_A Will this building have any heat pumps?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
FPLACE_A How many units in this building have a built-in fireplace with a flue?	Units	Units	Units	Units
PARKING_A Are there parking spaces in or under the building?	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No	1 ☐ Yes 2 ☐ No
OWNERSHIP_A Are the units in this building – 1–For rent? 2–For sale as condominiums or cooperatives? 3–For sale, not as condominiums or cooperatives?	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives	1 ☐ For rent 2 ☐ For sale as condominiums or cooperatives 3 ☐ For sale, not as condominiums or cooperatives
OTHER_BLDGS Have other permits been taken out previously for residential buildings in this project? 1 ☐ Yes – Approximately when did this last occur? → Month / Year 2 ☐ No	NOTES		Your Census Representative	

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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.[1] 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).[2]

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).[3]

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.[4] 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.[5] 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.[6] 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.[7] 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).[8] 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.[9] 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).[10] 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).[11] Impact fees can be designed, however, to more nearly approach marginal cost pricing (Blewett and Nelson, 1988).[12] 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).[13]

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).[14] 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).[15] 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[16] tools in general are used for exclusionary purposes is mixed.[17] 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.[18] 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.[19]

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.[20] 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).[21]

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.[22]

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.[23] 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.[24] Yinger started his analysis of the incidence of impact fees by assuming that impact fees will fund infrastructure that consumers value.[25] 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.[26] 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.[27] 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.[28] 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.[29] Under these circumstances, impact fees would result in a capital gain for existing residents.[30]

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.[31] 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.[32] 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).[33] 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.

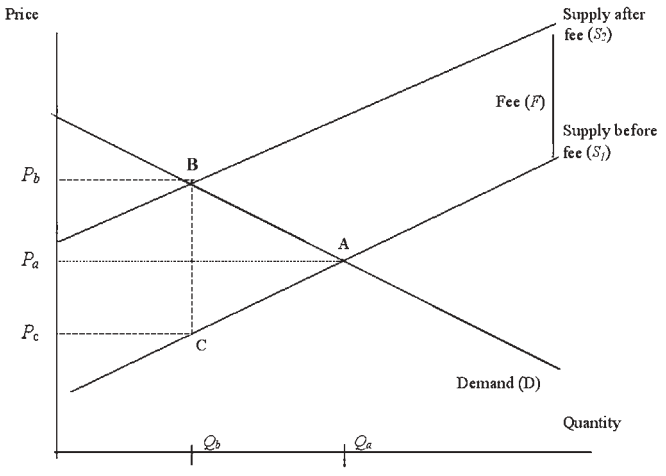
Exhibit 1 illustrates the problem. The horizontal axis represents the quantity of housing supplied, and the vertical axis represents the price per unit of that housing. The S_1 and D curves in exhibit 1 indicate, respectively, the supply and demand for new housing in the jurisdiction before the impact fee is imposed.[34] 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.[35] 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)[36] 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.[37]

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

<table>
<tr><th rowspan="2">Competitiveness of Housing Market</th><th colspan="3">Uniqueness of Exaction</th></tr>
<tr><th colspan="2">Unusual Exaction</th><th>Widespread Exaction</th></tr>
<tr><td rowspan="2">Fungible Jurisdiction (competitive housing market and elastic housing demand)</td><td colspan="2">Landowner, developer, or owners of capital bear fee in short term; consumers may pay higher prices in long run.</td><td rowspan="2">Consumers pay or demand less housing across all jurisdictions (if demand drops across all jurisdictions, landowners will bear some of the cost).</td></tr>
<tr><td>Elastic land supply: 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”).</td><td>Inelastic (and limited) land supply: 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.</td></tr>
<tr><td></td><td colspan="2">Unusual Exaction</td><td>Widespread Exaction</td></tr>
<tr><td rowspan="2">Unique or Free-Standing Jurisdiction (inelastic housing demand)</td><td colspan="2">Consumer or landowner pays</td><td>Consumer pays.</td></tr>
<tr><td>Elastic land supply: Consumer will pay most of fee.</td><td>Inelastic (and limited) land supply: Consumer again will pay most of the fee, or developers will provide higher end housing.</td><td></td></tr>
</table>

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.[38]

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).[39] 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).[40]

In the fourth scenario, where there is a *unique jurisdiction and a widespread exaction*, the consumer will be even more likely to pay.[41] 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.[42] 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.[43]

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).[44] 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.[45] 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.[46]

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).[47] 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.[48] 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.[49] They then used those estimations to calculate the price of a new, "constant-quality" house for each city in each year.[50] 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.[51]

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,[52] a time variable for the month the house was sold, and a dummy variable for the time the impact fee was in effect.[53] 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).[54] 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).[55] 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).[56]

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.[57] 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.[58]

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.[59] 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.[60] 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 where higher.[61] 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.[62] 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.[63] 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.[64] 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.[65] 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.[66] 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.[67]

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.[68] 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).[69] 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.[70] 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.[71] 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).[72] 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).[73]

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.[74]

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.[75] 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.[76]

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.[77]

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 indepth 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, policymakers, 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; Clingermayer (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 (R2 = 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 multifamily 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.

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Environmental Regulations and the Housing Market: A Review of the Literature

Katherine A. Kiel
College of the Holy Cross
Department of Economics

Abstract

Environmental regulations in the United States are intended to improve the quality of the environment; preserve ecosystems, including wildlife; and protect human health. This article considers the impact of regulations such as the Clean Air Act Amendments; the Clean Water Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the Endangered Species Act; the National Environmental Policy Act; and state and local regulations (including "smart growth" controls) on the U.S. housing market. The extent of the impacts could be measured by looking at changes in house prices and the quantity of housing available.

Whether or not environmental regulations are placed directly on the suppliers of housing, it is possible that these regulations will have an impact on the housing market. Environmental laws can impact the supply of land, a key input in the production of housing. Laws can also change the prices of other inputs into the construction of housing (for example, lumber) and can affect the supply of housing in that way. Laws can impact the supply of housing if they increase the amount of time necessary to build housing units or if they increase the possibility of litigation faced by housing developers. On the other hand, if the regulations are effective, they can impact the demand for housing by changing the quality of available housing. All these effects can lead to changes in both the price and the quantity of housing in the market.

The academic literature has focused on the increase in the demand for housing due to improvements in environmental quality. Very few studies attempt to estimate the impact on the supply of land or housing. Some researchers examine the issue by interviewing developers and public officials and asking for estimates of cost impacts (for example, James and Muller, 1977). Others use statistical techniques to control for factors that impact sales prices so that the effect of the regulations can be more clearly seen (for example, Frech and Lafferty, 1984). Generally, these studies find that regulations restricting possible uses of undeveloped land lead to decreases in the prices of that land (for example, Guttery, Poe, and Sirmans, 2000), and land near restricted areas can increase in value due to increased demand (for example, Beaton and Pollock, 1992).

To better understand the impact of environmental regulations on the housing market, research must be extended in several directions. Studies that use statistical techniques to examine the housing market both before and after regulations are put in place are necessary. Although the data requirements of such studies are large, the results will estimate the extent of the increase in prices due solely to the regulations. If policy analysts want to know whether the increase is due to a decrease in housing supply, an increase in housing demand, or a combination of the two, the results from such studies can be used in a "second stage" estimation of separate housing supply and demand equations.

Research also needs to estimate the amount of land removed from the housing market due to environmental restrictions. Landis (2001) has undertaken such a study in California; his work should be extended to other areas. He demonstrated the importance of estimating how much of the land that is removed would be "developable," as well as how the removal impacts the ability of the area under study to grow.

Finally, research should examine the general equilibrium impacts of environmental laws on all markets because the housing market also is affected by the labor market. Riddel (2001) estimated this type of model and showed that open space purchases in Colorado increased the demand for housing by more than they reduced the supply of housing.

If regulations lead to increases in housing prices that make housing unaffordable, the next step would be to consider how to make the regulations less costly or how to subsidize those most affected by the price increases.

Introduction

Environmental regulations in the United States are intended to improve the quality of the environment; preserve ecosystems, including wildlife; and protect human health. These regulations are often written without considering how much they will cost; some regulations are explicitly required to ignore costs. In evaluating current regulations as well as future laws, both the costs and the benefits must be considered. Only in this way can careful decisions be made on which regulations will be enacted and enforced. A decision may be made to ignore the costs, but in doing so, decisionmakers must be mindful of what is being sacrificed as well as what is being gained.

Some environmental regulations impact the housing market by affecting the supply of developable land or by restricting its use. Other environmental regulations focus not on the land market but rather on polluters such as factories, utility plants, and automobiles. Polluters may, however, attempt to pass the costs placed on them to other consumers, including housing developers and landowners. Thus, environmental regulations can impact the cost of supplying housing.

Because environmental regulations can be local in nature, homeowners often will experience the benefits. Thus, researchers often examine changes in the price of housing due to regulations and then use those changes to quantify the benefits received. One can see that increases in the price of housing can be due to decreases in supply and/or increases in demand for housing. The literature has yet to separate those two impacts in a way that the increases due to changes in supply of housing can be measured separately from those due to changes in demand for housing.

This article surveys environmental regulations in the United States with a particular focus on how the housing market is impacted. It first looks at the current regulations, then at the theoretical impact of the regulations on the housing market, and next at empirical studies that attempt to quantify the impact. After a discussion of what the literature examines, the following sections look at the gaps in the literature, and then make some proposals about how future research could be directed for a clearer understanding of the overall impact of regulations on the housing market.

Environmental Regulations in the United States

Federal regulations intended to improve the quality of the environment began in the United States with the Rivers and Harbor Act of 1899. This law forbade the dumping of refuse into any navigable water in the United States. Other laws have followed, especially since the U.S. Environmental Protection Agency (EPA) was created in 1970. State and local governments also have passed laws that regulate the use of air, water, wildlife, and other natural resources.

Environmental regulations in the United States generally focus on a single media, such as air or water. The EPA typically oversees federal regulations, although other agencies, such as the U.S. Army Corps of Engineers (Corps), also can be responsible. The overarching goal of these regulations is to protect the health and well-being of individuals as well as plants and animals.

The quality of air in the United States is the focus of the Clean Air Act (CAA) of 1970, which was most recently amended in 1990 by the Clean Air Act Amendments (CAAA). The goal of the CAA and its amendments is to ensure that the National Ambient Air Quality Standards are met. These standards are set to protect the health of all individuals in the United States. The CAAA control the amount of pollution emitted by both stationary and mobile sources, with an estimated 27,000 stationary sources of air and more than 200 million mobile sources (Tietenberg, 2001). Currently, the regulations typically work through command and control policies, such as requirements on the quantity of emissions from automobiles. Some regulations, however, do allow for more market-based regulations, such as emissions permits in the case of certain pollutants in certain areas (for example, sulfur dioxide trading programs). The regulations are believed to have been effective in reducing air pollution in the United States because air quality has generally improved since 1970 (see exhibits 1-4).

Water pollution is controlled under the Clean Water Act (CWA) of 1972 and the reauthorizations of that act in 1977 and 1987. The three main goals of the CWA are as follows:

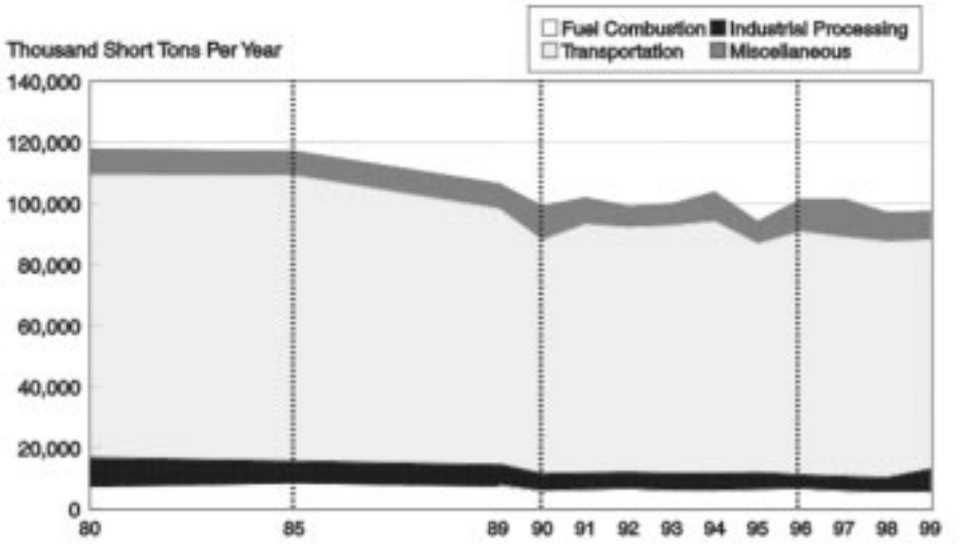
- Elimination of pollution discharges into all navigable waters.
- Ability of all surface waters to be able to support recreational activities.
- Elimination of the discharge of toxic pollutants into water.

These goals are typically met by effluent limitations on identifiable sources and the funding of the construction of publicly owned water treatment plants. It is estimated that more than 60,000 sources of effluent are regulated (Tietenberg, 2001). Water quality has generally improved in the United States since the 1970s, even though the regulation of nonpoint sources has not been stressed.

Drinking water in the United States is legislated by the Safe Drinking Water Act in 1974 and its 1977, 1986, and 1996 amendments, which set standards for the quality of drinking water. The amendments also include funds to help states and localities maintain the quality of their local water purification and testing infrastructure.

Exhibit 1

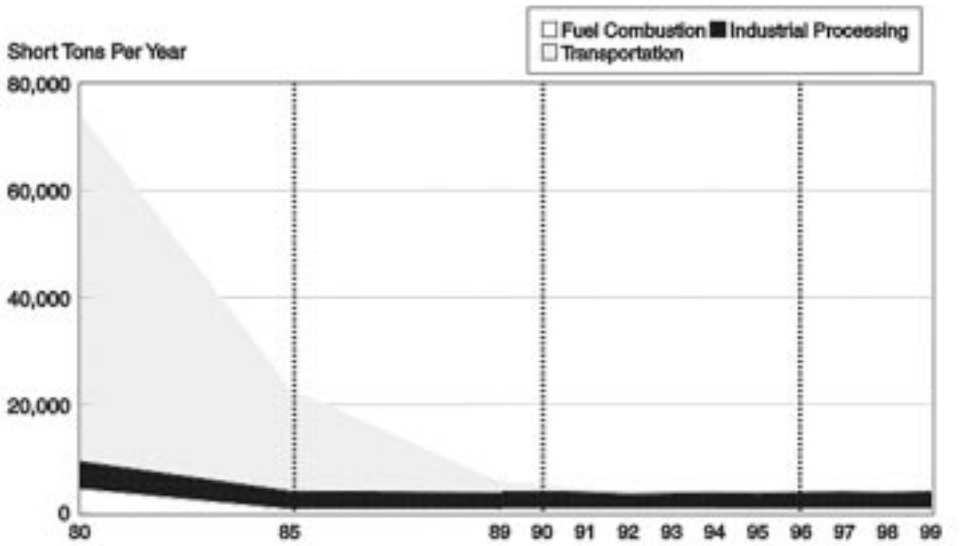
National Total Carbon Monoxide Emissions, 1980–99



Source: U.S. Environmental Protection Agency, 2001a: 14

Exhibit 2

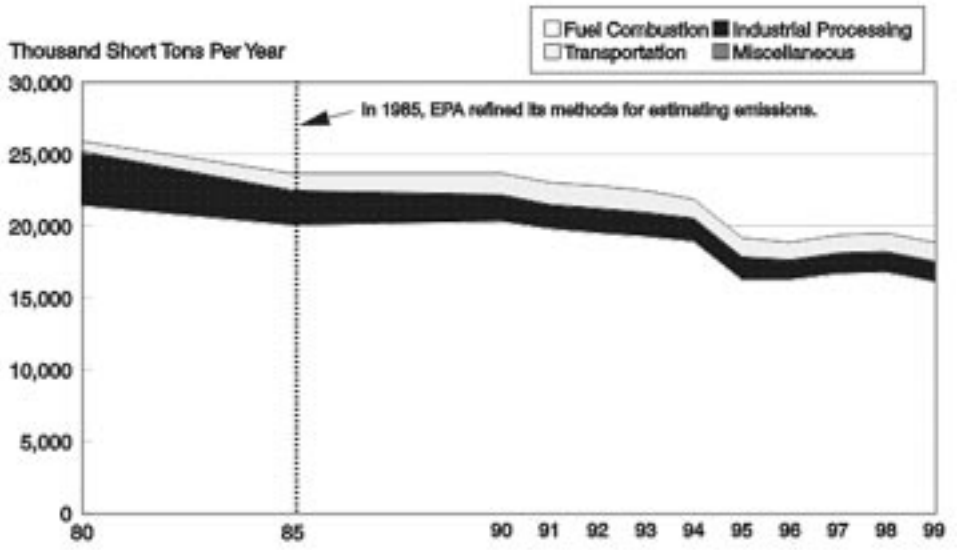
National Total Lead Emissions Trend, 1980–99



Source: U.S. Environmental Protection Agency, 2001a: 20

Exhibit 3

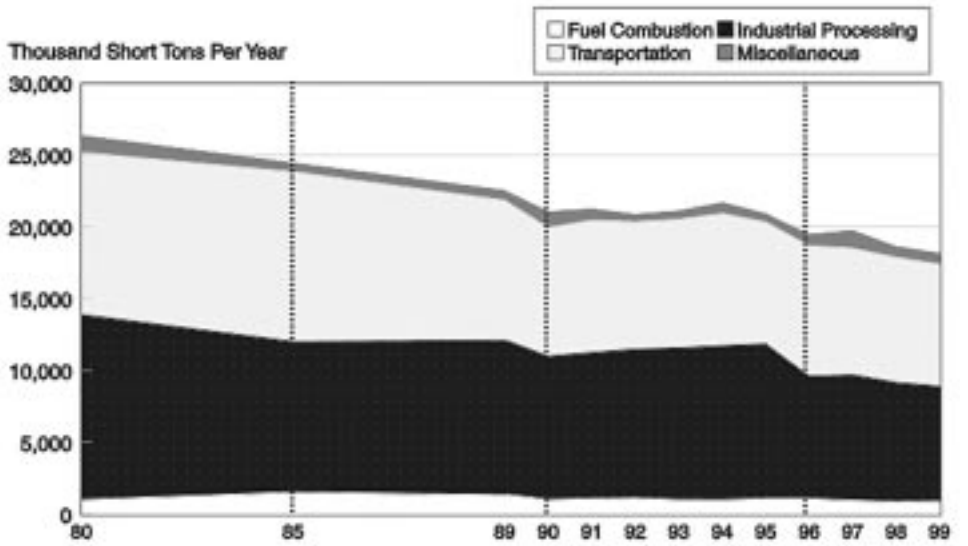
National Total Sodium Dioxide Emissions Trend, 1980–99



Source: U.S. Environmental Protection Agency, 2001b: 63

Exhibit 4

Trend in National Total Anthropogenic VOC Emissions, 1980–99



Source: U.S. Environmental Protection Agency, 2001a: 36

The federal government regulates wetlands in the United States in an effort to preserve them as much as possible. The EPA and the Corps, under the Clean Water Act, enforce these regulations. The CWA requires landowners to receive permission from the Corps before conducting dredging or filling activities on any land defined as a "wetland" or other water of the United States. States and localities can have stricter requirements on landowners in this aspect, and many do. Before issuing a permit, landowners can be required to submit their land to an environmental review to determine the impact on the local area and its habitats if the wetlands were to be altered. Under wetlands regulations, more than human health and well-being are taken into account; the ecosystem, including fish and wildlife, also must be considered (Guttery, Poe, and Sirmans, 2000). The regulations have been successful in slowing the draining of wetlands.

> According to a report issued by the National Wetland Inventory (*Status and Trends of Wetlands in the Conterminous United States 1986 to 1997*, U.S. Fish and Wildlife Service), the rate of wetland loss in the United States has decreased to an estimated annual loss of 58,500 acres (an 80 percent reduction compared to the previous decade). The Natural Resource Conservation Service's Natural Resource Inventory (NRI), reporting on the health of America's private lands, also shows significant reduction in wetland losses. The NRI found an average annual net loss of 32,600 acres of wetlands on nonfederal lands from 1992 to 1997 (a 58 percent reduction compared to the previous decade) (EPA, 2000: 45).

Environmental laws directed toward hazardous waste sites focus on cleaning the sites and getting the responsible parties to pay for the cleaning. The federal regulations governing hazardous waste site cleaning and payment for this are included in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. These laws are meant to reduce the risk to humans from improperly disposed-of toxic substances. Brownfields sites are properties "the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" (EPA, "Brownfields," n.d.). Some states have changed the legal liability assumed by purchasers of such property in an effort to increase the development of such sites, especially in urban areas.

Current federal regulations on air and water quality focus primarily on human health. The Endangered Species Act (ESA) of 1973 was enacted to protect the biodiversity of the United States by identifying plants and animals at risk of becoming extinct and then requiring that their ecosystems be protected. The ESA does not allow considering the costs of protecting the ecosystem; if a species is at risk, it must be protected. At least 600 species have been identified as endangered or threatened under the ESA, ranging from the Florida manatee to the black lace cactus (EPA, "Endangered Species," n.d.).

The National Environmental Policy Act (NEPA) of 1969 requires that all federal public policy proposals be assessed for environmental impact, regardless of the agency that is evaluating the program. In 1997, 498 Environmental Impact Statements were completed by the agencies and departments of the U.S. government (Callan and Thomas, 2004). Many states have similar legislation to oversee the environmental impacts of state-level laws. The federal agency that most directly impacts housing is the U.S. Department of Housing and Urban Development (HUD), but other agencies also can affect development (Braconi, 1996). Because state agencies are often called on to administer federal programs, the requirement to assess the impact of a proposed policy on the local environment can filter down to the state level.

The Coastal Zone Management Act of 1972 (CZMA) is not generally thought of as an environmental regulation. Administered by the National Oceanic and Atmospheric

Administration, CZMA is intended to provide a means for states and localities to manage their coastal areas. Some states, such as New Jersey and California, have used the law to restrict or regulate development in their coastal areas in an effort to manage that particular environment (Frech and Lafferty, 1984).

States and localities also enact environmental legislation, some of which has been mentioned above.[1] For example, Washington state allows city and county governments to declare areas "environmentally sensitive," which makes development in the area subject to agency reviews (see Steiner, 2001, for a discussion). New York City requires an "analysis of the environmental impacts of all privately sponsored projects that need discretionary approvals from a government agency" (Salama, Shill, and Stark, n.d.: 49). Such laws can lead to delays and increase the uncertainty about the ability of developers to successfully complete a project. If such delays are anticipated, any expected costs will be capitalized into the price of the land, thus lowering the price of the land.

Although urban growth controls are not inherently environmental regulations, some are designed to enhance the quality of life of an area, and thus include requirements on open space; other controls are intended to decrease the amount of traffic in an area. Therefore, such controls may have environmental goals included in them. Currently, the term *smart growth* is used to encompass urban growth controls and the "prevention of urban sprawl, integration of transportation and land use plans, provision of affordable housing, protection of open space and timely and efficient provision of urban infrastructure" (Knaap, 2001: xi). Some 73 metropolitan areas have used urban growth boundaries to try to limit expansion (see Burby et al., 2001), although it is not clear if this has been done to improve the local environment.

The environmental regulations in the United States are wide-reaching, covering factories, automobiles, municipal water supplies, wetlands, wildlife, and coastal areas. Although few of these laws are specifically directed toward the housing market, we turn now to consider how the laws can directly and indirectly affect that market.

Impact of Environmental Regulations on Housing: Theory

Whether or not environmental regulations are placed directly on the suppliers of housing, these regulations may have an impact on the housing market. If regulations increase costs for firms, the firms' owners will attempt to shift the costs to others. If costs can be shifted to housing suppliers, the incidence of the regulation differs from those that the law is originally directed to. Freeman (1992) discussed what he called the "naïve" view of the cost of environmental regulations when only the costs of pollution controls bought and maintained by the regulated firms are considered. Freeman argued that those costs can be shifted forward. Thus, even if the environmental regulations are not placed directly on the suppliers of housing, the cost of supplying housing can increase due to the regulations.

Environmental laws can impact the supply of land, a key input in the production of housing. These laws also can affect the supply of housing in other ways by changing the prices of other inputs. If the regulations are effective, they can impact the demand for housing by increasing the local environmental quality. All these effects can lead to changes in both the price and the quantity of housing in the market.

Supply of Housing

The first consideration is the market for land. Any regulations that restrict the supply of land will lead to an increase in the price of land. This would include regulations such as the ESA, wetlands regulations, and coastal zone management laws. If the land removed

from the market was desirable land in the eyes of developers, the price of similar land not similarly regulated will increase. An increase in the price of land—a critical factor in housing production—will decrease the supply of housing in the market, leading to an increase in the price of housing, all other factors remaining constant.

In the housing market, supply can be affected by changes other than an increase in the price of land. If the regulations increase the prices of other inputs, supply will again decrease. For example, if the intensified regulation on water treatment plants increases the costs of sewer pipelines, the cost of new developments where such pipelines must be installed will increase.

The supply of new housing can be affected if the increased regulations cause delays in the development process. If the delays are expected, such as situations where reviews must be conducted, developers can incorporate the lags into their timeline, which will increase their holding costs, including interest payments. If the delays are unexpected—for example, when the review process leads to changes in the design of the project—the cost impact will be even greater because developers will not be able to schedule deliveries and workers appropriately.

If the regulations increase the possibility of litigation, the supply of new housing can be affected. Litigation, whether expected or unexpected, can increase the cost of new housing by either forcing the developers to fight the problem in court or encouraging them to be overly inclusive in their reviews in an attempt to avoid potential lawsuits (see discussion by Braconi, 1996). If the litigation is anticipated, the expected costs of such litigation should be capitalized into the price of the land that developers purchase.

Demand for Housing

Demand for housing can also be impacted by environmental regulations. If the regulations are successful in the sense that they improve the quality of the local environment, the demand for housing in that area should increase, thus increasing the price of housing. The notion here is that if there were two identical houses, but one was in a neighborhood with cleaner air, that house would sell for more because individuals would be more interested in obtaining it (see Boyle and Kiel, 2001, for a review of studies on this topic).

One of the reasons that environmental regulations are passed is because environmental goods are public goods (or common property resources) that are exploited in the market if they are not regulated. The government steps in to correct this market failure, thereby improving the quality of life for the impacted society. Laws that had been passed are expected to have improved the local area and made it a more desirable place to live. Houses in that area are now perceived as being of higher quality, and the demand for these houses should increase. In fact, if the demand did not increase, one might wonder why the government would enact such a law.[2]

As exhibit 5 illustrates, a decrease would be expected in the supply of housing due to the increase in the price of inputs, such as land. The shift from S1 to S2 with a corresponding increase in price from P1 to P2 shows this. In addition, an increase in the demand for housing would be expected as the quality of the house's neighborhood improves. The shift from D1 to D2 with a corresponding increase in price from P2 to P3 demonstrates this. Clearly, house prices will increase due to the regulations. What is not as clear, however, is what will happen to the quantity of housing seen in the market. Whether the decrease in supply is greater or less than the increase in demand is largely an empirical question.

Air Regulations

Few of the federal regulations discussed above are directly targeted at housing developers. The regulations could, however, have an indirect effect. The CAAA regulations on mobile source polluters increase the price of new automobiles. If this makes public transportation, and thus houses located closer to public transportation, more desirable, an increase in demand for housing in these locations could occur (Freeman, 1992). The regulations on stationary source polluters should not have an impact on housing unless they restrict large developments in areas where the standards for air quality are currently being exceeded.

Water and Wetlands Regulations

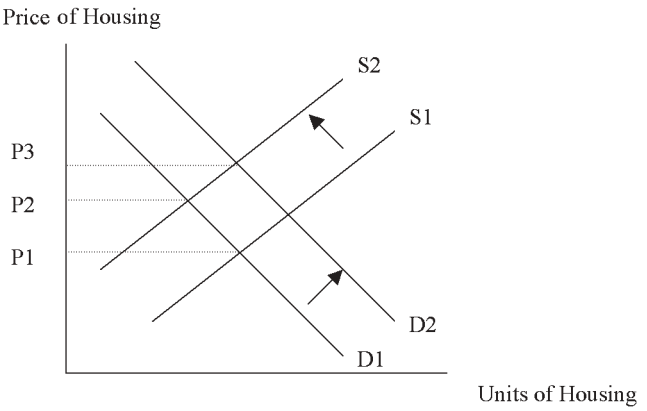
The laws that regulate water quality, especially those that focus on water treatment plants, can generate costs to the suppliers of housing if the increased costs of water treatment are passed on to the housing market. The costs could be passed to the developers of new housing or to the current residents through higher taxes. Wetlands preservation laws focus on developers of housing; by requiring a thorough review before being allowed to develop the property, the costs to the suppliers of housing are increased. The increased uncertainty of whether the permit will be granted may affect the price of properties that contain wetlands, but this should, in theory, decrease the price of that land because increased costs of developing the land would be capitalized into the price of the land.

Endangered Species Act

The ESA could also affect the housing market. If the ESA removes a significant amount of land from possible development, the price of remaining developable land should increase, thus increasing the cost of supplying housing in those areas. When this occurs, the housing market would be expected to adjust by using less land per housing unit over time, which would help mitigate the cost increase. The Endangered Species Act (ESA) could decrease the prices of those lands removed from development because the potential uses of the land would be reduced. Because that land would not be an input to the housing market, changes in its prices are not considered in this article.

Exhibit 5

The Housing Market



Coastal Zone Regulations

Coastal zone regulations should decrease the supply of land available for development for housing, thus increasing the price of the land available for housing projects. Developers would attempt to pass this cost increase to the purchasers of housing. Thus, land similar to that removed from potential development should be impacted and experience a price increase.

Toxic Waste Regulations

Efforts by the EPA to clean up toxic waste sites through the Superfund are likely to increase house prices in the area surrounding the site; as a nearby dangerous property is cleaned, demand for houses in that area should increase. Of course, the length of time that it takes to clean the site will affect how quickly local house prices should increase. The legal liability involved with purchasing or developing such a site, even after it is cleaned, reduces the likelihood that such properties will be redeveloped. Current changes to the regulations are meant to make the program "faster, fairer and more efficient" (Smith and Garcia, 2002: 162). If these changes are successful, the regulations should lead to an increased supply of land, which should decrease the cost of supplying housing.

In the case of brownfields, the federal, state, and local governments generally have attempted to speed up the process through reforms that are intended to "expedite site clean-ups by addressing remedy selection issues and setting risk-based clean-up priorities" (Smith and Garcia, 2002: 164) and to reduce the legal uncertainty. These reforms are aimed at encouraging the redevelopment of these properties, especially in the inner urban core. As with Superfund, redeveloping these properties should affect local house prices and may increase the supply of housing in the area.

Growth Controls

Because smart growth policies vary across locales, predicting their general impact on the housing market is difficult. Urban growth boundaries will limit the supply of developable land and could lead to a decrease in the supply of land. Policies focused on the local quality of life should increase demand for housing in the area. The interaction of these forces will determine the final outcome in the market.

In theory, who will bear the final costs of these regulations should be clear. If the laws put restrictions on the use of some land (for example, ESA), the price of that land will fall; this will cause economic harm to owners of that land. Neighboring land may increase in value due to either the reduction in the amount of land available for development or the perception by purchasers that the area has become more desirable. Owners of these types of properties will experience a gain due to the laws. For regulations that increase the cost of developing land (for example, the Clean Water Act), if the costs are anticipated, they will be capitalized into the price of the land. Therefore, the sellers of that land will receive a lower price for their property. Developers should pay the same in total (land plus costs); thus, the price of housing should not be impacted. If the costs are not anticipated, developers will have higher total costs and will attempt to share those costs with those who purchase homes.

The Impact of Environmental Regulations on Housing: Empirical Results

Any environmental regulation that restricts the supply of land to the housing market will increase the cost of housing by decreasing the supply of housing at any given price. Surprisingly few empirical studies, however, attempt to quantify the magnitude of that shift. Some studies state that the impact is present but make no attempt to measure the increase while controlling for other possible sources of change (for example, Braconi, 1996).

One of the earliest studies to attempt to quantify the impact was by James and Muller (1977), who examined the effect of required environmental impact reviews (EIRs) on local housing costs in Florida and California. As mentioned above, these reviews are required at the federal level under the National Environmental Policy Act (NEPA); some states also passed legislation mandating the consideration of environmental impacts from development. James and Muller looked at San Diego, California, and Broward County, Florida, in part because the programs were quite different in the two states and also because these areas were rapidly growing.

The authors measured two types of costs due to EIRs: (1) the cost of undertaking the review and (2) the cost of "requirements imposed on the developers in order to protect the public interest" (James and Muller, 1977: 284). The first costs were those of preparing the review, public assessment of the review, and the delays due to the review process. After interviewing developers and public officials, the authors estimated that these costs were $192 per housing unit in Florida and $115 per housing unit in California (assumed to be 1975 dollars). The second costs were "the costs of altering the physical characteristics of new residential developments to comply with public requirements arising from the EIR process" (James and Muller, 1977: 289). This included costs due to projects being rejected as well as projects that were required to change in some way. James and Muller used a survey by the Center for Urban Policy Research to estimate that the increases in costs were $194 per unit in Florida and $50 per unit in California (again assumed to be 1975 dollars). The authors did not attempt to quantify the benefits from the EIRs, but did mention that in San Diego, a "majority of the officials contacted in the course of the study thought that EIRs had a significant positive influence on environmental quality in the state," although the public officials in Florida felt that, "EIRs had no effect or only a small effect on their land use decisions" (James and Muller, 1977: 296). James and Muller argued that the benefits were likely to be received by existing local residents, and the costs were likely to be borne by developers and purchasers of new housing units. Of course, as the price of new housing increases, the demand for existing houses increases; thus, the price of existing houses also increases. Whether this relationship is seen as a cost or a benefit to current residents is not clear.

Peiser (1981) studied local land development regulations (including environmental laws) in Dallas and Houston, Texas. These two cities were chosen because they were similar in many ways, yet faced different regulatory requirements. Peiser considered five different types of regulations on developments: utilities, land use controls, subdivisions, roads, and the environment. The relevant environmental regulations included federal Environmental Impact Statements, flood plain permits, coastal areas, and wetlands, with the latter two relevant only in Houston. Peiser examined two developments, one in each city, and found that costs in Dallas were approximately $1,000 per lot (in 1981 dollars) higher than in Houston. Since the author did not break out his cost estimates, how much of that $1,000 is due to environmental regulations is not determinable. Because Houston has more environmental requirements, however, one could assume that those costs are relatively low.

In a 1984 study by Frech and Lafferty, the impact of the California Coastal Commission (CCC) on house prices was estimated. The CCC was created to protect and preserve the environmental resources of the coastal area in California. The authors argued that the CCC would impact house prices through two channels: the reduction of available land for residential development should increase the price, as would the increase in local amenities, such as open space. The authors believed that the former effect would be uniform over their study area because they were looking at only a small coastal area where building extends only 13 miles inland. The latter effect should, in their opinion, be stronger closer to the coastline.

The authors estimated a hedonic regression of the sales price of the house as a function of its characteristics. They included categorical variables based on distance from the coast and an interaction variable that measures the amount of land used for agriculture if the property was in the coastal zone and was sold after the CCC was created; the latter variable takes on a value of zero if the house was not in the coastal zone or was sold prior to the CCC's existence.[3] Using sales data from 1966 to 1975, the authors found that prices did increase for houses close to the coast (by $2,882 to $5,040, in 1975 dollars), while those further inland (0.5 to 13 miles) experienced a smaller price increase ($989 to $1,700, in 1975 dollars). Frech and Lafferty argued that the difference between the two was due to amenity effects. The authors then stated that because "much of the price rise occurred as far as 13 miles inland…most of the price rise is attributable to the reduction of area-wide residential land, rather than improved amenities" (Frech and Lafferty, 1984: 120). Frech and Lafferty went on to point out that the benefits of the increased prices were received by current homeowners and owners of developed land.

In a study of the impact of coastal area building restrictions in Maryland, Parsons and Wu (1991) estimated the decrease in the value of properties that were no longer able to be developed. They first estimated a hedonic regression using data from a developed coastal area. This regression equation was then used to predict the value of "lost amenities" to houses that could not be built in the coastal areas, and, thus, must be built further inland. The authors calculated that houses that would have been built on the waterfront would lose an average of $96,672 in value (in 1983 dollars), while those that would have been built further away would lose an average of $447 in value (in 1983 dollars). This study showed that land that was restricted in its use (rather than restricted in supply) fell in price as predicted. The authors did not attempt to estimate the benefits from the coastal zone restrictions.

Beaton (1991) examined the impact of land use regulations on the prices of vacant land in Pinelands, New Jersey. As he made clear, zoning changes can affect both the supply and the demand sides. Beaton used the repeat sales approach to estimate the price effect of growth management policies while holding other characteristics constant over time. The data he used were sales prices of parcels in the area from 1965 through 1986. Beaton stated that from 1966 through 1972, "economic development was the dominant theme for local planning," and that 1972 through 1981 was a period in which the environmental issues became more important (Beaton, 1991: 13). He found that the values of parcels zoned for residential development increased due to the policies that controlled growth and development. In looking at vacant land, Beaton found that parcels in more restrictive zones fell in value, and the value of those parcels in less restrictive zones fell and later increased after the restrictions were put in place.

Beaton and Pollock (1992) examined the impact of Maryland's environmental protection legislation on housing values using a hedonic regression technique. The legislation, passed in 1986, reduced densities in some areas and controlled "development-related runoff, erosion, and habitat disturbance" in other parts of the Chesapeake Bay area (Beaton and

Pollock, 1992: 3). In 1988, Maryland also enacted wetlands development legislation that further increased the review process for developments in this same area. The laws "grandfathered in" existing development and phased in the implementation of the law. Using a data set of sales that took place between 1981 and 1986, the authors ran hedonic regressions that controlled for various parcel attributes including whether it was located in an area under the new regulations. Beaton and Pollock reported finding that no "significant" drop occurred in values of vacant land, and those areas with access to employment and recreation saw price increases for both vacant and residential land. Thus, land prices did increase in this area after regulation.

In a paper prepared for a HUD conference, Braconi (1996) presented an overview of the impact of environmental regulations on housing. He reviewed the laws established by NEPA, wetlands regulations, coastal zone management, the Clean Air Act, CERCLA, radon regulations, asbestos regulations, historic preservation requirements, unfunded mandates, and lead paint regulations. These regulations impact the cost of building new housing, financing costs experienced by homeowners, and operating expenses, and Braconi discussed each of these in turn. He argued that the increase in house prices between 1963 and 1993 was due, at least in part, to the increase in environmental regulations. He provided only anecdotal evidence, however, of the impact of specific regulations on housing prices.

In a response to Braconi's paper, Evans (1996) pointed out that few environmental regulations existed before 1972; therefore, regulations cannot be blamed for the price increases from 1962 to 1972, and that the increases in house prices also could be due to sociodemographic changes, such as an increase in population.

Guttery, Poe, and Sirmans (2000) studied the impact of wetlands regulations on residential sales prices in Baton Rouge, Louisiana. As discussed above, the costs of complying with these regulations can include delays, preparing the environmental impact report, and meeting the mitigation requirements (Guttery, Poe, and Sirmans, 2000). These costs are placed on the permit applicants (often developers), but economic theory suggests that the applicants will attempt to pass these costs on to the purchasers of the property. The study proposed to test this possibility by examining the sales prices and characteristics of 328 multifamily housing units in the study area between 1983 and 1988. This time period was selected because the regulations on wetlands went into force in 1986; thus the sample included units sold before and after the regulations. The results of the hedonic regression showed that sales prices of wetlands property fell by 10.5 percent, relative to nonwetlands property, after the regulations were put in place. The authors argued that this was due to the restrictions put on the development of the land. One could interpret this result as due to a demand shift in that wetlands properties are now less desirable, causing the prices to fall. The purchasers knew that extra costs would be involved in developing the property, and those costs were capitalized into the reduced sales price.

To estimate the impact of environmental regulations on housing production costs, the amount of land removed from the market must be estimated. If this amount is large relative to the remaining developable land, the regulations could have a significant effect on the housing market. Landis (2001) estimated the impact of various kinds of restrictions on the availability of land in California by combining various data sets in a geographic information systems framework. He reported that in 1996, California had "3.5 million acres of urbanized land, 32 million acres of public or physically undevelopable land, and nearly 25 million acres of potentially developable raw land" (Landis, 2001: 9). Landis estimated that slightly more than 17 million acres were "developable and accessible" (within 6.2 miles of a major roadway), and that slightly less than a million acres were mapped wetland areas. Thus, only 5 percent of the "developable and accessible" land in California is undevelopable due to wetland restrictions. Another 1.8 million acres are a

"highly suitable habitat for eight or more threatened and endangered…species," and thus could be removed from the market under the ESA rulings. Landis interpreted these numbers to mean that environmental constraints (which he defined as "prohibitions on wetlands, flood zones, and prime and unique farmland development") would "slightly reduce the state's ability to accommodate projected household growth through 2010…Only Orange and Los Angeles Counties would encounter land capacity limits" (Landis, 2001: 19).

In an undated research report, Crellin examined the impact of the ESA on property values. Using property transaction in three counties in Washington—from 1986 through 2002 for Clallam County, from 1995 through 2001 for Clark County, and from 1986 through 2001 for Snohomish County, Crellin estimated separate hedonic models for single-family homes, condominiums, commercial properties, and land. In all cases (except for unplatted land in Clallam County), Crellin found that properties located in ESA-designated areas fell in value by between 1.4 and 19.9 percent. In theory, one would expect undeveloped land that has restrictions placed on it to decrease in value, but Crellin provided no explanation as to why existing structures would decrease in value. Regardless, his empirical model did not provide a convincing test of the hypothesis. Crellin's data are countywide, yet he did not control for any town or neighborhood characteristics; perhaps his indicator variable of ESA restrictions picked up those factors. In addition, Crellin controlled for changes over time through the use of a linear time trend; other researchers (for example, Kiel, 1995) have shown that including data before the restrictions were put in place as well as after is important, and that a more general form for the time trend should be used.

Analysis of the Current Empirical Literature

The studies discussed above use either case studies or regression analysis in their attempts to measure the impact of regulations on housing prices. When using case studies, one is often forced to rely on information from surveys of the relevant parties, such as housing developers. These individuals may not report costs accurately because either they did not have an incentive to take the time to correctly calculate the prices or had a political incentive to overstate the costs.

Economists generally prefer to use what are called *revealed preference* models, where the actions of individuals are observed in the market, rather than reported in a survey situation—which is called a *stated preference*. Regression analysis on housing prices is an example of this revealed preference approach. Data are taken from actual transactions made by individuals who are utility or profit maximizing.

The hedonic method (Rosen, 1974) assumes that the housing market is in equilibrium so that the price that is observed is where housing supply is equal to housing demand in the relevant market. The technique requires the researcher to include as explanatory variables all the characteristics of the house that influence its sales price. Thus, a typical hedonic regression is as follows:

$$P_i = \beta_0 + \beta_1 H_i + \beta_2 N_i + \varepsilon_i$$

where P_i is the sales price of the i^{th} house, H_i contains information on the characteristics of the house (such as number of bedrooms), N_i contains information on the neighborhood in which the house is located (such as quality of the local school), and ε_i is the unobservable stochastic random error. The estimated βs, thus, are the marginal impact of a unit change in the characteristics on the price of the house; they are the marginal prices of the included characteristics determined in the housing market.

Hedonic regressions can be used to estimate the prices of environmental characteristics in a house's neighborhood if the quality can be quantified and included in the regression. Although an individual does not directly purchase, for example, air quality, if the individual considers local air quality when purchasing a house, a measure of local air quality should be included in the hedonic regression. Its estimated coefficient then represents its marginal price as determined in the housing market. A large number of studies used this approach when valuing environmental goods; see Boyle and Kiel (2001) for a survey of these studies.

Thus, the studies reviewed above that use the hedonic approach are in good company.[4] The hedonic studies cited in Boyle and Kiel (2001), however, assume that the increase in price is due to a shift in demand; higher environmental quality makes the house more desirable so that the demand increases, making the price increase. Most of the studies reviewed above assume that the increase in price is due to a decrease in supply; higher environmental standards increase input costs and decrease supply, thus increasing the price. Frech and Lafferty (1984) conducted the only study that attempted to model the two shifts separately (although they use a single hedonic regression) by explicitly including characteristics that should impact demand, but not supply, and characteristics that should do the reverse.

The prices estimated in the hedonic regression are the result of the housing market being in equilibrium. If, however, the researcher was interested in knowing the impact of demand and supply separately, a second stage must be considered. As Rosen (1974) discussed, the marginal prices estimated in the hedonic regression could be used to estimate the marginal willingness-to-pay (demand) and supply functions in a second stage. The issue in the second stage becomes one of econometrically identifying the demand and supply functions.

The focus in the economics literature has been on the estimation of the demand function in the second stage, often because knowing the demand function allows the researcher to estimate the social benefits from the regulation in question. As Freeman (1992) made clear, two potential problems exist in this second stage. The first is that the demand function uses the price from the hedonic regression as its dependent variable; that price is an estimated price, not an observed price. If the second stage uses the same data that were used in the hedonic regression, the results for the demand regression will be the same as those for the hedonic regression. The second problem is that the price and quantity of the environmental good are both endogenous in the hedonic regression. Thus "demand shifters," such as income, are correlated with observed choices, and it becomes difficult econometrically to separate the shifters from the demand equation; see Freeman (1992) for a discussion of this issue. The difficulties with estimating the supply function are the same.

Several studies have used Rosen's (1974) approach in an effort to estimate the demand for air quality; see Zabel and Kiel (2000) for a brief review. Researchers attempted to identify the second stage demand equation by making strict assumptions on the demand equation, such as its functional form, by using data from multiple markets or from a market over time. In general, the results were mixed, underlining the difficulty in estimating a second stage demand equation given prices estimated with a hedonic regression.

In Which Direction Should the Literature Go?

Clearly the literature has yet to fully answer the question of the impact of environmental regulations on the housing market. If the question of interest is, "Do current environmental regulations make housing less affordable?" it would be sensible to break the question into two separate parts: (1) do current regulations increase the price of housing through changes in the supply and/or the demand, and (2) does the price increase so much as to render housing unaffordable? If the answers to these questions are "yes," the decision to

be made is whether regulations can be changed in such a way that the price impact can be minimized, if regulations should be removed, or if housing costs should be subsidized for (certain) consumers who are greatly impacted by the regulations.

The first consideration is the question whether regulations increase housing prices through changes in supply and/or demand. To be able to separate the two is important because in the case of supply decreases, a decrease in the quantity of housing in the market is seen; with demand increases, an increase is seen. Thus, the availability of housing is determined by which type of shift occurs in the market, or if both, which shift is greater.

The supply of housing, as discussed above, is impacted by the supply of inputs to housing. An examination of the literature does not indicate how large the changes are in the supply of developable land when environmental regulations are imposed. The research that Landis (2001) performed is important and should be carried out in other localities. The decrease in available land may be so small in most areas that housing prices are not impacted by these rules. This hypothesis can be tested by estimating hedonic regressions on house prices in areas where the regulations have been imposed. The regressions must cover long periods of time, extending from well before the regulations were considered until after they have been enacted.[5] This will enable the researcher to determine the impact of the regulation on the market while carefully controlling for other possible impacts. Cross-sectional studies, or those that do not cover a long enough time span, cannot segregate the regulation's effects. Of course, if an increase in house prices is captured by the hedonic regressions, some of this price increase could be due to increased demand for housing near the restricted area if owners view the restrictions as increasing the quality of the housing.

A similar hedonic regression approach could be used to examine the impacts of changes in other supply costs due to environmental regulations. If changes in the costs of water treatment lead to increased costs to developers, the amount of the cost increase could be estimated in the hedonic regression. Again, having a long time series of data would be important to consider the problem; cross-sectional data would not be useful because other changes could not be controlled.

Another approach would be to estimate the second stage hedonic regressions that would then separate the price changes seen in the housing market into supply effects and demand effects. This technique is not used often because it requires identification of each equation that must be used by looking at multiple housing markets or finding instruments for supply and/or demand shifters. An example of this technique is in Witte, Sumka, and Erekson (1979). The authors developed a unique data set that consisted of a sample of rental properties in North Carolina in 1972. They had information on the rent charged, characteristics of the unit and its neighborhood, and characteristics of both the renter and the landlord. These data enabled the authors to identify the supply and demand equations given the marginal prices estimated in a first stage hedonic rent regression.

To use this technique to study the impact of regulations on house prices, data sets will need to be developed. Although existing data sets have information on the occupant (for example, American Housing Survey), obtaining information on the landlord or the developer of the unit would be difficult. The benefits from estimating the second stage regressions would appear to be worth the effort of putting together such a data set because it would likely provide the clearest answer to the question under consideration.

Another option is to develop more comprehensive models of urban areas. An example of such a model was developed by Riddel (2001). She pointed out that changes in environmental amenities will impact not only the housing market, but also potentially related markets, such as the labor market. If these changes take time to move through the various markets, cross-sectional hedonic regressions will not capture all the price changes.

Other researchers looking at the "quality of life" have modeled housing markets and labor markets simultaneously (for example, Blomquist, Berger, and Hoehn, 1988). The argument for doing this is that positive externalities (including environmental goods) make an area more desirable to workers who are therefore willing to work for a lower wage. As more workers move in to take advantage of the externality, the demand for local housing increases, thereby increasing house prices. Thus, a more "desirable" area will see lower than expected wages and higher than expected house prices.

Riddel (2001) criticized the use of house price hedonic models in estimating the prices of environmental goods because they explicitly ignore the labor market.[6] She, therefore, developed a multimarket model in which prices and quantities in the markets were assumed to vary over time.

Riddel's model included the housing market, the labor market, and the apartment/rental market, and allowed environmental externalities to be endogenous. Because the author was considering the case of open space purchases by the local government in Boulder, Colorado, this environmental good was considered to be a function of the number of households and the level of taxes (used to purchase the good).

Riddel used a dynamic modeling approach to estimate the model using data from 1981 through 1995 and found that the 15,000 acres of open space purchased during her sample period led to an increase in housing prices of 3.75 percent (due to changes in demand as well as in supply). She also reported a 3.3-percent increase in jobs and a slight increase in total housing stock. It appears, although Riddel did not state it this way, that the shift in demand for housing was slightly greater than the shift in supply. Thus "the positive implicit price of open space clearly expresses the value of the program to residents" (Riddel, 2001: 511). Riddel's model did not lead to a separate specification of supply and demand functions, but her results do let us see which of the two shifts dominated by reporting the change in the total quantity of housing due to the program.

Research such as Riddel's (2001) that uses multimarket models should be encouraged. It may avoid some of the econometric complications involved in estimating the second stage regressions in the hedonic framework, and the data requirements might be less restrictive. Both approaches will enable researchers to better understand the impacts of changes in supply and demand due to environmental regulations.

Ongoing concerns exist about the impact of the delays and litigation due to uncertainty created by the regulations. If unanticipated, the delays can lead to increased costs to developers. If fully anticipated, the expected costs would be capitalized into the price of the land affected by the regulations. An interesting line of research would be to examine those areas where the regulatory process has strict timelines that should reduce the delays as well as the uncertainty; the laws should have a smaller impact on these land prices than in areas without such timelines. If, indeed, such timelines do minimize the effect, such an approach should be encouraged nationally. Examining areas where insurance markets might be used to share the costs of uncertainty would also be of interest; for instance, some insurance markets exist for brownfields properties.

When we have determined the extent to which environmental regulations affect the price of housing, we can then ask whether the increase makes housing unaffordable. As Bogdon (2001) pointed out, affordability is easy to define, but difficult to measure. She considered several measures of affordability in the rental market by looking at both the demand and supply side of the market. On the demand side, one could examine the percentage of income spent on housing by households with different levels of income or the income necessary for a household to rent a unit that meets some standard of quality. These measures indicate

the importance of household income to affordability measures. On the supply side, one could look at vacancy rates at different rent levels or at the availability of units renting at or below the fair market rate set by HUD.

Bogdon also looked at measures of affordability for homeowners, particularly first-time buyers. Common measures include the National Association of REALTORS®' affordability index, which is the ratio of the median family income to the income needed to buy the median price house, or the National Association of Home Builders' housing opportunity index, which looks at the distribution of house prices.

Bogdon discussed the need for local authorities to "track affordability measures on a regular basis, compare current and past numbers and use this information to plan policy changes if affordability problems worsen" (Bogdon, 2001: 325). When considering environmental regulations, comparing measures of housing affordability before and after the laws are in place would be important. Given the estimated price increases, will housing affordability problems arise in the area?

Conclusions

Surprisingly little is known about the impact of environmental regulations on the price and quantity of housing in the United States. Most, if not all, economists would say that the increase in the price of inputs, along with any increase in delays and/or uncertainty, would decrease the supply of new housing to the market, thus increasing the price of new housing. And most, if not all, economists also would say that improvements in the environment due to regulation should increase the demand for housing in areas that have experienced the improvement, which would increase price. Many economists have estimated the price increase, with some attributing the increase to changes in supply and others to changes in demand. Why these impacts have not been separated is curious.

It is clear, however, that environmental regulations do increase the price of housing. Whether that increase is good or bad will depend on one's perspective. An increase in the price of housing due to an improvement in the local environment is beneficial to a homeowner in that area; when a Superfund site is cleaned and property values increase, local residents whose investment asset increases in value see this to be good. The price increase, however, makes it more difficult for outsiders to purchase homes in those areas. The issue becomes one of affordability. On the other hand, imagining policymakers refusing to undertake improvements in the environment simply because they would make housing less affordable is difficult; policymakers could improve the environment and then subsidize new owners if that was their concern.

Instead, it seems reasonable to undertake a cost-benefit analysis whereby the costs of the program, including the decrease in the supply of housing, are measured against the benefits of the program, including the increase in the demand for housing. If the benefits are greater than the costs, the program should be considered. In the housing market viewed in isolation, this would mean an increase in the quantity of housing. Of course, we do not want to consider any market in isolation. Rather, social costs and social benefits in all markets that are affected should be examined. This will require the development of more sophisticated models, which will demand more data. The author of this article recommends this as the direction to take.

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Author

Professor Katherine A. Kiel is an associate professor in economics at the College of the Holy Cross. She received an A.B. from Occidental College and a Ph.D. in economics from the University of California at San Diego. Her current research focuses on the impact of various kinds of pollution on house prices, with some of her research funded by the U.S. Environmental Protection Agency. She has published in the areas of real estate price indices, racial discrimination in the housing market, and the demand for environmental quality in the United States, with her work appearing in the Journal of Environmental Economics and Management, Land Economics, *the* Journal of Urban Economics, *and other peer-reviewed journals.*

Notes

1. A full discussion of current state and local environmental regulations is beyond the scope of this article.

2. It is also possible that the benefits from the regulation are felt nationally, whereas the costs of the regulation are felt only locally. I thank a referee for making this point.

3. The hedonic regression technique will be discussed below. See Freeman (1996) for an excellent discussion of the approach.

4. Or repeat sales analysis, which is a variant of the hedonic technique.

5. To carry out such research, datasets on housing transactions and housing characteristics in the affected area over the relevant time periods would have to be obtained.

6. Riddel (2001) also points out that the assumption required by hedonic models that the housing market be in equilibrium is often inappropriate.

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Regulatory Implementation: Examining Barriers From Regulatory Processes

Peter J. May
University of Washington

Abstract

This article addresses the effects of regulatory processes on the availability and affordability of housing. One concern is delays in construction and the rehabilitation of housing related to red tape. Another concern is the effects of the added burdens of regulatory implementation in discouraging housing development or rehabilitation in the first place. Understanding how to lessen these barriers is one foundation for development of policies for advancing affordable housing. Promising directions for reform include regulatory and administrative process simplification, conflict reduction and consensus building, smart enforcement, and facilitative reviews and inspection. Bringing about these changes presents a variety of policy challenges of which the principal one for federal policy is the limited federal role with respect to state and local governmental regulatory processes.

Introduction

This article draws attention to the ways that the pursuit of regulatory goals concerning such subjects as the safety of buildings, environmental protection, historic preservation, and land use affect the availability and affordability of housing. Over the past 35 years, several national commissions concerned with affordable housing (for example, Advisory Commission on Intergovernmental Relations, 1966; National Commission on Urban Problems, 1968; Advisory Commission on Regulatory Barriers to Affordable Housing, 1991; Millennial Housing Commission, 2002) have addressed this topic. Despite the consistency of the findings of these reports, the ways that different regulations act as barriers to various aspects of housing are not well understood.

The barriers to affordable housing posed by regulatory processes are lesser-studied aspects of these concerns. Consideration of regulatory processes draws attention to two barriers. The first barrier includes delays in construction and rehabilitation of housing related to cumbersome decisionmaking processes. Delays add to the costs of construction and, in turn, affect the affordability of housing. The second barrier discourages housing development or rehabilitation in the first place, lessening the availability of housing in those locations that developers avoid; it also can lessen the overall supply of housing rather than shifting it to other locations.

This article reviews different types of regulatory process barriers, advice concerning how to lessen these barriers, the policy challenges associated with bringing about these changes, and research needs. The degree to which various sources of regulatory barriers affect the availability and cost of housing is largely unknown. Many of these aspects have not been studied and the studies that exist rarely separate the effects of the substance of regulations from their implementation. Although few prescriptions emerge from the housing literature about reducing regulatory process barriers, this article addresses the relevance of insights provided by regulatory scholars who have studied reforms of regulatory practices more generally. Identification of necessary research to advance policy and other actions aimed at alleviating regulatory process barriers sets the foundation for considering future research.

Considering Regulatory Process Barriers

A variety of regulations potentially impinges on different facets of availability and affordability of housing (for an overview, see Schill, 2002). Land use and zoning provisions affect the location, density, and types of housing allowed. Environmental and other impact assessment requirements further affect the location and types of development allowed. Building safety regulations, along with disability provisions, energy codes, historic preservation requirements, asbestos and lead paint abatement provisions, health and safety provisions, and housing codes, govern various aspects of new construction and rehabilitation of buildings. A variety of procedural requirements affects who has a voice in determining how and when structures are built or rehabilitated.

In considering the barriers that implementation of these regulations pose for affordable housing, reviewing what the development community views as the key barriers is useful. That understanding provides a basis for more systematic review of the relevant regulatory process barriers. No matter the type of regulation being considered, the role of regulatory approvals, hearings, enforcement, and administrative structures need to be considered.

Concerns of the Development Community

The concerns of the development community and housing advocates have been well represented in the reports of the various national commissions considering barriers to affordable housing. These reports highlight frustration over delays and disruptions that limit the availability of affordable housing. Few of these studies, however, separate the effects of regulatory provisions from the way in which they are administered. As a consequence, drawing conclusions about the magnitude of the barriers posed by regulatory processes is difficult.

The most common approach to identifying these concerns is to survey firms or regulators about their impressions of regulatory impediments. For example, the National Association of Home Builders (NAHB) found in a 1998 survey of association members that 10 percent of the cost of building a typical new home is attributable to unnecessary regulation, regulatory delays, and fees (U.S. House, Committee on Small Business, 2000). In more refined research based on profiles of development costs for new residential subdivisions in New Jersey, Luger and Temkin (2000: 140–141) estimate that the "direct cost of excessive regulation" imposed by delays added expenses for construction and impact fees, and increased financing costs by $10,000 to $20,000 per new housing unit (in 2000 dollars).

A variety of surveys of different constituencies in the housing and development industry evidence concerns about regulatory burdens.[1] Nearly three decades ago, Field and Rivkin (1975) published *The Building Code Burden*, which provided an indictment of building

codes as impediments to innovation in housing and construction. Their survey of home manufacturers revealed that 69 percent cited building codes as one of the top three problems limiting innovation in construction practices—the highest percentage of any item (Field and Rivkin, 1975). To assess trends for different concerns over time, Ben-Joseph (2003) replicated key elements of a survey undertaken in 1976 by Seidel (1978). In both the 1976 Seidel survey and the 2002 survey by Ben-Joseph, nearly three-fourths of the development community respondents cited "government-imposed regulations" as one of the three most significant housing problems.

Delays in permitting and construction are clearly noteworthy concerns. Developers of subdivisions who participated in Ben-Joseph's study (2003) reported waiting an average of 17 months for relevant permits. One-fifth of the respondents reported waiting more than 2 years. In a study of motivations for building-code compliance by homebuilders in western Washington, May (2004) found that a primary motivation for compliance, cited by 76 percent of the respondents, is avoidance of delays in construction. Luger and Temkin (2000) provide insights about the sources of delay for residential development in their surveys of regulators in New Jersey and North Carolina.[2] "Organized citizen opposition" to subdivisions was cited by the greatest percentages of respondents, followed by contractor or development error, inadequate staffing, and unspecified sources of delay in negotiations (Luger and Temkin, 2000: 57). In response to other questions, from one-third to more than one-half of the respondents cited complexity in regulations or regulatory processes as a major factor in delays in regulatory approvals (Luger and Temkin, 2000).

Inconsistencies in regulatory requirements and inspections constitute another set of noteworthy concerns. More than three-quarters of the residential homebuilders surveyed by May (2004) cited these inconsistencies as a constraint on code compliance. "Unnecessary delays" and the impacts of "local administrative discretion" each were cited as the most burdensome aspect of regulation by approximately one-quarter of the respondents in both the 1976 and 2002 studies summarized by Ben-Joseph (2003: 7). These are all different ways of communicating concerns about lack of coordination and inconsistencies in interpretation of rules.

Citizen opposition to affordable housing development was highlighted by the Advisory Commission on Regulatory Barriers to Affordable Housing in the title of their report, *"Not in My Back Yard": Removing Barriers to Affordable Housing* (1991). That commission cited the "not in my backyard" atmosphere in which groups opposed to affordable housing have slowed or blocked the expansion of such housing.

Among recent studies, only the Luger and Temkin research (2000) specifically asked about citizen opposition. More than one-half of New Jersey regulators and more than one-third of North Carolina regulators cited citizen efforts as a reason for delays in subdivision applications. Interestingly, only 9 percent of the residential developers Luger and Temkin surveyed in New Jersey cited "organized citizen opposition" as a reason for delay, with another 15 percent citing "individual/isolated opposition" as a consideration (2000: 57).

Barriers Posed by Regulatory Approval Processes

Those seeking to develop new housing or rehabilitate existing housing undergo a regulatory gauntlet similar to the following to obtain necessary approvals:

- A series of pre-approval meetings to discuss the outlines of the proposed development, the process to be followed for approval, and preliminary negotiations over the development itself.

- Submission of application materials that detail plans, alternatives, and adherence to the variety of relevant regulations concerning land use and location of the property; environmental considerations and remediation of potential harms; adherence to local codes concerning visual appearance, utilities, and roads; adherence to building regulations; and, in the case of housing rehabilitation, consideration of potential environmental considerations, such as asbestos removal.

- A variety of special studies to support the application materials that may include separate environmental reviews, engineering assessments, traffic studies, and other technical backup.

- Community or other hearings by approval boards to register concerns about the proposed development.

- Approval decisions that contain conditions placed on the development that must be met before receiving necessary permits or other approvals; these may be appealed to hearing examiners or other quasi-judicial bodies.

This is clearly a stylized depiction of the long gauntlet of regulatory approvals prior to initiation of major housing developments or rehabilitation projects. Further complicating the situation is the lack of a single approval process. Instead, developers must deal with multiple agencies and approval processes that relate to separate regulations governing land use, building safety, environmental considerations, and other regulations.

In most instances, decisionmaking for approvals is highly prescribed by relevant regulations with respect to the participation of different groups, locus of decisionmaking, and appeal procedures. Regulatory approval processes typically entail discretion granted to regulatory agencies to make decisions that are subject to administrative law review (for example, by a hearing examiner), appeal to political authorities for variances (for example, a city council), and options for legal contests (for example, through civil courts). In some settings, separate appeals committees with quasi-judicial authority have been established to handle such topics as growth management disputes (for example, Washington State Growth Management Hearings Boards) and implementation of requirements for affordable housing set-asides (for example, Massachusetts Housing Appeals Committee).

The delays associated with these processes are central concerns of the development community. Other than the research noted above documenting delays, however, only a limited understanding exists of the effects of different aspects of approval processes and duplication. The findings about these delays are largely anecdotal. For example, in commenting about the high costs of new housing construction in New York City, Salama, Schill, and Stark wrote:

> "Because the Buildings Department is the single most important agency in the development process, its management and operations need to be as efficient as possible. In fact, the New York City permitting process is not—the process is arcane, cumbersome, confusing, complicated and paper-intensive" (1999: 108).

The extent to which groups are able to use the regulatory process to avert new housing is especially difficult to gauge. Examples of groups using public hearings concerning environmental, zoning, or other regulatory aspects to construct roadblocks to planned multifamily developments are not hard to find (see Euchner, 2003; Field, 1997). Without specific knowledge of the circumstances of the actual situations, however, evaluating whether known examples represent fundamental problems in regulatory administration or simply particular instances of outright opposition is difficult.

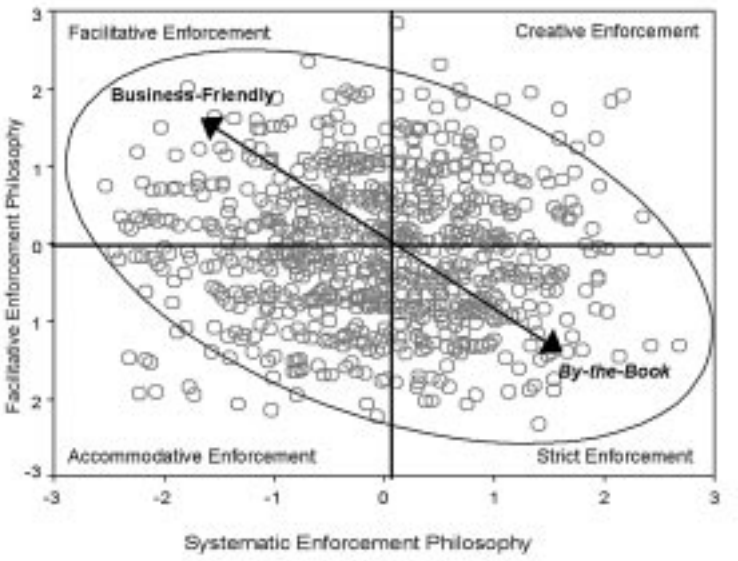
Barriers Posed by Regulatory Practices

Great differences exist in how vigilantly regulatory agencies enforce regulations, their approach to enforcement, and the actions of inspectors in the field. Although the regulatory literature is still somewhat unsettled about distinctions in regulatory strategies and philosophies, a broad distinction can be made between strict and "by-the-book" approaches and more facilitative and "business-friendly" approaches (Kagan, 1994; May and Burby, 1998). The former entails strict enforcement and formal processes, while the latter entails cooperative enforcement and facilitative practices. The term "business-friendly" could suggest a strong, pro-development stance on the part of elected officials and regulatory agencies. This article, however, uses the term to characterize a regulatory agency approach entailing a supportive regulatory regime that helps developers negotiate the regulatory gauntlet. The issue of regulatory enforcement approaches crosscuts different types of regulations.

Exhibit 1, based on data employed in the analyses reported in May and Burby (1998) and Burby et al. (2000), shows the variation among cities and counties across the United States in enforcement philosophies and strategies for building regulation. Each data point shows how the regulatory practices of a given jurisdiction score with respect to systematic and facilitative practices. The categories of agency enforcement strategies reflect the degree of emphasis that each jurisdiction places on systematic and facilitative practices. Jurisdictions with scores on the upper left quadrant of the exhibit have a more business-friendly approach, while those in the lower right quadrant have a more by-the-book approach.

Exhibit 1

Building-code Agency Enforcement Philosophies and Strategies



Note: Each circle represents the philosophy and strategy employed by a local building-code enforcement agency based on a national sample of city and county agencies. The scales show relative differences in approach. The oval and endpoints of the arrow show degrees of the extent to which both philosophies and strategies are either business-friendly or by-the-book.

Source: Author, adapted from May and Burby (1998) and Burby et al. (2000)

Critics of regulatory excess presume that the by-the-book approach presents unnecessary delays that drive up the cost of housing and, in the extreme, creates a business climate that deters development (see, in particular, Downs, 1991; Field and Rivkin, 1975). The business-friendly approach, as the label suggests, is expected to facilitate development and rehabilitation by easing the restrictions of the more intrusive and burdensome by-the-book approach.

Also relevant is the role of inspectors' enforcement styles. Enforcement style communicates the reality of the regulatory philosophy of a given jurisdiction or regulatory authority. A tough enforcement style, marked by higher formalism and less facilitation in regulatory interactions, may signal a by-the-book approach that is offputting to developers. A flexible enforcement style may signal a more business-friendly regulatory climate and encourage development. As such, these expectations about enforcement styles parallel those noted above for enforcement philosophies and strategies.

A final consideration for regulatory practices is the role of corruption in building regulation. Although determining the extent of corruption is especially difficult, the subject has been a longstanding concern among developers and regulatory officials. A national survey undertaken by May and Burby (1998) found that 13 percent of building officials volunteered that their jurisdiction experience corruption in building regulatory practices within the prior 10 years. Bryan Jones (1985) found that past experiences with corruption in building functions in Chicago were important reasons for the tightening of managerial processes, leading to greater formalism and delays in the process. Salama, Schill, and Stark (1999: 141–143) concluded that several types of corruption—bid rigging, bribes to union officials and municipal employees, and disruptions by labor coalitions—added to the cost of new construction in New York City.

Barriers Posed by Fragmented Administrative Structures

Regulations tend to get layered on one another over time in response to particular demands or crises according to what Bardach and Kagan (1982) label a "regulatory ratchet." New organizations are often created as new regulations are added or new provisions developed. The result can be a patchwork of different agencies haphazardly administering a variety of different regulations.

Because different levels of government administer various regulations, some overlap in regulatory functions is inevitable. Thus, for example, permits associated with development in areas with wetlands may require review by the U.S. Army Corps of Engineers, along with parallel reviews by the U.S. Environmental Protection Agency, as well as corresponding state and local agencies. Duplication within a given level of government reflects assignment of regulatory functions to different agencies at that level. Vertical and horizontal fragmentation of functions, commonly cited as an inherent aspect of U.S. governance, clearly adds to the complexity of regulation.

Numerous anecdotes illustrate how duplication of administrative structures and gaps in regulatory decision processes frustrate regulatory implementation. For example, Euchner highlights the impacts of regulatory fragmentation as barriers to housing in the Greater Boston area:

> The lack of integration [of regulations] at the state level [then] can lead to confusion among local enforcement authorities such as building inspectors, fire chiefs, and boards of health and increase the number of appeals boards in front of which a builder has to appear. The process is especially complex (and confusing) in the case of environmental and handicap access regulations.

> Public officials also regularly defer to "community process" when controversial projects are proposed. Many cities and towns specifically require that projects undergo community scrutiny, even when the projects fit into the existing look and feel of the neighborhood. Community process can be especially problematic in small communities with volunteer governance structures like town meeting and little professional staff in town hall (2003: 7).

Potential duplication of regulations and inconsistencies among regulatory authorities specifically address administrative structures. A well-developed tenet of the implementation literature is that decision structures entailing multiple decision points—across levels of government, among agencies at the same level of government, or both—frustrate effective implementation (Pressman and Wildavsky, 1972). These decision points, at a minimum, introduce delays as decisions are made and remade. More often, they introduce multiple opportunities for vetoes of policy decisions or implementation actions.

Toward Solutions: Evaluating the Evidence

Understanding how to lessen the preceding barriers is the foundation for developing policies for advancing affordable housing. Although few prescriptions emerge from the housing literature on these topics, scholars who have studied reforms of regulatory practices provide key insights (in particular, see May, 2002; Sparrow, 2000). We review several key directions below, with attention to relevant research findings and their implications for affordable housing.

Regulatory and Administrative Process Simplification

In recent years, a number of states and localities have launched efforts to streamline regulatory functions as part of efforts to enhance business climates and economic development opportunities. A 1998 HUD-sponsored survey reported that 24 percent of local code administrators had initiated efforts to streamline enforcement (University of Illinois, 1998). These efforts include electronic permitting, delegation of enforcement to third parties, and administrative reorganizations to combine regulatory functions.

Electronic permitting and "one-stop" permits are aimed at reducing duplication of approvals and cumbersome decision processes. The National Alliance for Building Regulatory Reform in the Digital Age cites the work of nearly two dozen counties and states that have adopted technology for integrating one or more aspects of permits, inspection, enforcement, licensing, and plan review using a mix of proprietary and commercially available technology.[3] The benefits of these and other changes have not been systematically analyzed, but the following anecdotal evidence provided by the Alliance shows substantial improvements (National Conference of States on Building Codes and Standards, 2003):

- Streamlining of regulatory functions by the City of Los Angeles resulted in reductions in waiting times by a factor of nearly 10 for processing of permits, plan checking, and inspection scheduling.
- Use of integrated permit forms and processes among jurisdictions in the three-county Portland, Oregon, area resulted in a substantial reduction of delays and confusion caused by the prior fragmentation of services.
- Use of online processing of permits and inspection requests by Fairfax County, Virginia, achieved $1.5 million in operational savings for these regulatory functions in 2001 and reduced permit processing times on average from more than 4 hours to less than 1 hour.

A National Institute of Building Sciences report on electronic permitting cites more than 100 jurisdictions as "known leaders" in electronic permitting (2002: 3–5). Recent scholarship in public administration provides a broader discussion of both the promise and pitfalls of e-governmental reforms (Ho, 2002; Moon, 2002). The examples above show how technology can be used to streamline regulatory processes and overcome the barriers of fragmented regulatory authorities without necessitating major reorganization of those functions. How these changes affect the regulatory environment remains to be examined.

Enforcement delegation and third-party certification speed up regulatory processes by expanding the resources available to regulatory agencies. For example, engineers hired by cities to conduct inspections of engineered structures or peer reviews of development applications compensate for limitations in agency staff. Third–party use, in principle, can be expanded to include private certifiers to review plans, conduct inspections, and perform audits of regulatory compliance. Some smaller jurisdictions in the United States currently contract out for these services. New York City allows "self-certification" of building applications and plans, final surveys, and other considerations for certain classes of buildings by registered architects and professional engineers (Salama, Schill, and Stark, 1999: 111–112).

The experience with energy conservation and radon reduction in the United States provides instructive examples of the use of third-party certification of regulatory compliance. In both cases, private certifiers play important roles in evaluating problems, certifying compliance, or both. The more problematic part of a system of third-party certification is monitoring the quality of third-party actions. Some form of external monitoring by regulators is required, as well as self-policing by industry groups or use of liability or financial mechanisms. For example, New Zealand suffered a "leaky building" crisis in which some 20,000 homes and hundreds of apartment buildings developed structural failures from water infusion. As discussed by May (2003), a key source of the leaky building problem was that poorly trained consultants were given authority to sign off on adherence to code provisions. Had proper inspection been undertaken, many of the problems would have been resolved earlier.

This energy conservation and radon reduction experience provides a good understanding of the issues involved with greater reliance on third parties for providing regulatory approvals. The benefits of such delegation for reducing delays in regulatory approvals and production of affordable housing more generally have not been systematically addressed.

Administrative reorganization seeks to reduce duplication of regulatory programs and organizations, which presumably has the benefit of reducing delays associated with the need to deal with multiple agencies. The relevant organizational issue is the degree to which regulatory functions are integrated. The most obvious method to integrate administration is to have compatible regulatory functions performed by the same agency. This integration has been typically accomplished by combining planning and permit functions at local levels of government so that planning approval, permit issuance, and inspections are administered by the same organization.

A second approach is to coordinate functions across different agencies. Advances in e-government make it possible to have a virtual integration of regulatory functions without necessitating administrative reorganization. The appointment of a central administrator with responsibility for overseeing the integration of regulatory functions can facilitate coordination. For example, some cities appoint "permit czars" charged with cutting through bottlenecks in regulatory processes. These czars serve roles that the implementation literature refers to as "fixers" for implementation problems.

Like other aspects of regulatory simplification, the implications of administrative simplification at local levels of government for housing have not been systematically studied. The broader literature on implementation suggests that administrative simplification or coordination is necessary for reducing delays, but do not guarantee that delays or other problems will be eliminated. In particular, rearranging the organizational boxes does not necessarily reduce turf considerations and other bureaucratic hurdles. A transformation of organizational cultures and routines is necessary to overcome these constraints.

Conflict reduction and consensus building are more difficult to address. As noted by Burby, citizen involvement in planning, and by extension in development and housing decisions, "tends to be dominated by an 'iron triangle' composed of local business and development interests, local elected and appointed government officials, and neighborhood groups" (2003: 38). The structure of interaction between these groups can profoundly affect both the timeframe and character of planning and other regulatory decisions.

Extensive discussions of different forms of stakeholder involvement have occurred in recent years in the planning literature and the literature on environmental decisionmaking (Beierle, 2000; Beierle and Konisky, 2000; Burby, 2003). Given the diversity of approaches, a simple taxonomy of different forms of stakeholder involvement cannot be created. Relevant processes include such elements as different types of advisory committees, facilitated forums, systematic canvassing of groups, and structured deliberation. Participation by a diverse set of stakeholders helps anticipate and raise issues that might not otherwise be identified. More voices, however, are not necessarily conducive to rapid decisionmaking. The result may be a better policy, but the process may be frustrating and drawn out. The consensus of the evolving literature on stakeholder involvement is that a shared commitment to broad stakeholder involvement *and* joint resolution of disputes is more important for effective outcomes than the specifics of the mechanisms for involvement.

Conflict resolution and other negotiation processes have been employed to lessen the delays and undesirable outcomes that follow from contentious decision processes. Field (1997) argued that joint problem solving that uses mediation and "principled negotiation" can help overcome impasses created by groups that oppose affordable housing developments. Field illustrated the successful use of these processes to secure agreements about affordable housing in Hartford, Connecticut. Although extensive literature addresses negotiated decisionmaking and stakeholder involvement (Beierle and Cayford, 2001), little research specifically addresses negotiating conflicts over affordable housing.

Smart Enforcement: Regulatory Approaches Matter

One of the main changes in thinking about regulation in recent years is a shift in perspective from considering ways to strengthen enforcement to addressing ways to improve compliance. The terminology for this shift includes "smart enforcement" (Sparrow, 2000: 181–193), "responsive regulation" (Ayres and Braithwaite, 1992), and "business-friendly enforcement" (Burby et al., 2000). Although the specific actions differ, the basic goal is to reduce particularistic, by-the-book approvals and enforcement and rely more on facilitative actions in regulatory approvals and enforcement. Most of the literature on these topics is concerned with the effect of regulatory approaches on regulatory compliance.[4] The research about enforcement strategies reviewed in this article provides evidence that changes in regulatory practices can enhance housing availability.

Research on the effects of building regulation on central city development provides important insights for affordable housing. Burby et al. (2000) consider the effects of regulatory approaches on economic development in central cities, in particular the extent to which regulatory practices deter development in the first place. Exhibit 2 summarizes the

findings for the effects of different regulatory approaches on single-family, detached residential construction.[5] The calculations of change in construction activity shown in exhibit 2 are based on multivariate findings by Burby et al. (2000) that control for differences among central cities in demand for housing, development opportunities, development costs, indicators of the quality of life (that is, crime, poverty, and schools), and metropolitan-area characteristics.

Exhibit 2

Effects of Enforcement Choices on Success of Central Cities in Capturing Single-family Residential Construction, 1985–95

	Percent change in construction activity	
Enforcement choices	**Number of units**	**Value of units**
Enforcement philosophy:[a]		
More business friendly	9.1%	8.8%
Enforcement strategy:[b]		
Strict	base case	base case
Creative	– 1.7	– 0.7
Facilitative	7.3	8.1
Accommodative	9.0	8.7
Enforcement level of effort:[c]		
Stronger	0.3	1.8

[a] Entries show the effects of changes of moving from the highest quartile to the lowest quartile of all cities for the systematic enforcement philosophy.
[b] Entries show the effects of changes associated with each strategy relative to the base case of a strict enforcement strategy.
[c] Entries show the effects of changes of moving from the lowest quartile to the highest quartile of all cities for enforcement effort.

Source: Burby et al. (2000): 153

The findings in exhibit 2 directly address the impacts of agency-level regulatory practices on housing. The conclusions from this research are particularly germane and, thus, warrant quoting:

> Adopting business-friendly approaches will not reverse the movement of industrial, office, and retail businesses from central cities to the suburbs. But these approaches can help cities attract more single-family detached housing (and the population that comes with it) and spur more commercial rehabilitation projects. The percentage gains in construction activity that can be achieved are not large—about 5 to 10 percent. Because home building and commercial rehabilitation account for about 70 percent of construction activities in metropolitan areas, however, the absolute amounts of additional construction activity central cities can capture is large enough to merit attention (Burby et al., 2000: 154–155).

Although these findings are supportive of arguments made by those advocating less rigid and more business-friendly regulatory practices as ways of advancing affordable housing, the failure to find an effect on multifamily housing is an important limitation that needs further exploration.

Current research by Burby and Salvesen for the Fannie Mae Foundation addressing the impacts of New Jersey's rehabilitation code suggests that rehabilitation can be spurred by "smart codes" and flexible enforcement.[6] Smart code provisions, first implemented in

1998 through the New Jersey rehabilitation subcode, clarified rehabilitation requirements and reduced some previous requirements for projects to fully meet the code requirements for new construction. These changes also signaled a desire for local governments to adopt a more facilitative approach to regulating the rehabilitation of buildings. Although this research has yet to be published, the findings to date show that New Jersey's efforts resulted in a greater number of rehabilitation projects than under the prior regulations or in the rehabilitation activity of control cities from neighboring states without the smart code provisions. No discernable difference arose, however, in the total value of rehabilitation projects for either set of comparisons. These findings suggest that developers of smaller projects were likely to have been deterred from undertaking rehabilitation by more stringent regulations and regulatory practices that created uncertainty about the standards to be applied to rehabilitation projects.

Facilitative Review and Inspection: Regulatory Practices Count

Housing and rehabilitation specialists express concerns about inconsistencies in the interpretation of rules, drawing attention to actions in the field that affect the ability of housing developers to comply with regulations and enhance cooperation between the developers and regulatory inspectors. The available research provides evidence that inspectors' enforcement styles do have appreciable effects on compliance, understanding of rules by regulated entities, and cooperation between inspectors and regulated entities.

Burby, May, and Paterson (1998) found that a facilitative enforcement approach enhances commitment of residential and non-residential contractors to comply with building codes. May and Wood (2003) provide a more nuanced set of findings from their study of residential contractors in western Washington. The authors found facilitative enforcement styles help foster a better understanding of rules for less knowledgeable contractors, but that advice can be undermined by inconsistencies among inspectors or over time. These findings indicate a downside to the use of "responsive regulation" that calls for flexible enforcement, and toughness only when flexibility fails. In particular, May and Wood wrote, "To the extent that such flexibility fosters inconsistent signals by inspectors across time or across settings, it undermines regulatees' understanding of rules and the development of shared expectations concerning compliance" (2003: 135).

Policy Challenges

Bringing about these changes presents several challenges for federal, state, and local policymakers. We considered the following broad challenges:

- Indirect federal influence.
- Balance of regulatory objectives.
- Constraints in bringing about change.

Indirect Federal Influence

Federal policymakers face a challenging situation in which the implementation of the relevant regulatory programs falls largely within the province of state and local governments. As a consequence, the federal influence in addressing many of the regulatory process barriers and bringing about reforms is indirect—an example of the classic dilemma of shared governance in the U.S. system. On the one hand, federal housing officials want to promote expansion of affordable housing; on the other hand, these efforts rest on actions of state and local officials who do not necessarily assign a high priority to these housing goals. This dilemma explains why the recommendations of various commissions on affordable housing have not had more impact in reducing regulatory process barriers.

Several broad avenues of influence can affect change in regulatory processes at state and local levels of government. Federal sponsorship of research can identify the sources of regulatory barriers and means for addressing them. Sharing information and examples of best practices among relevant state and local associations helps diffuse these practices. Examples include HUD's efforts to document barriers to affordable housing (Listokin and Listokin, 2001) and the National Institute of Building Standards to promote adoption of e-permit processes (National Institute of Building Standards, 2002). The federal government could also sponsor demonstration programs at local levels of government that serve as exemplars of regulatory reforms.

Balance of Regulatory Objectives

A second challenge concerns the balance between achieving regulatory objectives for land use, environmental protection, and other nonhousing goals with achievement of affordable housing goals. The lack of a consensus about affordable housing goals, particularly at local levels of government, seems to tilt this balance toward the regulatory objectives. Field has argued that a breakdown exists in the national consensus over the goals of affordable housing. He writes: "Today, proponents of affordable housing must negotiate with diverse and sometimes hostile parties to secure project approvals. Discussions are frequently adversarial, and stalemate is often the result" (1997: 801).

Just as some community groups and local elected officials are reluctant to restrict land use for environmental protection (Burby and May, 1998), others are reluctant to endorse and carry out affordable housing programs. Simply put, the problem is that many communities lack a meaningful political constituency for affordable housing. Instead, a stronger coalition argues against it, often operating under the guise of pursuing other, more important goals. As a consequence, local officials either need to be cajoled into creating programs by state mandates or court orders (as in Massachusetts and New Jersey) or constituencies need to be fostered. Mandates are often ineffective because they are circumvented with token compliance. Fostering constituencies is difficult. But, as discussed by Burby (2003), participation in planning processes is one mechanism for building constituencies around community goals. When done well, participation in planning processes can be a vehicle for planners to raise issues and citizens and community groups to express their concerns.

Constraints in Bringing About Change

A final set of policy challenges stems from the constraints on regulatory reform at local levels of government. Although local practices are not immutable, they have developed over time in response to specific demands and needs that provide impediments to achievement of local regulatory reforms. In general, regulatory practices are shaped by broader objectives of local governments (for example, whether to promote development or limit it) and the internal workings of regulatory bureaucracies that operate out of the glare of visible political debates. Studies of the adoption and enforcement of building codes at the state level (May, 1997) and local levels (Burby and May, 1999; May and Birkland, 1994; May and Feeley, 2000) reinforce the importance of political considerations, economic realities, and problem context in affecting regulatory choices.

These studies reveal that reforming regulatory practices is not a simple undertaking. Legal considerations constrain efforts to increase flexibility and discretion in regulatory approaches and practices. Local officials open themselves to litigation if administrative procedures are not followed in full or actions are inconsistent. Perhaps the largest constraint is the inertia of bureaucracy. Studies of housing code enforcement undertaken by Ross (1995) and of field practices in building regulation by May and Wood (2003) and Wood

(2003) highlight the important role that inspectors' values and attitudes play in determining what regulations look like in practice. Changing these values and attitudes to reflect more business-friendly and flexible regulatory approaches is likely to be difficult.

Gaps and Research Needs

The indirect influence of federal actions over regulatory processes at state and local levels of government draws attention to the important federal role in sponsoring research about regulatory process barriers and ways to overcome them. The preceding discussion evidences a much better understanding today than a decade ago about aspects of regulatory barriers to housing. Advances have been made in understanding the concerns of developers and others about regulatory barriers, the ways that choices by regulatory agencies and field personnel affect potential development, and the procedural roadblocks and decision considerations. Nonetheless, we suffer from a number of gaps in understanding the problem and the steps to address it. Exhibit 3 summarizes the gaps and the related research needs suggested.

Exhibit 3

Gaps and Research Needs

Issue	Research Gap	Result of Research on Topic
A. Understanding of regulatory process barriers		
Cost of regulatory process barriers to housing goals	Understanding of the true costs of regulatory process barriers as distinguished from other sources	Basis for evaluating relevance of addressing regulatory process barriers versus other barriers
Implications of regulatory processes for regulations other than regulation of building safety	Better understanding of implications of regulatory processes relating to environmental, land use, and other regulations	Broader understanding of regulatory process issues and their implications
Attention to lesser studied aspects of regulatory processes: citizen opposition and fragmented structures	Better understanding of sources of regulatory process barriers	Ways of reducing regulatory process barriers
B. Understanding of solutions to regulatory process barriers		
Administrative e-government reforms and other mechanisms for process simplification	Understanding of the implications of the reforms with respect to more than just administrative efficiency	Better understanding of how to design effective administrative process reforms
Third-party involvement in regulatory administration	Understanding of the potential and limits to third-party certification and other forms of involvement	Potential leveraging of regulatory resources and reduced delays in administrative processing of permits and other reviews
Procedural reforms in regulatory decisionmaking and goal setting	Better understanding of role of mediation and negotiation along with public participation in shaping consensus for affordable housing goals	Ways of addressing opposition to housing developments and forging consensus about housing goals

Exhibit 3 (continued)

Gaps and Research Needs

Issue	Research Gap	Result of Research on Topic
Flexible regulatory approaches	Better understanding of what these entail and how to implement them	Ways of reducing enforcement burdens
C. Consideration of implications of broader regulatory reforms		
Performance-based regulation	Implications for regulatory processes and practices as they affect housing-related goals	Greater flexibility and potentially reduced costs of compliance
"Voluntary" regulation	Implications for regulatory practice and housing-related goals	Less direct governmental regulation

Improved Understanding of Regulatory Process Barriers

Several weaknesses are evident in the research concerning regulatory process barriers. One is the heavy reliance on what developers report as their concerns, which inevitably will be shaped by general impressions of regulations and, thus, subject to bias. A second limitation is the imprecise cost estimates associated with regulatory burdens. Estimates of those costs often lump together costs associated with administrative burdens and legitimate regulatory hurdles, making it difficult to assess the impacts of regulatory inefficiencies. A third limitation is the inability to generalize from these findings to broader, national impacts on housing supply and affordability.

These broad criticisms lead to consideration of three avenues for research that will lead to improved understanding of regulatory process barriers.

Understanding the True Costs of Regulatory Process Barriers to the Availability and Affordability of Housing

The existing research provides an understanding of the sources of the administrative barriers and the types of costs imposed. In particular, Lugar and Temkin (2000) provide estimates of the costs associated with delays, impact fees, and other regulatory provisions from their data about the costs of developing residential subdivisions in New Jersey. These limited data, however, do not address costs on a nationwide basis or account for costs imposed on different types of housing. Many developers complain about the administrative burdens and the costs they impose, but how much of the "housing affordability gap" can be explained by regulatory process barriers is unclear. Understanding this will help put into perspective the degree to which policy should focus on these barriers versus other aspects of regulatory impacts on housing.

The limited research on these topics consists mainly of case studies of the experience in selected jurisdictions with particular types of housing. The advantage of this approach is that it allows for collection of detailed information about different sources of regulatory burdens. The disadvantage is that it provides little basis for generalizing across housing types or jurisdictions to provide a broader understanding of the national situation. Development of this understanding requires more systematic data collection for a sample of local jurisdictions and development types across the country. A carefully constructed study involving a national sample of jurisdictions and housing types could provide a good understanding of the nationwide variation in local regulatory processes and their effects on housing.

Understanding the Effects of Regulatory Practices for Regulatory Areas Other Than Regulation of Building Safety

Studies of regulation of building safety provide much of our understanding of the implications of different regulatory processes. This focus is appropriate because new housing production and rehabilitation of existing housing must comply with relevant building regulations. Yet, as discussed by May and Wood (2003), building regulation differs in two important ways from other regulations. First, inspection is certain (and frequent) for building regulation but is infrequent and sometimes nonexistent for most regulatory functions. Second, building inspection is aimed at identifying and rectifying problems, whereas for most regulatory settings, inspection is primarily aimed at preventing harms.

Research concerning regulatory processes for environmental, land use, and other nonbuilding regulations is necessary to determine if the lessons from existing studies of building regulation also apply to other regulatory areas. This research might consist of a set of analytic studies that compare the differences in regulatory approval and enforcement processes for selected jurisdictions for different types of regulations with particular attention to duplication of regulatory processes. This research would provide a broader understanding of the influence of regulatory processes for affordable housing. It also could provide a basis for commenting about the potential for reducing overlap in regulatory processes.

Attention to Lesser Studied Aspects of Regulatory Processes

The research concerning regulatory processes tends to focus on enforcement aspects of building regulation. Lesser attention has been paid to citizen opposition and its effects, and to the implications of fragmented regulatory structures. Although each of these topics is separate, putting them in context with respect to their contribution to the overall barriers posed by regulatory processes is useful.

The understanding of the impact of citizen (and other group) opposition to affordable housing developments is long on anecdotes and thin in providing insights about the nature of the opposition and its implications. A better understanding of the reasons for opposition is essential for responding to it. Also important is an understanding of the way that regulatory procedures foster what regulatory scholar Robert Kagan (1991, 2001) has labeled “adversarial legalism” in providing veto points for affordable housing. This type of research is perhaps best conducted as indepth case studies of citizen opposition to affordable housing with selection of cases to provide illustrations of different types and degrees of opposition.

The role of fragmented regulatory structures in contributing to frustration and delays is not hard to understand. But, such broad observations provide little understanding of the sources of fragmentation and the constraints in overcoming it. How much of the fragmentation is driven by legal considerations related to procedural considerations specified in regulations beyond the control of local governments? Are some functions better left separate to avoid abuse or increase accountability? This type of research is perhaps best conducted as case studies of organizational arrangements in different jurisdictions with attention to the basis for the organizational structures and their implications for regulatory delays.

Improved Understanding of Solutions to Regulatory Process Barriers

Several avenues for overcoming regulatory process barriers are fruitful to consider for further research. Four such paths are considered in the following paragraphs.

Understanding of Administrative Process Simplification

We lack research that addresses regulatory processes and decisionmaking as these relate to barriers to affordable housing. The anecdotal evidence about streamlining of regulatory processes suggests that substantial reductions in administrative delays can be achieved through use of e-government reforms. That evidence, however, is highly selective and focuses entirely on efficiency considerations. Little is known about how such reforms affect regulatory outcomes, the level of understanding by regulated entities of what is expected of them, and the overall satisfaction with regulatory processes. Studies of developers who have participated in selected jurisdictions' e-government reforms in permit applications and processes are necessary to gain this understanding. These studies are best conducted as surveys of participants, perhaps undertaken in conjunction with sponsorship by one or more local governments of an evaluation of their e-permit reforms.

To date, the emphasis of e-regulatory reforms has been on coordinating regulatory paper flows. Although these constitute major advances in processing of regulatory applications, other advances can and should be explored. In particular, the use of electronic collaboration for predevelopment permit discussions and joint decisions among regulatory authorities have potential for reducing the barriers imposed by multi-agency, serial decisionmaking. This research might best be undertaken as small pilot studies or demonstrations in cooperation with jurisdictions that are interested in such regulatory advances.

Implications of the Use of Third Parties in Regulatory Practices

One response to limitations of staff resources for carrying out review of plans and inspection has been to rely on third parties for these functions. The selected experiences reviewed above provide some understanding of the issues involved when placing greater reliance on third parties for regulatory approvals. The benefits, however, of such delegation for reducing delays in regulatory approvals and for production of affordable housing more generally have not been systematically addressed. The involvement of third parties raises issues concerning certification, accountability, and legal liability.

Research concerning the legal implications—regarding assignment of responsibility and liability—of use of third parties is especially important to undertake. Much can be learned from the selected experiences in the use of professional engineers and registered architects for certifying plan conformance and adherence to various regulatory provisions. A broader understanding of the role of third parties from the literature on energy conservation, radon reduction, and other fields may be useful in drawing policy lessons.

Understanding of Procedural Reforms in Regulatory Decisionmaking and Goal Setting

Perhaps the least understood aspect of regulatory administration is how to effectively use mediation, negotiation, and other problem-resolution techniques for reducing conflicts over affordable housing projects. Extensive literature addresses environmental dispute resolution, but we lack research that addresses the implications of these approaches for housing disputes. The housing-related literature on these topics is long on advocating the use of the techniques and short on evaluating their implications—especially as they relate to addressing disputes involving tradeoffs between housing- and non-housing-related regulatory objectives. Case studies of circumstances in which dispute resolution has been employed for mediating tradeoffs among regulatory goals could provide insights about the strengths and limitations of dispute resolution mechanisms.

A more basic set of issues is the degree of community and local elected officials' support for affordable and other housing goals. Such support is no doubt variable depending on

economic conditions, housing markets, desires to facilitate development, and the extent of environmental and other concerns in a community. Nonetheless, establishing housing goals is an important aspect of land use and community planning. As discussed by Burby (2003), the role of participation mechanisms in establishing those plans is important to consider (Beirle 1998). Research on the role of planning processes and other mechanisms for establishing housing-related goals is important for gaining an understanding of how to build consensus around housing issues. This type of research is usually undertaken by considering planning processes and resultant plans across communities that have made efforts to address affordable housing.

Carrying Out Flexible Regulatory Approaches

One of the key research findings noted above is that of Burby et al. (2000) in showing that business-friendly and flexible regulatory approaches have positive payoffs with respect to encouraging development of housing in central cities. Indeed, the notion of flexible regulatory approaches is not new. Ahlbrandt (1976) cited the virtues of flexible code enforcement for neighborhood preservation more than 25 years ago. More recently, regulatory scholars such as Ayres and Braithwaite (1992) and Sparrow (2000) have endorsed variants of flexible approaches that involve situational monitoring of compliance, results-oriented enforcement of code requirements, and the use of sanctions only when required. Yet, we do not really understand the definition of a flexible approach, nor do we know how best to enact it.

Advances in thinking about this approach require a better understanding of how different tools of enforcement (for example, use of sanctions, incentives, and provision of information), priorities for enforcement (for example, who is targeted and what is inspected), and the degree of effort involved in carrying out enforcement (for example, the allocation and leveraging of enforcement resources) add to or detract from a business-friendly regulatory climate. Creating this climate, however, entails more than simply specifying what choices enhance that approach. As discussed by Sparrow (2000), fundamental changes in the culture of regulatory agencies are required. And, as noted above, legal constraints relating to administrative due process considerations and equitable treatment of regulated entities may constitute barriers.

Research is required that considers the value and feasibility of flexible approaches from the perspective of regulatory officials, as well as the perceptions of this approach from the perspective of developers. Regulated entities "value clarity in expectations, consistency in procedures, and the benefit of the doubt when deficiencies are found. But, inspectors must be able to strike a proper balance to encourage cooperation without allowing them to be manipulated into ignoring substantial violations" (May and Wood, 2003: 135). This type of research is best conducted with surveys in selected jurisdictions of developers and regulatory officials. The challenge is conveying what a flexible approach really means so that respondents can express their views about it. One strategy might be to find jurisdictions that have recently introduced changes in regulatory approaches to examine the views about the changes. A second strategy would be to develop vignettes about different approaches that can be incorporated into survey research.

Gaps Related to Evolving Regulatory Reforms

Any discussion of regulatory barriers is framed with respect to the regulations and administrative processes in place at the time. In thinking about regulatory process barriers, considering the implications of evolving regulatory reforms that will likely shape future regulatory implementation is important. Two potentially relevant sets of reforms are discussed in the following paragraphs.

Implications of Performance-Based Regulation and Regulatory Regimes[7]

Performance-based regulation embodies the notion that regulations should be based on achievement of specified results rather than on adherence to particular technologies or prescribed means. This approach has been widely accepted as a basis for improving social and environmental regulations and has been central to reforms of building safety regulation of in the United States, as well as a number of other countries. Until the past decade, the regulation of building safety has developed throughout the world as one of the more rule-bound and prescriptive aspects of protective regulation. Employing a prescriptive approach, the typical building code provision addresses requirements for a component (that is, wall, partition, and floor) in specifying required practice (that is, nailing pattern and bolting or bracing), materials, or both. Since the initial model building code in the United States was promulgated in 1927 (the Uniform Building Code [UBC]), revisions and additions have resulted in hundreds of provisions that, as of the 1997 version of the UBC, comprised nearly a thousand pages.

Recognizing the deficiencies of the prescriptive approach and the increasing complexities of code provisions, a trickle of efforts that began in the 1970s and gathered momentum in a variety of forums has led to a rethinking of the philosophy of building and fire codes. Two separate sets of developments are relevant in the United States. One was an effort undertaken by a consortium of the three national code-writing entities that created a new entity called the International Code Council (ICC) to develop a performance-based building code. The resulting performance-based code was published in December 2001 as *ICC Performance Codes for Buildings and Facilities* (International Code Council, Inc., 2001). A second effort in the United States is a competing model code promulgated by the National Fire Protection Association (NFPA) (2002) as the *NFPA 5000, Building Construction and Safety Code*. Both the ICC and the NFPA performance-based code provisions are alternatives to existing prescriptive code provisions that must be adopted by states and/or localities before they can go into effect. The basic approach of the two performance-based codes is similar in specifying broad goals for building and fire safety, functional requirements that relate to specific aspects of the building (for example, structural stability, fire safety, and hazardous materials), performance requirements (standards) that specify minimum requirements, designation of means for verifying building performance, and, in some instances, examples or guidelines for "acceptable solutions."

Proponents of performance-based codes argue that the codes will foster greater flexibility and innovation in reaching regulatory objectives. The codes also seek to simplify the provisions; the ICC performance code is one-fifth the length of the corresponding UBC. The building industry's interest in the performance-based approach has been driven by desire for increased flexibility and the potential for reductions in compliance costs and time involved for complying with regulatory provisions. Proponents argue that these savings are especially evident when using performance-based codes in the rehabilitation of existing buildings.

Given that the performance-based codes have only recently been adopted, their effects on the administrative aspects of building regulation have not been systematically studied. The provisions put more responsibility on the development community (and their consultants) to demonstrate that a given building design complies with expected performance standards. The roles of plan checkers and inspectors change from assessing compliance with specific, prescriptive provisions to certifying that overall compliance with expected performance has been adequately demonstrated. This certification necessitates greater administrative capacity on the part of regulatory agencies and more expertise on the part of plan checkers and inspectors.

The shift to performance-based regulations is not limited to building regulation; they have been employed for regulations concerning environmental harms, food safety, health and safety, nuclear power plant safety, and transportation safety, among other regulatory arenas. The main issue for production of housing is how shifts from largely prescriptive-based regulations to performance-based regulations affect the types of barriers discussed herein. One research approach is to consider the lessons learned from the use of performance-based regulation to date. One such set of lessons is provided by May (2003) in describing the "leaky building crisis" that emerged in New Zealand after a performance-based building code was introduced. That experience does not serve as an indictment of performance-based regulation; however, it does serve as a reminder of the need to consider the implications for regulatory implementation of performance-based approaches.

Implications of Voluntary Regulation

Another set of regulatory reforms of potential relevance to housing considerations is increased use of various forms of "voluntary" regulation as either additions to or substitutes for traditional forms of regulation. Under the voluntary approach, government calls attention to a potential harm and facilitates voluntary actions by relevant firms or industry associations to address the potential harms. Several variants of voluntary approaches are used. One variant, discussed by Potoski and Prakash (2002), consists of encouraging industry associations to develop "voluntary codes" for which adherence by industry members will provide market and public relations benefits. Coglianese and Lazer (2003) discuss the use of "environmental management systems" as part of voluntary codes with which firms make use of management systems for identifying and addressing problems with adherence to environmental regulations. For example, some firms have adopted the environmental management processes specified under the International Organization for Standards' voluntary ISO 14001 standard. Firms that adopt these systems presumably will have better compliance, and even go beyond compliance, with environmental regulations.

The potential for the use of industry-based voluntary codes in housing-related regulatory programs has yet to be explored. As with the study of performance-based regulation, considering the lessons for housing from experiences with voluntary codes in other arenas and settings would be useful. Perhaps the most directly relevant issue for housing production is the ways in which participation in environmental voluntary codes by large housing manufacturers ease compliance burdens imposed by environmental regulations. This type of research can be undertaken by identifying developers and housing manufacturers that have participated in voluntary codes and studying how such participation has affected the timing of regulatory approvals and other regulatory barriers.

Conclusions

Given the limitations of current research on regulatory barriers, we suggest three avenues for future research. First, we must analyze the true costs of the barriers for the availability and affordability of housing, look beyond building regulation as a regulatory arena for study, and pay attention to lesser studied aspects of regulatory processes—citizen opposition and fragmented regulatory structures. Second, we must consider more fully administrative process simplification, the implications of the use of third parties in regulatory practices, the use of procedural reforms in regulatory decisionmaking and goal setting, and methods for carrying out flexible regulatory approaches. Third, we must consider the implications of broader regulatory reforms relating to performance-based regulation and voluntary codes for housing-related goals.

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Author

Peter J. May is professor of political science at the University of Washington where he is affiliated with the Center for American Politics and Public Policy and also is an adjunct professor at the Evans School of Public Affairs. His research addresses regulatory policy design, enforcement, and compliance with environmental regulations, and policy processes. His research on these topics has appeared in the Journal of the American Planning Association, Journal of Comparative Policy Analysis, Journal of Policy Analysis and Management, Journal of Public Administration Research and Theory, Law and Policy, Law and Society Review, Public Administration Review, *and* State and Local Governmental Review.

Notes

1. As noted by Ben-Joseph (2003), surveys of homebuilders undertaken by the National Association of Home Builders in the 1960s did not show government regulations as noteworthy obstacles to the housing industry, suggesting that the perceptions of regulatory burdens accompanied the growth of social regulation in the United States that took place in the 1970s.

2. Luger and Temkin (2000) also surveyed developers in New Jersey. The focus of their research was the impact of zoning and subdivision regulations, environmental regulations, and impact fees on housing costs. The impact of building codes was not included in their study.

3. The Alliance is a public-private partnership among 42 organizations with an objective of "streamlining the building regulatory process through the use of information technology to enable the nation to build 'faster, better, safer, and at less cost'" (National Conference of States on Building Codes and Standards, 2003: 1). Alliance members include the National Governors Association, U.S. Conference of Mayors, National Association of Counties, National Association of State Chief Information Officers, National Institute of Standards and Technology, American Institute of Architects, Building Owners and Managers Association International, National Association of Homebuilders, and National Institute of Building Sciences. The National Conference of States on Building Codes and Standards serves as the secretariat for the Alliance.

4. A second closely related focus of the regulatory implementation literature is explaining variation in the motivations of regulated entities to comply with regulations. This literature addresses the ways that regulatory practices facilitate or impede the willingness and ability of regulated entities to comply with regulatory provisions (see, for example, Winter and May, 2001; May, 2003).

5. These effects were studied for 155 central cities across the United States. Success in attracting real estate construction was measured with respect to the number and value of building units in the central city relative to the surrounding metropolitan area. The research failed to find detectable effects of different regulatory practices on central-city development of multifamily housing or of industrial, office, or retail/warehouse buildings. The effects on rehabilitation of commercial office buildings paralleled those for single-family detached residences.

6. The research results reported in this paragraph are findings reported in personal communication with the author on January 20, 2004. The research results are for residential rehabilitation.

7. This discussion of performance-based regulation draws from May (2003). HUD was one of the early proponents of performance-based codes as explored in the late 1960s under an innovative housing demonstration program, "Operation Breakthrough."

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The Policy Case for Research Into Regulatory Barriers: Reflections on HUD's Research Conference on Regulatory Barriers to Affordable Housing

Jeffrey M. Lubell
Consultant

The Role of Research in the Development of Housing Policy

Policymakers often are required to make judgments and take action without the benefit of an extensive research foundation. Indeed, from a policymaker's perspective, it sometimes seems as if the research process stretches out indefinitely without ever fully exhausting a subject or developing definitive conclusions. When a major research project is (finally) completed, it may come years after the program that gave rise to the research has been completed and, in some cases, has even been superseded by a new and improved program. Perhaps for these reasons some argue that a call for more research is just an excuse for delaying action.

On the other hand, research has a critical role to play in the policymaking process. Research can tell policymakers if a program is actually producing solid results, if a program is cost-effective in light of other programs with similar objectives, and if ways are available to improve a program to ensure it better achieves its stated objectives. Research also can help policymakers better understand the precise nature of complex problems so that they can design more effective solutions and test the efficacy of alternative solutions. Without solid research, policymakers, in a sense, are groping around in the dark. They can feel their way around the darkness and have a vague sense of what is around them, but they cannot actually see the true nature of things and whether there may be better routes through or around the obstacles than the one currently being taken.

The tension between the exigencies of policymaking and the more deliberate pace of research is a real one, but the tension need not lead to frustration or conflict. One way to reduce the tension would be to substantially increase the volume of housing-related research funded by the federal government. Consider what a corporation with an annual budget in excess of $30 billion (the approximate size of the Department of Housing and Urban Development's (HUD's) annual budget) would spend on R&D.[1] If a fraction of this amount were invested into housing-related research, policymakers would be able to

test promising approaches to and make substantial improvements in the nation's housing programs. Because such an investment would be many times the nation's current expenditures on housing-related research, many more research projects could be undertaken, delivering results on an ongoing basis and providing a more reliable and visible stream of research input into housing-related policy issues.

Another way to help bridge the gap between policy and research would be to do a better job involving policymakers in the process of planning future research topics. If the broader policymaking community were invited to help shape the research agenda and were fully briefed on research results and its policy implications, policymakers would not only feel invested in the research but also be more likely to take advantage of the results to strengthen existing programs and implement new ones. (Note that such research would likely have application at state and local levels as well as the federal level.) Finally, housing-related research should be conducted using a wide variety of research approaches—some with shorter timelines and some with longer ones. This would ensure that policymakers receive the benefits of both timely input into the policymaking process and the more definitive input on the impact of housing policy possible only through a long-term study with a very rigorous (and unavoidably expensive) research design.

Summary of Research Recommendations

These observations provide a useful context for considering whether research on regulatory barriers would help advance the policy objective of expanding the availability of affordable housing, and if so, what kind of research should be performed to achieve this goal. As Michael Schill has addressed these questions quite expertly from the perspective of a researcher in his introductory article to this volume, this article addresses them from the perspective of a former policymaking official. The recommendations advanced in this article are based on the papers prepared for and the discussion that occurred at HUD's Research Conference on Regulatory Barriers to Affordable Housing, held on April 22, 2004.

In brief, the answer to the first question is a resounding yes: we absolutely do need more research related to regulatory barriers to affordable housing. As summarized in the papers collected in this volume, many forms of regulation have an impact on housing prices; in the aggregate, this impact is quite substantial and thus a major obstacle to improving housing affordability. Some of this regulation is justified, however, by other important policy objectives. Research on regulatory barriers to affordable housing can help policymakers understand which regulatory processes have the greatest impact on housing costs and identify alternative approaches that might meet a regulation's legitimate policy objectives with less of an impact on housing prices (or, where that is not possible, identify offsetting policies, such as allowing greater than normal density on nonimpacted land, that help to make up for the regulation's impacts on housing costs).

Research on the regulatory systems of particular localities can help those localities better understand the impact on housing costs of their specific local regulatory processes and help identify changes to those processes that would reduce the adverse impact on housing costs. Research also can help test alternative approaches to reducing the impact of regulation on housing costs, such as one-stop permitting, fast-track approvals for affordable housing, and more "as-of-right" zoning for multifamily housing. Finally, research can help test alternative approaches to strengthening the public image of affordable housing, rental housing, manufactured housing, and density generally, thus mitigating the "not-in-my backyard" (NIMBY) sentiment that is a major obstacle to the development of affordable housing at the local level.

As noted above, a need exists for multiple approaches to research, with staggered timelines and varying audiences. Even as researchers conduct the much-needed basic research

that examines the precise impact of different regulatory processes and enables researchers to compare regulatory processes across locations, shorter term projects can and should be conducted that will deliver immediate results. For example, as Peter May discusses in his paper on regulatory implementation, a number of inefficiencies are present in the process by which housing and land use regulations are implemented that raise housing costs but serve no legitimate policy end. Brief short-term research projects that help identify the most common and problematic of such processes and highlight solutions that experts believe have worked can, if marketed widely and effectively, have an immediate impact in reducing inefficient implementation processes that negatively impact housing affordability. Finally, more creative thinking and consensus-building are needed around some of the thorniest challenges, such as the funding of new school construction and the protection of the environment, that lead to the development of new approaches that advance the legitimate goals of such policies while minimizing their negative impact on housing affordability.

Points of Agreement and Disagreement at the Research Conference

The papers prepared for HUD's Research Conference on Regulatory Barriers to Affordable Housing and the discussion at the conference itself provide a strong foundation for a determination of the extent to which research is needed to advance policymaking in this area and what form it should take. A useful point of departure is to consider the points on which the different speakers and writers agreed and on which they differed.

The speakers all agreed on the following basic points:

1. *A wide variety of regulations leads to increases in housing costs*. This rather basic point is easily forgotten in the rush to analyze these issues in finer detail. Many speakers at the conference emphasized the lack of detailed, systematic research regarding the precise effects of different regulations and regulatory environments on housing costs, but everyone agreed on the fundamental point that regulations can and do lead to significant increases in housing costs.

2. *Merely knowing that a regulation negatively impacts housing affordability is not a sufficient basis upon which to judge a regulation. Competing public policy values, such as housing quality and environmental protection, also need to be considered*. For example, by requiring builders to adhere to basic standards of housing quality, building codes increase the cost of some housing. But not all building codes should be thrown out. Some standards are plainly necessary to ensure that housing is decent and safe. Research can help us determine which standards are legitimately and efficiently related to safety and which are not. The same point goes for other core policy objectives, such as protecting the environment. Excessive building in a fragile ecosystem may have devastating environmental effects, warranting limitations on construction, even when such limitations raise housing costs. On the other hand, the benefits of *every* regulation justified by reference to environmental protection will not *always* be worth the costs. By more clearly demonstrating the housing affordability impacts of particular environmental regulation, research can help policymakers better balance these competing objectives. Research also can help identify the situations in which more creative thinking needs to occur to determine offsetting policies to improve housing affordability where a much needed environmental protection regulation inadvertently (or unavoidably) reduces housing affordability.

3. *The cost of housing can be affected by both the content of a regulation and its implementation*. This "big picture" point can also get lost in the minutia of the debate on research priorities. For example, in his discussant comments, David Sunding emphasized the costs associated with delays resulting from the need to prepare wetland permit applications. A nationwide analysis of such applications found that, on average, it

took 383 days from initiation of the process until submission of the application and another 405 days from submission until receipt of a decision from the U.S. Army Corps of Engineers (Sunding and Zilberman, 2002). Such delays cost money, and the costs translate into higher housing prices. By helping to clarify the housing cost impacts of such implementation processes—which by no means are limited to the environmental arena (other processes raising implementation issues include code enforcement, land use approvals, and many other aspects of the development and construction process)—research can help policymakers understand the extent to which such processes pose problems that need to be solved. Research also can help identify promising solutions.

As Michael Schill points out in his introductory paper, unlike some of the other areas of regulation that impact housing prices, implementation obstacles are not "morally ambiguous." In other words, no competing legitimate policy objective justifies bureaucratic inefficiency. Implementation obstacles thus pose a particularly fruitful target of quick turnaround research to identify the implementation processes that have the most significant impacts on housing costs and the most effective strategies for addressing these problems.

4. *Context matters*. Regulatory processes obviously differ from one locality to another. Any thorough examination of regulatory barriers to affordable housing thus needs to drill down to better understand the specific issues of a particular locality. Differences in local housing markets and political processes also need to be considered. For example, as James McElfish, Jr., noted in his discussant comments, the effects on housing prices of development limitations imposed by wetland regulations can range from "negligible to nonexistent" in a housing market such as rural Nebraska, where alternative developable land is in ready supply, to "substantial" in a high-demand, low-land-availability area such as Orange County, California. In his discussant comments, Carlos Martín similarly argued that context should be taken into consideration in the analysis of building code regulation. Particular housing code provisions may make more sense for one type of housing than another or in one area than another in light of local or regional building patterns.

5. *The possibility of unintended consequences needs to be considered in assessing the merits of a particular regulation that negatively impacts housing affordability and determining how to modify the regulation so as to improve housing affordability*. This point was emphasized in the discussant comments of William Fischel, who noted that if jurisdictions are denied the right to assess large impact fees, they might respond by simply refusing to issue any permits at all, which would hinder, rather than help, affordability. This does not mean the size of impact fees should be ignored altogether, but rather that the legitimate needs of local jurisdictions and the full range of their options and likely responses to policy changes should be considered before enacting policies that could inadvertently be counterproductive. It also may mean that, in the long term, systems need to be set up that help to oversee the fairness of local regulatory decisions.

6. *More research is needed to better understand which regulations have the greatest impact on housing affordability, the costs and benefits of such regulations in light of other policy objectives, and how best to resolve any conflicts*. This point emerged as the overriding theme of the conference, as presenter after presenter carefully reviewed the state of the evidentiary record in each area and found it wanting. It is of course the nature of researchers to identify a need for more research (just as it is the nature of practitioners to identify a need for more government funding), but in this case, the need for more research is clear. This article aims to articulate the specific policy value and implications of such research.

Somewhat surprisingly, fairly few points of outright disagreement arose during the conference. Different speakers, however, offered different emphases. One difference in emphasis concerned the strength of the existing evidence on the extent to which regulations increase the cost of housing. Some emphasized the limitations of the evidence, while others emphasized its strengths. For example, in their assessment of the impacts of growth control and other land use regulations on the price of housing, John Quigley and Larry Rosenthal were fairly guarded in their conclusions, emphasizing the methodological weaknesses of many of the studies and their mixed results. In commenting on the Quigley and Rosenthal paper, by contrast, Robert Ellickson argued that the most careful and impressive studies supported the common sense proposition that land use regulations that restrict supply lead to increases in housing prices. William Kreager echoed this point, noting that, based on his experience as a builder and a developer, regulations that limit developable land raise housing costs, as do fees, permits, and requirements that developers pay the full costs of new infrastructure (which they pass on to home purchasers).

Another difference concerned the willingness of individuals to consider the potential for regulations to impact costs by increasing demand as opposed to decreasing supply. The basic point here is that some regulations may raise costs by making the regulated land more attractive to potential buyers rather than by constricting the amount of developable land. From the perspective of affordable housing, one can argue that it does not matter whether the costs of housing are driven up by scarcity of supply or increased demand; if the resulting housing prices are unaffordable, subsidies will be needed to make the housing affordable. As noted above, however, the same regulations that drive up the costs of housing may serve competing social values that justify the increased costs. By considering the extent to which housing prices rise from "increased demand" created by regulations, economists are able to "monetize" (some of) the value of regulation, thus considering it in a cost-benefit analysis assessing the merits of the regulation. A narrow application of this approach, however, may miss much of the real value of the regulation, as many benefits served by regulation (for example, the long-term benefits to society of reduced global warming or of enhanced diversity of animal species) are societal benefits that are unlikely to be internalized into the price of an individual housing unit.

Research Suggestions and Recommendations

Finally, and perhaps most importantly, differences of opinion arose in what individuals recommended as the focus of future research in this area. The following is a summary of the principal research suggestions and recommendations that emerged from the conference, along with some thoughts on the policy relevance of each. (Note that the order in which these recommendations are presented below does not reflect any assessment of the relative priority of each recommendation.)

1. *The collection of basic data on jurisdictions' regulatory policies and practices.* This recommendation seemed to be the consensus of the conference participants. Although the gathering of basic data on regulatory practices and policies (including implementation practices) across jurisdictions does not sound particularly exciting, the collection of this information is critical to addressing fundamental, policy-relevant issues, including the identification of which regulations have the greatest impacts on housing costs and an assessment of the magnitude of those impacts. Because the gathering of such data is a relatively expensive undertaking, and the benefits extend to all communities included in the survey (as well as others that can learn from the data), the collection of such data is a natural role for a public entity such as the federal government to play.

2. *Indepth analyses of the impact of regulatory environments on housing costs in particular jurisdictions.* Since many regulations—and certainly most regulatory processes—that affect the costs of housing are local in nature, research must focus on the specific

regulatory regimes of particular localities so that local decisionmakers can become informed on the particular regulations and processes that are increasing housing costs in their areas, along with options for mitigating those burdens. The study of New York City's regulatory environment by Salama, Schill, and Stark (1999) provides a good illustration of the power of such a study and its potentially positive impact on the local regulatory process. By closely analyzing the city's regulatory processes, quantifying the impacts of those processes on housing costs, and proposing specific steps to reduce the identified regulatory barriers to affordable housing, this study has had a significant impact on the city's regulatory policies. Among other changes that appear to be related (at least in part) to this study are the rezoning of significant parts of the city to increase the amount of land available for residential development and progress in reforming the city's outdated building code.

3. *Indepth research on the impacts of regulation on particular housing types, such as manufactured housing, multifamily housing, condominiums, and cooperatives*. Manufactured housing is a particularly important source of affordable housing for low-income families that is often neglected in the affordable housing conversation. In light of the lack of attention given to this segment of the affordable housing market, rehearsing the basic facts on manufactured housing is useful. As stated in Apgar et al. (2003: 3):

> Between 1993 and 1999, manufactured housing accounted for more than one-sixth of the growth in owner-occupied housing stock. For particular submarkets, the share is considerably higher. For example, among households with very-low incomes (that is, less than 50 percent of area median), 23 percent of homeownership growth between 1993 and 1999 came through manufactured housing. For southern households, the figure was 30 percent, and for rural households 35 percent. Indeed, in the rural South, manufactured-home purchases accounted for a stunning 63 percent of the increase in very-low-income homeownership.

Although manufactured housing continues to be a substantial contributor to the nation's affordable housing stock, many regulatory barriers exist to the use of manufactured housing that lead to a reduction in the supply of low-cost housing produced through this market mechanism. These barriers range from outright bans of manufactured housing to more subtle land use requirements that make it extremely difficult or impossible for manufactured housing to be used in a particular community. A research program focused on better understanding the nature and extent of such regulatory barriers and identifying promising solutions for overcoming them could lead to significant increases in the supply of low-cost housing. The same point applies to other particular segments of the housing stock, such as multifamily housing, condominiums, or cooperatives, which are important sources of affordable housing but often face regulatory and other obstacles to their use.

4. *Research on the impacts of regulatory barrier mitigation strategies*. As Harriet Tregoning observed in her discussant comments, many jurisdictions have adopted policies intended to reduce barriers to affordable housing. Many of these approaches, such as one-stop permitting, electronic processing, administrative streamlining, and third-party certification of compliance, have focused on reducing delays and other burdens associated with *regulatory implementation.* Other changes focus on revising outdated regulatory provisions, such as Smart Codes that streamline the process for rehabilitating deteriorated housing or new building codes that permit the use of lower cost materials. Research that persuasively documents the positive impacts of such changes on lowering housing costs and helps policymakers understand which approaches yield the best "bang for the buck" would be of great use to local policymakers, advocates, and practitioners.

5. *Research on how to impact public perception about the value of affordable housing, rental housing, and density*. As many of the papers, presenters, and discussants observed, some regulatory barriers to affordable housing are inadvertent byproducts of regulatory processes that may not be sufficiently focused on (or informed about) the impacts of the regulation on affordable housing, while others may be quite intentionally designed to keep out new residents or prevent the proliferation of certain types of housing (for example, multifamily rental housing) that the proponents (or defenders) of the regulations view as problematic. While straightforward descriptive research on the impacts of regulatory processes on affordable housing can supply much of the data needed to convince policymakers to adopt policies that mitigate *inadvertent* barriers to affordable housing, it will do little to prompt changes to regulations where the very point is to exclude, delay, or marginalize the development of affordable housing.

   To address the NIMBY sentiment at the root of many of the regulatory barriers to affordable housing, experimentation with different strategies for strengthening the public image of affordable housing, density, and multifamily rental housing is necessary. Certainly, descriptive research has its place here; for example, studies of the effects on property values of particular types of affordable housing, such as public housing, low-income housing, tax credit housing, unsubsidized workforce housing, manufactured housing installed on a permanent foundation, and townhouses. As several panelists on the concluding panel of the conference noted, demonstrating that such impacts are negligible (or even positive) can help break down misconceptions that lead people to oppose new affordable housing development.

   At the same time, a need exists for proactive research designed to test the potential of different marketing strategies to change the image of "less favored" housing types. Properties developed today under the HOPE VI program or the Low-Income Housing Tax Credit (LIHTC) program look very different from the traditional, high-rise public housing developed in the 1960s. Yet, when most people think of subsidized housing, they are unlikely to picture a nice new LIHTC development. A marketing campaign that helped the broader public come to terms with the very attractive nature of most subsidized housing today could help minimize NIMBY sentiment that motivates the establishment of many regulatory barriers (or nurtures the neglect that permits inefficient regulatory systems to continue, notwithstanding their negative impact on affordable housing). A research project that designed and tested the efficacy of different marketing approaches could show if such an approach would actually work, and if so, how it should be designed.

   Similarly, as Tregoning argued in her discussant comments, local communities rarely appreciate the real negative economic consequences of a shortage of affordable housing until the problem reaches crisis proportions. A proactive marketing campaign designed to promote the economic benefits of ensuring adequate affordable housing for the police officers, hospital workers, teachers, and other essential workers who keep local economies going could help change public perception about the value of such housing, reducing NIMBY sentiment and increasing support for affordable housing strategies. Again, research could help determine if such a strategy would actually be effective, and if so, how it should be designed to achieve maximum effect. Similar approaches could be used to test strategies for strengthening public opinion of multifamily rental housing, manufactured housing, and increased density generally.

6. *Research and policy development on offsetting policies that can help resolve competing concerns.* In his discussant comments, James McElfish stressed the importance of "offsetting" strategies that help compensate for unavoidable housing cost impacts of environmental regulation. For example, cluster development allows for the preservation of large open spaces for ranching and habitat, while at the same time ensuring adequate space for people to live and work. Other offsetting approaches include allowing density

waivers to compensate landowners for reductions in the amount of developable land or transferable development rights programs that help preserve the net amount of residential development opportunities, even if they substantially reduce or eliminate a particular landowner's opportunities to develop his or her land. Research can help identify when such offsets are needed, the magnitude of the impact that needs to be offset (which can help target an appropriate resolution), and highlight particularly innovative and effective approaches that are being used to address these problems by different jurisdictions. (Research purists might classify the latter point as "best practices identification," rather than "real" research, but careful identification and documentation of effective local practices being used to address challenging problems can be a highly effective use of research dollars that has a real impact on local practice and often has no alternative funding source within HUD.)

As observed in the environmental context and elsewhere, regulatory barriers sometimes reflect a clash of competing values. In some such cases, we may need to spur more creative analysis and policy development to develop alternative approaches that do a better job balancing these competing objectives. New school construction, for example, is a particularly thorny issue. On the one hand, one cannot deny that requiring new homeowners to pay for the costs of constructing new schools has the effect of raising new construction costs, placing some newly constructed housing beyond the reach of low-income families. On the other hand, most localities are reluctant to cover such costs out of local property tax revenues and, as Fischel observed, may choose to permit *no* new construction rather than absorb the costs of new school construction and other marginal costs of adding new residents. Paying for these costs at the state or national levels would spread the costs out over a much wider base, thus mitigating the impacts on any one community. For some reason, however, most new school construction continues to be financed locally. Research and policy exploration that thoroughly examines how this issue is handled in different areas and states and considers new approaches that might break the logjam and mitigate the impact of new school construction costs on new homeowners would be quite useful.

A similar point applies to liability insurance, which although often overlooked in a discussion of regulatory barriers can have a significant negative impact on affordability. Some builders in California, Texas, Arizona, and other states argue that the high costs of liability for product defects, especially for planned unit developments and condominiums, substantially increases the costs of constructing such housing. Protecting the public from product defects is important, but ensuring that housing is affordable is also important. Creative thinking and policy development on solutions to resolve such competing concerns is needed to address such barriers.

7. Finally, and perhaps stretching the concept of regulatory barriers just a bit, the field would benefit from *more creative thinking and policy development on new housing types that would be attractive to the public but would cost less to build*. As Carlos Martín inquired in his discussant comments, is it really the case that all Americans dream of owning a single-family detached "Cape Cod" style home? Or are there significant portions of the public that either already desire an alternative (and less expensive) form of housing or that could be convinced to desire such housing if exposed to it in the right circumstances and if the price were right? These questions are closely related to regulatory barriers issues because a detailed examination of local regulations would be needed to determine if such alternative housing types would be permissible and affordable. Determining how the current regulatory environment shapes existing housing types, which in turn shapes the public's "image" of the American Dream, could be helpful in charting a course for regulatory reform that leads to a richer and more diverse range of housing types and, ultimately, more satisfied consumers.

Conclusion

As the discussion above indicates, numerous policy-relevant research projects have been identified that could contribute to the overall goal of reducing regulatory barriers to affordable housing. Faced with an array of potential research approaches and limited research funding, one may legitimately ask which recommendations deserve the highest priority.

Before responding to this question, it may be useful to conduct a small thought experiment that highlights the magnitude of the problem of regulatory barriers to affordable housing. According to a recent copy of *U.S. Housing Market Conditions*, 1.39 million new, privately owned one-unit homes were completed in 2003, and the median sale price of single-family homes in 2003 was $195,000. If policy changes to reduce regulatory barriers led to a 5-percent reduction in the market price of only 5 percent of these homes, the total cost savings for the nation would be as much as $675 million in just 1 year alone. (Similar savings would be achieved in future years as well.) Even if these changes led to only a 2-percent reduction in the market prices of only 2 percent of these homes, the annual savings to consumers would be as much as $108 million. And this does not reflect the savings that would be achieved through reductions in the costs of two-, three-, and four-family homes; multifamily developments; manufactured housing; or new subsidized housing developments.

In light of the huge potential savings that could be achieved through even minimal reductions in the prices of a tiny fraction of the new housing sales each years, the answer to the priority question should be that researchers and policymakers should be pursuing *all* policy-relevant research in this area as quickly as possible. Given the magnitude of the potential benefits for increasing housing affordability, multiple research tracks are needed, addressing different components of this issue, with different research methodologies and different timelines. Such an effort would obviously require a real budget, but the investment would be well justified.

In sum, a comprehensive research program is needed in this area to accomplish the following goals:

- Arm practitioners, policymakers, and researchers with knowledge about the nature of the problem and how to fix it.
- Experiment with strategies to change public perception about affordable housing, multifamily rental housing, and greater density to encourage the public to be more open to such development.
- Further develop offsetting policy options that help to mitigate affordability problems that flow from otherwise desirable policies.

Finally, the coalition of groups working on this issue should be broadened, and the number of individuals that are educated on the problems of regulatory barriers and how to overcome them should be expanded. The issue of regulatory barriers is rarely on the radar screen of most practitioners, advocates, and policymakers when they make or influence decisions on how to increase the availability of affordable housing. Clearly, regulatory barriers reduction is not the only answer to affordable housing shortages. Nor is it an adequate substitute for government-funded housing subsidies for the lowest income families with the greatest housing needs. But regulatory barriers reduction clearly can have a meaningful and substantial impact in improving housing affordability. This is not a partisan issue. Meaningful regulatory barrier removal would significantly advance the cause of affordable housing.

Author

Jeffrey M. Lubell is a consultant specializing in affordable housing, community development, and asset-building policy. He formerly served as Director of the Policy Development Division in the Office of Policy Development and Research of the U.S. Department of Housing and Urban Development.

Note

1. According to the U.S. Department of Housing and Urban Development's (HUD's) fiscal year (FY) 2005 Budget Justifications, the FY 2004 HUD budget enacted by Congress totaled $30.4 billion in discretionary budget authority and another $4.3 billion in mandatory budget authority. In addition, billions of dollars in government funding are invested in affordable housing each year through the low-income housing tax credit, tax-exempt bonds, and state and local housing programs.

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Regulations and Housing Development: What We Need To Know

Michael H. Schill
University of California, Los Angeles

Abstract

Additional research is needed to inform public debate on the impact of government regulation on the housing market. This research includes cost/benefit analyses of individual regulations, investigations of the impact of regulations on affordable housing, city- or state-specific research on regulatory barriers, and analyses of the effects of regulatory barrier removal in those jurisdictions that effectively have reformed their regulatory processes. In addition, further research would be useful to understand why many jurisdictions employ regulations to thwart housing production and what impacts housing shortages created by regulatory barriers have on municipal and regional economic competitiveness.

The U.S. Department of Housing and Urban Development has an important role to play in stimulating research on the relationship between government regulation and housing supply and cost. This role includes investing research dollars in the collection of both quantitative and qualitative data on regulatory practices throughout the nation. It also includes providing "seed" money to researchers to stimulate use of this data to answer a set of relevant policy questions.

Introduction

The articles prepared for this volume clearly demonstrate that insufficient research exists on the subject of regulatory barriers to development. For most forms of land development regulation, more questions than answers exist. In particular, very little research exists to demonstrate the costs and benefits of regulations, the effect of regulations on the price of affordable housing, which barriers are particularly problematic, and the possible effects of barrier removal on housing prices. In addition, we need to know more about the reasons municipalities erect barriers to housing development and whether the concerns of residents are justified. Finally, research is needed to understand the consequences of constrained housing production for municipalities and regions.

One reason for our modest progress in eliminating regulatory barriers is a lack of sufficient information about the effects of federal, state, and local regulations. More and better research, therefore, is needed—a point that is emphasized in each of the articles contained

in this volume. Part 1 of this concluding article presents some ideas about particularly fruitful avenues of inquiry; part 2 explores the U.S. Department of Housing and Urban Development's (HUD's) role in stimulating this research.

Part 1. Priorities for Research on Regulatory Barriers to Housing

Cost/Benefit Analysis of Regulations Affecting Housing

As discussed in the first article of this volume, the efficiency of a given regulation may not determine if the regulation constitutes a barrier to housing, but it is certainly relevant to that conclusion. Complete cost/benefit analyses that take into account the effect of regulations on housing simply do not exist. Part of the problem is methodological. In many instances, disentangling costs and benefits is difficult because of the joint effects of supply and demand. In addition, the adoption of regulations often is endogenous to the types of impacts that would be studied in a cost/benefit analysis.

Although these methodological difficulties are significant, they pale next to the problem of data limitations. As many of the articles in this volume indicate, no up-to-date nationwide census or compendium of regulations and regulatory practices is available in the United States. Ideally, information would be collected over time on the types of regulations each jurisdiction has on the books. In addition, it would be necessary to identify what proportion of developable land is subject to the regulations. A strict building code in a jurisdiction with little vacant land would be unlikely to have the same impact on housing as a comparable code in a growing locale. Data collection cannot solely rely on objective information from zoning maps and building codes. As May (2005) suggests, the stringency with which government officials and line staff enforce a given legal requirement varies tremendously across jurisdictions. Some municipalities are facilitative, while others go by the book. Any comprehensive collection of data to be used in a cross-sectional cost/benefit analysis would have to include a combination of quantitative and qualitative data.

Current data limitations might inhibit cost/benefit analyses of regulations throughout the nation, but researchers can still conduct studies based on individual jurisdictions or groups of municipalities. In many instances, this strategy would make both the data and methodological problems more tractable.

The Effect of Regulations on Affordable Housing

As discussed in the first article of this volume, even if the benefits of land development regulations exceed the costs they generate, policymakers still might be concerned about their impact on particular segments of the market. For example, environmental restrictions on certain types of development may be efficient (assuming that all costs and benefits have been appropriately accounted for) in the sense that they prevent externalities or congestion, but they also may push the cost of housing beyond the reach of low- and moderate-income families. This distributional result may be unsatisfactory either because it intensifies concentrated poverty or racial segregation elsewhere or leads to labor shortages or extremely burdensome commutes to work.

Very few of the studies examining the effect of government regulation on the cost and supply of housing have focused specifically on affordable housing. Instead, most of the studies examine impacts on the housing market as a whole. Additional research on this issue, therefore, would be useful. Definitions of affordable housing could be tied to commonly used criteria for housing assistance. Alternatively, affordable housing also could include what some have called "workforce" housing—housing that can be afforded by the types of employees needed in a given community.

To the extent that efficient regulations generate distributionally undesirable results, policymakers have several tools within their arsenal to alleviate the problem. For example, government could subsidize affordable housing for those households that are priced out of the market. Another option would be for the state or municipality to enact some form of inclusionary land use ordinance that either would mandate affordable housing as part of any market-rate development or grant density bonuses or other regulatory relief to developers who provide the housing voluntarily. Additional research is needed to identify which strategies are feasible and productive. Some have suggested that inclusionary requirements might operate as a tax on housing development and actually reduce overall housing supply rather than increase it (Ellickson, 1982). Studies that examine empirically which market conditions are most likely to facilitate the production of affordable housing through regulatory means would certainly be in order.

City- or State-Specific Studies of Regulatory Barriers

Although cross-sectional statistical analyses of the impact of regulations are necessary to develop a complete understanding of the problem of regulatory barriers to housing, actual change on the ground will likely occur only as a result of city- or state-specific research. Typically, such a study will involve interviews with a broad array of builders, bankers, housing advocates, and policymakers to learn what regulations in a particular jurisdiction pose the greatest impediments to housing developers. Researchers can then propose changes to those regulations that will enable the municipality to achieve its legitimate purposes, while also promoting housing development. This type of analysis has recently been done in Boston (Euchner, 2003) and New York City (Salama, Schill, and Stark, 1999).

The Effects of Barrier Removal on Municipalities

Closely related to the previous two research topics—the effect of regulations on affordable housing and city- or state-specific studies of regulatory barriers—is research on the impacts of efforts to remove regulatory barriers. Some municipalities and states have begun to experiment with efforts to remove regulatory barriers to housing. It would be immensely useful to understand what happens as regulations are streamlined. Specifically, do municipalities substitute other regulations for the ones removed in an effort either to limit production overall or limit certain types of housing? A second question is the extent to which removing regulatory barriers would lead to the creation of lower cost housing. It is plausible, of course, that just as the cost of regulations is partially borne by landowners, so too the benefits of deregulation may be capitalized into land values.

Understanding the NIMBY Phenomenon and How To Alleviate It

The 1991 report of the Advisory Commission on Regulatory Barriers to Affordable Housing identified the "Not In My Back Yard," or NIMBY, mindset as one of the primary reasons that municipalities erected barriers to development. The reasons for this aversion to new development have been described in detail in the literature. Studies have not examined, however, whether the fears are justified and what could be done to reduce the problems that might occur.

One of the principal concerns communities have when faced with new development is that their property values could decline. This fear is particularly acute when low- and moderate-income housing is proposed but frequently exists for market-rate housing as well. The literature on the spillover effects of housing is growing rapidly. Most studies, however, have examined only the effects of subsidized housing. According to one recent review of the literature (Galster, 2003), several studies have found positive, rather than negative, impacts. The magnitude of these impacts tends to vary with the number of units built, the context of neighborhoods, and the share of housing that is owner occupied.[1]

Unfortunately, very little research has studied carefully the impact of the most likely type of housing that would be built in communities that reduced regulatory barriers—market-rate workforce housing.

It is possible that housing developments sometimes will create negative impacts for communities. Crime may increase as lower income people move into the community, congestion might intensify, and taxes might need to rise to pay for public schools. Research is needed to show how communities have dealt with these challenges. Over the past 10 to 15 years, developers have experimented with a variety of mixed-income development models. An analysis of what designs work best, what services are most useful, and what tenant mixes are most successful would be useful. In addition, Been (2005) suggests that one of the theoretical benefits of impact fees over more traditional growth controls is that they might make a community more willing to accept additional housing. It would be useful to learn whether this hypothesis is true, and, if so, how the impact fees are calculated.

Finally, and in a related vein, much of the support for regulatory barriers to housing likely derives from our system of public finance. Municipalities rely heavily on local property tax revenue to fund local services, and, thus, have a tremendous incentive to bar development that leads to an influx of population demanding more in services than it provides in revenue. Some cities and states have experimented with a variety of equalization and tax-base sharing mechanisms. Whether these fiscal "reforms" reduce opposition to development and whether they lead to more socially optimal expenditure patterns are subjects that certainly deserve increased academic attention.

The Effects of Housing Shortages on Economic Competitiveness

Much of the concern over the shortage of workforce housing revolves around the fear that the absence of affordable housing could endanger the economic competitiveness of cities and regions. To the extent that affordable housing is unavailable nearby, employers will need to pay their employees more to compensate them for the increased housing expenses, or, alternatively, for their longer commutes to work. The fear is that over time, inflated labor costs will cause businesses to relocate elsewhere where the cost of living is lower.

Although surveys of business executives typically suggest that housing and living costs are often instrumental in their location decisions, no empirical studies support the argument that high housing costs and economic activity are inversely related. Indeed, high housing costs might actually reflect the economic vitality of a region. In other words, housing expenses and economic activity are most likely endogenous.

Even so, it is plausible that regulations could serve as barriers to entry in the housing market and may independently reduce the overall economic competitiveness of a region. Research on this question would be useful but would require cross-sectional data on regulatory stringency that do not currently exist, as well as a sophisticated methodology to tease out causation.

Part 2. HUD's Role in Supporting Research on Regulatory Barriers

As part of the America's Affordable Communities Initiative, HUD has requested a $2 million appropriation from Congress for fiscal year 2005 to fund research on regulatory barriers. This sum of money, while large, is no doubt insufficient to support all the research that would be necessary to address the issues outlined in this article, plus many other related questions. To obtain the greatest leverage from this appropriation, HUD might consider creating a partnership with foundations to support a research program in the area of regulatory barriers.

HUD's money would best be invested in data gathering. The single most important reason for the absence of research on the impact of regulations on housing development is the lack of systematic and consistent data on local regulatory practices. This absence of data is mentioned in each of the articles prepared for this volume. To fill this gap in our knowledge and spur additional research, HUD could support a census of regulatory practices throughout the nation. The data collected would include both objective data about regulation in each municipality (for example, amount of land zoned for multifamily housing, whether certain cost-saving technologies are permitted), as well as data from interviews on the average time it takes to obtain approvals and certifications. Although performed on a much smaller scale, as Quigley and Rosenthal (2005) note, similar data-gathering efforts have been undertaken by researchers at the University of Pennsylvania (Linneman, et al., 1990) and the University of California (Glickfeld and Levine, 1992). The questionnaires used, the problems encountered, and the data collected would be immensely helpful in structuring HUD's own efforts.

HUD could collect the data on regulations and regulatory practices in several ways. One approach would be to rely on localities to provide the data to HUD. One model would be the recent HUD Notice offering applicants for HUD funds the opportunity, if they so desire, to earn points in competitive funding situations based on their efforts to reduce regulatory barriers. Participation in data gathering under this model would be voluntary.

Many jurisdictions, however, might be unlikely to respond to this invitation, particularly those most likely to create regulatory barriers. Therefore, a mandatory data collection effort might be advisable. HUD could require all recipients of HUD funding to provide information according to a prescribed protocol. Again, the same problem might occur with certain of the most problematic jurisdictions not providing data because they do not receive Community Development Block Grants or discretionary HUD funding. Perhaps the only way to ensure that these jurisdictions participate in the data collection effort would be to make it a requirement of both municipal and state recipients of HUD funding. Because municipalities are legally the creations of their states, they would have no choice but to follow state dictates.

An alternative approach would be for HUD or some other agency to collect the data from municipalities. If HUD were to perform this task, it could make use of its decentralized Economic Market Analysis Division, which is located in regional offices throughout the nation. If this data collection effort would strain HUD's capacity, it could either contract with the Census Bureau to collect the information or make arrangements with a private organization. As Quigley and Rosenthal (2005) point out, the Census Bureau would be a natural partner. They currently collect local administrative data on a variety of indicators, such as building permits. In addition, the Census Bureau and HUD already collaborate closely on data collection in the context of the American Housing Survey.

If HUD were to undertake a census of regulatory practices, the agency could then make this data freely available to researchers throughout the nation. Together with its foundation partners (for example, the Fannie Mae Foundation and the National Science Foundation), HUD could provide small, competitive research grants to academics who have innovative ideas for using the data to answer a preselected set of important policy questions.

One excellent model for this type of research is the Moving To Opportunity (MTO) grant program sponsored by HUD in the mid-1990s. This program used centralized data on the experimental program, plus $50,000 research grants, to leverage additional resources and generate a substantial body of useful, and sometimes pathbreaking, research (Goering and Feins, 2003). Ultimately, 8 researchers were selected from more than 25 applicants in a competitive peer review process administered by an outside agency. This small grants

competition produced impressive research. In addition, the modest grants were able to leverage substantial additional private funds—in some instances, many times the HUD contribution.

As happened with the MTO research, HUD should reach out to fund cross-disciplinary work on the relationship between regulation and housing. To a large extent, real estate economists have dominated the field. Other academics with different perspectives or institutional knowledge, such as economists, civil engineers, sociologists, planners, and lawyers, also should be encouraged to conduct research on the impact of regulations on housing development.

This strategy has several advantages. First, it is unlikely that any individual researcher would have the resources to put together the type of data necessary to provide an accurate picture of regulatory stringency in the United States. A government agency with access to funds and a mission to generate public benefits would be well suited to generating this data. A second and substantial benefit of a small-grants program is that it might spark an interest in research on the relationship between regulation and housing among more junior academics and build a field of intellectual inquiry. As each of the articles prepared for this volume indicates, that field will likely be quite fertile for years to come.

Author

Michael H. Schill, Dean of the UCLA School of Law, is a national expert on real estate and housing policy, deregulation, finance, and discrimination. Before joining the UCLA School of Law, he was the Wilf Family Professor in Property Law at the New York University School of Law and professor of urban planning at the New York University's Robert F. Wagner Graduate School of Public Service. He has written or edited three books and more than forty articles on various aspects of housing, real estate, and property law.

Note

1. According to Galster (2003), most studies show that positive spillover effects will tend to be larger when greater numbers of units are provided (up to a threshold level, at which point, additional units tend to generate negative externalities), when developments are located in more affluent locations, and when greater shares of total units are composed of owner-occupied dwellings.

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Appendix

Response to "Building Codes and Housing" by David Listokin and David B. Hattis

Carlos Martín
Arizona State University

I commend David Listokin and David Hattis for their tremendous efforts in exploring the very messy subject of building codes and their impact on affordable housing and, for that matter, all development. Scholars such as Listokin and Hattis who investigate the structure and operations of building codes—as well as our colleagues in code organizations such as the National Conference of States on Building Codes and Standards, Inc. (NCSBCS), International Code Council (ICC), and the National Fire Protection Association (NFPA), and predecessors such as Francis Ventre and Charles Field—have all contributed to scholarship that attempts to go beyond anecdotes. Indeed, the critical need to go beyond anecdotes is the ultimate goal of this conference. Ironically, however, I would like to structure my comments on this article around five specific anecdotes presented in the literature.

Anecdote 1: There Are Too Many Anecdotes

Anyone who works on the production side of housing knows that the homebuilding industry's history is replete with building code anecdotes—e.g., how Trade Association X lobbied City Councilperson Y to amend the codes to favor its members' products, or how Building Inspector A's personal dislike of Builder B led to noticeable, although not documented, harshness on the construction site. Even more significant than the sum of these individual anecdotes is the fact that the development community reinforces the perception that codes and code officials are "barriers" to development and innovation. All the literature in the management of construction and architectural technology explicitly states this, although with few, if any, references or little empirical backing (Field and Rivkin, 1975; Cooke, 1977; Tatum, 1987; Bernstein and Lemer, 1996). As such, the industry has fully bought into the anecdotes.

Further, among those outside the building industry, another false perception exists that building codes are strictly technical documents. Among all the development regulations discussed today, building codes certainly appear to be among the most technical and have the longest history of structural, material, fire and hazard resistance, environmental, and architectural engineering testing and validation. Yet, the sheer volume and complexity of these technical standards often mask the fact that building codes and code practices are as socially constructed as they are technically determined, if not more so (Colwell and Kau,

1982; Martín, 1999; Wermiel, 2000). Building practitioners know this reality all too well, even though the perception persists in circles outside production development circles.

As with all social documents, we must contextualize building codes in their moments of creation, adoption, and enforcement. Our discussions about codes and the perceptions of codes today must be contextualized on many fronts: while uncovering patterns in actual code enactment is necessary, the analysis must take into consideration geographic, technological, and market segment (housing type) variations because these regulations are structured around such contexts. In fact, most of the interesting work done in the field looks at how codes develop in regional contexts. Looking at the codes nationally rarely tells us anything beyond anecdotes.

We also need to place the perceptions of codes in context, too. Under which economic and industrial conditions do builders and developers think of codes as a "big deal"? Listokin and Hattis (2005) rightfully discuss how codes currently are less a concern for the majority of housing starts (which are in southern and southwestern suburbs) than other development barriers. For housing innovation, similarly, codes also are only one of many perceived barriers to innovation, and not necessarily the highest (Koebel et al., 2003). The contemporary volume and location of housing production—as well as the acceptance of a standard housing "product"—likely have much to do with the current decreased perception of building codes as a barrier. In addition to current market conditions, then, how is it that the perception of building codes as a regulatory barrier has diminished recently despite the constant haranguing in industrial scholarship?

Anecdote 2: Some Progress Has Been Made

Many changes in code administration have taken effect over the last decade, some of which are further elaborated in Peter May's article in this conference (2005). These changes have been highly successful (anecdotally) and are worth reviewing here. These recent policy solutions and experiments, however, have been almost all based on anecdotal evidence.

The consolidation of model building codes, as well as the increased (albeit optional) flexibility included in their instructions, represents a dramatic step forward in code creation from even the three to four model regional codes available just a few years ago. Code adoption also has moved forward: as more states and cities are adopting the model codes with little amendment, many have taken efforts to examine their code regulation process for the first time in 6 months (especially for rehabilitation and renovation), and local press is paying particular attention to these adoption decisions. For example, Phoenix is the only major municipality to adopt the NFPA 5000 model code in a region that has heavily invested in the ICC codes.

The effect of code content on new, potentially cost-saving technological innovations has also been much discussed in the last decade. "Performance-based" standards—those that require only final, measured goals for a building rather than prescribing the materials, means, and methods of reaching that performance—are more commonly accepted in code hearings. These standards remain somewhat ineffective, but their inclusion speaks volumes about changed perceptions. The ICC's National Evaluation Service (NES) sponsored a workshop in December 2003 on implementing alternative materials provisions in the code and suggested mechanisms for their implementation (such as placing some regulatory weight behind ICC NES' technical evaluations). Numerous federal initiatives also have taken on the task of looking at regulatory effects on innovation, including Building America, ENERGY STAR, and especially the U.S. Department of Housing and Urban Development's Partnership for Advancing Technology in Housing.

Code enforcement, however, is likely the regulatory process witnessing the most experimentation. Cities are adopting expedited processes (such as "one-stop shops") for most building regulatory submissions and approvals, as well as collaborations between cities serving similar housing markets. In Arizona's Maricopa County (one of the nation's five fastest growing counties), building officials from multiple cities have formed the *Regional Plan Review Group*, whose mission is uniform residential plan review and inspection policies among the participating jurisdictions. This group also has devised mechanisms for a homebuilder to submit plans in one jurisdiction for approval in all.

In an effort to become more "business friendly," as Peter May describes it, many jurisdictions are implementing new incentive programs for future regulatory approvals (such as holding regular meetings with builders) and making their current processes more transparent (for example, training builders on inspector requirements and even publishing inspector checklists). Some municipalities are toying with third-party or self-certification methods to compensate for their lack of resources, as well as to show good faith with builders (although most production builders already are contracting with third-party inspectors for litigation purposes). Numerous cities are adopting advanced information technologies for submissions, reviews, and even inspections (such as those described in the NCSBCS "streamlining" initiatives). These technologies also provide the best opportunity for gathering data about specific builders and their regulatory records, variances between building officials and cities, and ultimately, a much better understanding of the procedures by which building codes serve as barriers. Colleagues at Arizona State University, for example, currently are working with the Regional Plan Review Group to establish inspection report standards and reporting mechanisms from which this data can be gathered and assessed.

Given the wealth of positive changes in code creation, adoption, content, and enforcement, why are building codes included in this conference as a regulatory barrier?

Anecdote 3: Although the Perception of Codes as a Barrier Has Decreased in Some Markets, Problems Persist

The burden of building regulation on this country's housing builders and developers seems to come less from the actual restrictions of the codes than in their administration. Problems still arise in code creation (codes continue to be far from performance-based) and adoption (most jurisdictions continue to make amendments based on local political conditions rather than on climatic, geological, or material realities). Further, manufacturers' lobbying efforts, inconsistent acceptance of technology across regions, and the inability of innovators to develop experimental prototypes suggest that the development of codes could still be improved.

Code enforcement, however, seems to be the most significant barrier to development. Specifically, plan reviewers in city departments often are caught in a bind between their need to thoroughly review planned proposals and the pressing needs from city planning departments and elected officials to approve new developments in those cities whose future tax base is predicated on their quick construction and occupancy. Extreme variations in plan reviews and inspections still exist not just between jurisdictions but also increasingly *within* jurisdictions. As one Phoenix-area builder has commented, many developers state that they would prefer consistent "by-the-book" enforcement to varying, oftentimes lax, enforcement. Building departments have much to improve along these lines, although they also face serious constraints: training programs for building regulators get cut from city budgets, inspectors and plan reviewers rarely discuss common approaches, and, often, cities grow to such large geographic areas that basic travel for inspectors becomes an intervening factor in their inspection reports. Despite their bringing in the most significant

levels of funds to city general fund coffers in many jurisdictions, most building departments suffer from limited resources and personnel.

Builders and developers, as regulated parties, also have some responsibility in the reality of the code burden. In a soon-to-be-published study by an Arizona State University colleague, a point review of one Arizona city's inspection failures showed that the number one reason for inspection failures by far came not from poor or improper construction (whether from shoddy construction or an overactive inspector), but from builders prematurely requesting inspections and being unprepared for them when the inspector comes onsite. This internal misstep causes the same delays and added cost and time for the builder as those stemming from unreasonable codes or stringent inspectors. This condition is a marker of internal inefficiencies in the building industry, particularly its information conduits between builders and trades, builders and plan reviewers, and trades and inspectors. These inefficiencies have even led some builders to rely on building departments' and inspectors' reports for their production processes: one Arizona builder reported knowing of other builders that use inspection failures as the "punch list," designating which work needs to be completed.

One last way in which problems with building regulations have actually worsened over the last few decades has been through the addition of regulations that may or may not be directly administered by building code departments, but that have direct effects on the physical qualities of homes in the same way as the building codes. Requirements such as Fair Housing and Americans with Disabilities Act design stipulations certainly have added costs—although, for some, very clear benefits. Green Building Programs that are optional in some jurisdictions, though increasingly required, not only add costs and time to housing development, but also may serve as a means for regional segregation; the city of Scottsdale (one of the wealthiest in the Phoenix area) has actively promoted its new Green Building Program. Design Review Boards, common not only in existing communities but increasingly in growing communities attempting to maintain the appearance of traditional communities, are adding many physical features to housing developments that add cost and time and often provide questionable subsequent benefits to neighborhood environments. Although these regulations should definitely be noted, none of the other articles in this conference address these burdens, most likely because their scope of control is the physical quality of individual housing units—much like building codes—and have yet to receive the amount of scholarly attention as land use concerns.

Anecdote 4: There Is No Research

National surveys of building regulations have often added to the list of anecdotes without describing the real ways in which codes deter or delay development, because they are national (regulations vary widely) and they are surveys (which gauge perceptions more than processes). As such, we need to approach research in this area in the same way we approach anecdotes: we need to look at building codes on a regional basis and delve into the practical details of how they are adopted and enforced for different housing types on that basis. For example, we know that in regions of extreme population growth (and hence housing starts) where production builders produce the majority of homes, building codes are perceived to be less of a deterrent to development. We also know that many of these builders simply plan contingency funds for regulatory approvals and inspections and swallow the costs and time as a cost of doing business. For builders in those market segments in which swallowing costs is not an option (for example, small-unit remodeling or subsidized housing), however, we know that building codes can make or break a project. Keeping in mind that both scenarios could produce and currently are producing "affordable" housing, we need to examine how regional economic conditions determine the behavior of builders and building code departments as much as we examine the content

of the codes themselves. For potentially cost-saving innovations, the same structure can be framed to contextualize whether innovators with many resources behave differently from small inventors in different markets.

In short, we cannot separate code enforcement from code content in this country, and our research efforts should reflect this. Indeed, one reason why work in this research area has been so limited is because its subsequent effect on policy applications has been limited. Researchers should examine the effects of specific codes on housing costs by comparing two imaginary houses, one built pre-code and the other built post-code. These comparisons would give us some clarity about the effect of the specific code provision and also highlight debates regarding the definitions and measures of costs and benefits.

The actual added burden of—and variation in—enforcement probably plays just as significant a role in determining the costs of codes as the content. One option is to analyze one code provision with a fine-toothed comb— examine one specific code citation, its history of enactment, its variances in enforcement, and its longitudinal effect on time and cost. Unfortunately, this research would only give us a fraction of the costs that building codes add to development given the tens of thousands of homebuilding components, products, and processes. Because much of the material for this investigation is not documented or reported and definitely not consistent (for example, a plan reviewer simply saying she won't accept a new product), this work also would lead to further anecdotes.

Because basic data on enforcement are unavailable, the methods of measuring and gathering data on how cities enforce codes should be our first order of business. Similar to the suggestions that Quigley and Rosenthal (2005) make in their article for this conference, these taxonomies would not only help cities report on their own operations, but also would provide much-needed data sources for more extensive studies. As a side note, the suggestion of using the Insurance Services Office's (ISO's) Building Code Effectiveness Grading Schedule is an interesting one, although how ISO comes to these rankings and whether pursuing this secondary resource would actually be less fruitful than developing new measures based on data acquired from the actual cities (which, of course, would require cities to standardize reporting data) is still unclear. We need to get primary data that truly help us detail code content, structure, adoption, enforcement, and negotiation—all of which are determining variables to the added cost and burden of future development—which is most certainly not an easy task.

Anecdote 5: Nobody Wants To Take on the Leviathan of Building Codes

I speculate that one of the reasons that the building code barrier persists both in practice and perception (and why few scholars study it) is because a significant change in the structure and content of building codes (for example, going totally performance-based) would require a significant evaluation of the construction industry's entire practices. Economists and policymakers refrain from this because of its too "technical" nature and the perceived diminishing returns from this exhaustive work. Homebuilders and developers naturally refrain because they have spent a century perfecting a production system based on these seemingly unfair and antiquated regulations. As such, we are left with anecdotes not only about building codes, but also about the homebuilding industry in general.

Certainly, if we define regulations that are burdensome as the "excessive rules, regulations, and red tape that add unnecessarily to the cost of housing" as others have, then the cultural and industrial norms of designing and constructing homes in the United States could certainly qualify strongly as a burden, maybe even as strongly as official building regulations (Schill, 2005). In many ways, we have accepted the ultimate anecdote about U.S. housing

design and construction: that Americans only want certain kinds of physical homes, such as a single-family, detached Cape Cod. Hopefully, through forums such as this, we can go beyond anecdotes of all kinds and get a better picture of reality.

Author

Carlos Martín works in academic and governmental sectors in the areas of technological and social change related to the design and construction industry. Trained as an architect, construction engineer, and historian of technology, Dr. Martín studies the cultural and industrial barriers to change—especially those related to affordable housing production. He has degrees in architecture and civil engineering from MIT and Stanford. Carlos returned recently to the U.S. Department of Housing and Urban Development and the Partnership for Advancing Technology in Housing after serving as an assistant professor at Arizona State University. It was in that latter capacity that he was asked to present at the Conference on Regulatory Barriers to Affordable Housing in 2004.

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Response to "The Effects of Land Use Regulation on the Price of Housing: What Do We Know? What Can We Learn?" by John M. Quigley and Larry A. Rosenthal

Robert C. Ellickson
Yale Law School

Housing prices in the United States are significantly higher in some regions—notably coastal California, New York City, Hawaii, and New England—than they are elsewhere. Quigley and Rosenthal have commendably collected and analyzed the pertinent studies that explore the possibility that these outcomes are partly attributable to government land use regulations, such as large-lot zoning and growth controls. As the authors repeatedly emphasize, these inquiries are methodologically challenging. In particular, a well-designed regulatory program may make a community more environmentally attractive to consumers. If it does, the upward movement in prices that follows adoption of a regulation may be partly or entirely attributable to a jump in demand, not to constraints on supply.

Most observers bring ideological baggage to the technical question that Quigley and Rosenthal address. Environmentalists, community preservationists, and other devotees of increased land use regulation are predisposed to favor the demand-side story. Homebuilders and fans of unfettered markets, by contrast, naturally warm to the supply-side interpretation. I should reveal at the outset that I come to this issue with strong predispositions. My first year-round job was with the staff of Lyndon Johnson's President's Committee on Urban Housing, popularly called the Kaiser Committee. Much of my work in that capacity addressed the issue of effects of technological and legal barriers on the cost of housing. The Committee's published volumes reflected the view, which I shared then and still embrace now, that supply constraints indeed can significantly harm housing consumers (President's Committee on Urban Housing, 1968). The Kaiser Committee had few careful academic studies to draw on. I note that the earliest study that Quigley and Rosenthal include in their appendix dates from 1969, while the Committee completed its work in 1968. Events since 1968 are striking: academic studies have proliferated but, in general, so have barriers to housing production. In 1968, no one would have dreamed that density on some San Francisco Bay Area hillsides would soon be limited to one house per 100 acres,[1] or that a county at the rural fringe of Greater Chicago would ban, in some locations, lots of less than 10 acres.[2]

After I had entered academic life, I wrote a lengthy article on the economic consequences of growth controls (Ellickson, 1977). In that work, I interpreted many antigrowth measures as deliberate attempts by "homeowner cartels" to drive up the value of their houses by lessening competition from new subdivisions.

Coming to the issue with these prior beliefs, I was struck by how guarded the authors are in their assessment. They see only mixed evidence of net consumer harm and are hesitant to draw clear lessons for policy reform. For several reasons, Quigley and Rosenthal do not shake me from my prior views. First, although they are willing to offer cogent criticisms of the various methodologies that different scholars have used, when making their synthetic appraisals, Quigley and Rosenthal seem to resort mainly to a raw tally of the studies on the various sides of the issue, without adjusting for the quality of those studies. The most careful and impressive studies—for example, those by Pollakowski and Wachter (1990), Glaeser and Gyourko (2003a, 2003b), and Seymour Schwartz and his various collaborators (1981, 1982, 1984, 1988)—all support the common sense view that a regulation that restricts supply, in fact, affects the supply curve. In particular, the meticulous Pollakowski & Wachter (1990) study, which found that constraints inflated housing prices beyond the boundaries of the constrained area, strongly supports the view that constraints mainly shift the supply curve, not the demand curve.

Second, Quigley and Rosenthal cite studies, such as those by Landis (1992), that doubt whether growth controls work in practice. All of us who study land use regulations recognize that a municipality may use an apparent legal constraint as a bargaining chip and waive it in the crunch. Plainly, the question before us is how binding constraints, not bluffed constraints, affect housing prices. Had the authors weeded out the studies that focused on what turned out to be bluffed constraints, their scales would have tipped more toward the supply-side view.

Third, Quigley and Rosenthal are more guarded in their conclusions than are many other highly respected economists who have investigated this issue. I am confident that William Fischel, Edward Glaeser, and Susan Wachter, for example, would not be as benign in their assessment of the effects of growth controls on consumer welfare.

In my remarks at the conference, I mentioned the overly guarded tone of this article. John Quigley replied that he did not doubt the sign of the effect of barriers on prices (implying that the sign was positive), but only the magnitude of the effect. In other recent writing, Quigley himself has partly attributed, without qualifications, housing price rises to excessive regulation (Quigley and Raphael, 2004). A danger exists that growth controllers whose policies harm housing consumers will interpret Quigley and Rosenthal's excessively cautious discussion as exonerating. For the reasons I've stated, I think these overly zealous regulators still should have trouble sleeping at night.

The authors' central recommendation is that an appropriate agency (perhaps the U.S. Department of Housing and Urban Development [HUD] or the Bureau of the Census) periodically underwrite a national survey of local land use regulations. This is a splendid idea. A database of this sort fits the economic definition of a "public good" that should be governmentally funded. Scholars and profit-motivated firms have inadequate incentives to generate this sort of information.[3] In addition, because the database is not congestible—that is, one scholar's use of it would not interfere with another's use— ideally it should be available without charge. Were HUD to publish the results of a survey of this sort, numerous scholars would quickly plug the data into their regression analyses of the effects of barriers on housing prices.

In closing, I propose several ways of expanding the survey that Quigley and Rosenthal envision. The authors stress collection of data on local government land use practices. As

they certainly would agree, gathering information on state practices also is essential. Hawaii, for example, zones its entire land area itself. California has a Coastal Commission with regulatory powers over its key coastal area. Equally important, states set the rules by which local governments engage in land use regulation. Statutory approaches vary enormously. Oregon imposes notably stiff planning requirements on its local governments. California requires the developer of a major private project to prepare an Environment Impact Report and requires a local government to make decisions consistently with its (state-required) comprehensive plan. These statutory requirements give "not in my backyard" forces powerful ammunition when they attack locally approved projects in court. Some states (but not others) allow initiatives on land use measures, have Anti-SLAPP (Strategic Lawsuits Against Public Participation) statutes to discourage developers from suing opponents of development, and so on. Regression analysis might reveal the effects of these enactments on housing prices.

In addition, a study of restrictions should include analysis of the rulings of the various state supreme courts. As many scholars have documented, in 1967 the Supreme Court of California began ruling in favor of antidevelopment interests in virtually every case it decided (Fischel, 1995; DiMento et al., 1980). Housing prices in California shot upward thereafter. Although virtually all state constitutions include a "takings clause" that conceivably could be interpreted to protect a homebuilder from excessive regulations and exactions, an observer cannot appraise the actual strength of these protections without examining judicial decisions.

Finally, Quigley and Rosenthal suggest that a national survey of land use regulations should include interviews with a sampling of local officials and homebuilders to obtain their overall assessments of the stringency of the local approval process. I agree that this sort of interview data could usefully supplement other measures of regulatory stringency. Two other sorts of experts, however, might be added to the list of interviewees: civil engineers who specialize in designing subdivisions and attorneys who specialize in land use litigation. Members of both these professions also work deeply in the relevant trenches.

Author

Robert C. Ellickson is Walter E. Meyer Professor of Property and Urban Law at Yale University. He is co-author with Vicki L. Been of Land Use Controls, *a leading casebook.*

Notes

1. See *Sanfilippo v. County of Santa Cruz*, 415 F. Supp. 1340 (N.D. Cal. 1976).

2. See *Twigg v. County of Will*, 627 N.E. 2d 742 (Ill. App. Ct. 1994).

3. Kudos are owed to Peter Linneman, Stephen Malpezzi, and the others who have striven to compile data of this sort.

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Response to "The Effects of Land Use Regulation on the Price of Housing: What Do We Know? What Can We Learn?" by John M. Quigley and Larry A. Rosenthal

William H. Kreager
Principal, Mithun

Now is a great time to be involved with land planning and housing design. Innovation and new ideas are constantly required. Our challenge is creating acceptable homes for today's lifestyles, but on less land and for higher cost than previously dreamed of by the home-buying public in its worst nightmares.

The subject article by Quigley and Rosenthal is a thoughtful review of modeling "hedonic" variables and methodology. I now understand that Euclid, Ohio, is responsible for validating zoning ordinances aimed at legally separating various land uses in a town plan. Euclid now joins President Eisenhower and his Federal Highway Act and 50 years of a growing American economy as perpetrators of suburban sprawl in the United States.

I agree with the first five conclusions presented in the article, but respectfully disagree with number six. I will comment on number six at the conclusion of my observations.

My overall conclusion is that the authors were far more interested in discussing modeling methodology and hedonic variables than drawing conclusions about the effects of land use regulations from the research. This article did not reveal much more than we already know. The article also is scattered in its approach and weakly organized, so gleaning the conclusions and recommendations was difficult. As best as I can tell, the authors reached the following conclusions:

1. Growth controls cannot stem growth.
   Regulations are local, growth is regional.
   Regulation cannot compete with exogenous population pressures.
   Growth bleeds across jurisdictional boundaries.

2. Exclusionary zoning or "snob" zoning used to keep out lower income people increases sprawl by dispersing population throughout a region in search of affordable housing.

3. Zoning is used by "monopoly" jurisdictions (those that have complete control over zoning and land use process) as a discretionary selection process for determining who can enter the community and best be able to pay for the new services provided.

4. Newcomers must pay the artificially inflated price of property and homes, which is a dereliction of community responsibility. Although homebuilders may be negatively affected by restrictive zoning policies by limiting the amount of homes that could be built, many also benefit from these same measures because they artificially increase the price of housing, thus allowing homebuilders to sell homes at a much higher price. Often, this inflation is achieved in connection with local officials who also seek personal gain indirectly by inflating the cost of property and housing artificially through zoning and land use regulations. Of course, those that gain (builders and elected officials) are those already established in the community.

5. Quigley and Rosenthal conclude that zoning and land use regulation cause "social mischief" and surmise that segregation of uses (the entire underpinning of zoning law) really has no basis because research done by Kenyon (1991) indicates that "unwanted land uses, such as power plants and pollution sources. . . . rarely depressed property values as much as feared and economic effects dissipate quickly as a function of distance" (Quigley and Rosenthal, 2005: 80).

The authors conclude with a recommendation for further research:

> Perhaps the most important reason why empirical research is not definitive is because of measuring the regulatory environment facing households and builders in a satisfactory manner (Quigley and Rosenthal, 2005: 102).

Accordingly, they think "the most promising strategy for improving our understanding of the economic effects of zoning and land use restrictions would be to devote resources to measuring regulatory conditions systematically in a large cross-section of cities and metropolitan areas" (Quigley and Rosenthal, 2005: 102).

The authors of this article believe that a systematic update and extension of this work would have a high social and scientific payoff. In their view,

> a useful survey of local land use regulation would have four components. First, the survey would be national . . .. Second, it would sample metropolitan areas . . . permit analysis of the interplay among political jurisdictions . . .. Third, such a survey would measure the outcomes of regulatory processes . . .. Fourth, it would sample builders, developers, and government officials to establish, as far as possible, the linkage between regulation on the one hand and the supply and price of housing on the other (Quigley and Rosenthal, 2005: 103).

I would now like to make my observations from the builder's and developer's perspectives, based on 30 years in the trenches, concerning the practical impacts of land use regulation on housing affordability. Land use regulation impacts housing costs in the following areas:

1. The limitation of available land raises cost.

2. The cost of regulation in fees, permits, and required concurrency of infrastructure raises cost.

3. The historic gradual transfer of the responsibility for funding growth from the broad community to the individual homebuyer raises costs.

First, we must understand the cost impact of regulation:

- Historically, the ratio of land cost of the finished lot to the sale price of the finished home has been 1:5, or 20 percent.

- Currently, national statistics from the National Association of Home Builders (NAHB) quote that figure at 23.6 percent, so the ratio is now approaching 1:4, or 25 percent.

- These figures apply to all housing nationally, ranging from jurisdictions with no particular regulations to jurisdictions with severe land use regulation.

Portland, Oregon, is the pioneer of mandated growth controls, instituted more than 20 years ago. Portland was once one of the nation's most affordable housing markets based on a ratio of housing price to average income. During the early years of mandated growth control, little evidence existed of cost increases generated by Portland's growth management legislation as homebuilders developed within a generous growth management boundary. But as the available land within the boundary was developed and became scarce, prices soared. Before 1995, an unimproved, developable acre inside the line could be bought for $40,000. Today, that unimproved acre can be had for around $300,000, if you can find it. Portland today has the highest land costs for a city with a population of more than 1 million outside California—a great example of land cost impact under land use restriction.[1]

My second point concerns impact costs, permit costs, and other fees related to environmental, recreational, school, and utility infrastructure. In a study released by the Master Builders Association of King and Snohomish Counties (Seattle) on April 18, 2004, fees and permits have risen to 5 percent of the house price for single-family homes and 3.2 percent of the cost of a multifamily dwelling. The permit fee is the cost for a piece of paper giving a builder permission to build the home and does not include any of the costs of the required concurrencies. Seattle and Washington State as a whole have been under state-mandated growth controls for 15 years.

Regulations affecting homebuilding include 22 federal laws and 45 state and local regulations and fee types. Further, the Quigley and Rosenthal (2005) article lists 47 land use regulatory categories. How can all these regulatory controls not impact the cost of building a house?

What is the premium for housing in a strictly regulated environment? An NAHB survey found that about 10 percent of the cost of building a new home can be attributed to excessive regulatory standards, needless red tape, and regulatory delays.

If the national average new home price could be lowered by 10 percent from today's $226,680 to $204,120, an additional 4.8 million households would be eligible to buy a home. Practically speaking, of that total, 190,000 to 240,000 households would actually purchase a home. Almost a quarter of a million households, then, would be empowered with the stability and pride of home ownership.

Third, although the article views land cost impacts anecdotally project by project, we must actually view the impacts across the board on all housing types.

For example, the statement is made that when land is restricted to low density, its price goes down. True. But what of the need for higher density land for more affordable housing? If land availability is reduced by the down zone, the remaining available land goes up in cost, thus raising the cost of the erstwhile affordable housing.

The article also addresses mobile home zoning, concluding that if mobile home zoning is restricted, adjacent single-family land goes up in value (Quigley and Rosenthal, 2005). This regulation does raise single-family land cost, but look at the other side as well. Mobile homes and manufactured housing accounted for more than 40 percent of the home starts in the United States last year. Why? Because these types of housing are affordable. Restricting zoning for mobile homes raises that respective land cost and lessens the affordability for this lowest cost, entry-level housing ownership alternative.

Finally, let's not go to "private bargaining" between landowners as an alternative to "exogenous government regulation." Adjacent landowners can be quite reasonable in details such as buffering, scale, and screening, but given the opportunity to stop a land use change, they can be vicious! "It ought to be a park!" they cry. Or, "the city should buy it, but don't raise our taxes!"

The homebuilding industry would much prefer zoning and land use regulations that are reasonable and predictable. Give us fair rules, and we will give you fair housing.

Author

William H. Kreager, FAIA, MIRM, has created new homes and communities all over the United States and in Japan. His projects have achieved national awards and recognition for environmentally sensitive master site planning and innovative architectural design. His market-oriented work includes projects from small infill communities to new towns of 6,000 acres. Urban infill, mixed-use development, and environmental sustainability are his key interests. He was the 2000 Chair of the National American Institute of Architects Housing Professional Interest Area and is in the leadership of National Association of Home Builders committees and boards.

Note

1. Statistics from the Portland, Oregan, Building Industry Association. Interview with executive director.

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Response to "Impact Fees and Housing Affordability" by Vicki Been

William A. Fischel
Dartmouth College

Professor Vicki Been has provided an excellent survey of what we know about impact fees. Her economic analysis is sound and well balanced, and she has surveyed the major works in this area with insight and institutional nuance. Her call for empirical work that takes into account the benefits, as well as costs, of exactions is especially important to heed. To that end, the focus of this comment is why thinking of exactions as fees for service rather than as taxes is better. Been's analysis presents both views about the nature of exactions, but she leans toward viewing exactions and impact fees as prices. I want to second that inclination and explain why it matters.

A tax is an obligation imposed by the government on owners of assets and income streams within its jurisdiction. Most taxes are uniform in their effect in this minimum sense: they treat people and assets that are economically identical the same. In this respect alone, it could be argued that land use exactions are different from taxes in that similar activities can easily be subjected to different exactions. Exactions are sometimes negotiated with government officials, and, for what are often legitimate reasons, different developers may end up paying different exactions for otherwise similar projects.

Uniformity, however, is not the key difference between exactions and taxes. The most important difference is that taxes are not directly connected to an entitlement to some government benefit. A person who (legally) pays no federal income tax because he/she does not earn sufficient income to be taxed is nonetheless entitled to all the services that the federal government offers its citizens. Someone who owns no property in a locality and, is thus, nominally, not subject to property taxation still is entitled to send his/her children to local public schools, use the roads and parks, and participate in public life on the same terms as everyone else. Of course, one can say that such a person indirectly pays taxes as a renter, but that merely shows that a direct link is not required between taxes and government services. Paying more taxes generally does not get you more government services.

Now, contrast the taxpayer with the development-minded landowner who wants to obtain permission from zoning and planning authorities to build something. This person may face a schedule of impact fees or an ad hoc group of land use exactions—some in cash and some in kind. If the would-be developer declines to pay these exactions and fees,

he/she will not receive his/her permits. Period. The ability of local officials to conditionally withhold a permit is the essence of an exaction, and this ability is what makes exactions different from taxes.

Taxes and fees intersect at two points that further illustrate their fundamental differences. One is the aphorism of Justice Oliver Wendell Holmes, Jr., that "taxes are what we pay for civilized society."[1] The unstated, but clear, implication is that those who decline to honor a legal obligation to pay a tax will not get to enjoy the benefits of civilized society. They will, instead, spend time in jail. The benefits of civilized society, however, are available to all who pay their taxes, regardless of their amount. These benefits also are available to those who arrange their affairs—say, by emulating Henry David Thoreau's 2 years at Walden Pond—so that no taxes are due. Conversely, the benefits of civilized society still are available to development-minded landowners who decline to pay impact fees. All they forgo is the building permit. They are not put in jail or refused service by the police and fire departments.

The other intersection between exactions and taxes arises when people have a choice of jurisdictions. If a potential resident or property owner has not settled on any particular community in an area with many to choose from, the combination of local taxes and local services can be thought of as a menu choice. In this context, the difference between exactions and taxes becomes less clear insofar as the potential resident views what the revenues finance—schools, police, fire, parks—as being paid for by the prospective property taxes that he/she will pay. Likewise, a property owner who has already purchased land in a community cannot avoid the adverse effect of a change in property taxes or exaction policies by selling his land and moving away. The buyer, in either case, will have notice of the change and will adjust the amount he/she is willing to pay downward by the net present value of the burden.

The remaining difference between exactions and property tax burden in the Tiebout model (the name political economy gives to the situation in which communities are numerous) is what may be called the majoritarian problem. Exactions often are ad hoc and nonuniform. That gives greater scope for the majority of local residents to extract some economic surplus (land rent) from individual owners who seek to develop their properties. The uniform assessment and rate conditions imposed on local property taxation deter much of this opportunistic rent-seeking. A local official who proposed that all land—developed or not—should be subject to a confiscatory tax (a la Henry George) would, in most instances, find that his/her tenure in office was brief. But an official who proposed that all owners of undeveloped land would have to pay exactions of a similar magnitude would often enhance his/her chances of re-election, especially in places where owners of undeveloped land were few in number and not resident to vote.

The point of this digression about the difference between exactions and taxes is that exactions have to be examined in a fashion different from that of taxes. With taxes, one can ignore, in most cases, what the tax finances. This allows for the usual partial-equilibrium graphical analysis of tax incidence that Professor Been demonstrates that she has mastered. But as she notes—though not prominently enough for my taste—this approach seldom fits the usual exaction scheme. As a result, the tax analogy can lead to counterproductive recommendations. Viewed as just another tax, exactions would seem solely to raise housing costs, and affordable-housing advocates would want them reduced.

When exactions are more properly viewed as a fee for service, however, a policy of reducing exactions is far more problematical. If seemingly high local exactions are reduced by state or federal legislation, the response of the communities affected must be

taken into account. The localities can, in the exactions case, withhold development permits that they might otherwise have issued. The effect of this supply reduction, if widespread, would make housing in the area less affordable rather than more affordable.

Yet, as Been again properly points out, this possibility does not warrant a completely hands-off policy with regard to exactions. Because of the majoritarian problem, some communities may be using exactions unfairly to finance public expenditures that should be borne by all property owners, not just those who were last to approach the moat. Purely rent-seeking exactions (those that try to divert some of the developer's capital gains to the community) are not, in theory, harmful to the development of affordable housing (Fischel, 1987). Rent-seeking by the community, however, often induces landowner-developers to adopt counterproductive strategies. For example, a large-scale developer might refuse to pay exactions, hence leaving land undeveloped, to establish a credible threat in a later round of negotiations with community officials. Beyond that, the perception that being a developer reduces one's stature in the law surely deters many decent people from becoming developers or dealing with especially aggressive communities. The theory that communities can selectively extract land rents from one set of the population is actually dubious as a practical matter, and that translates into less affordable housing.

The other problem that Been points to is that some communities enjoy a monopoly-like position with respect to development. This may be because of some natural resource advantage, such as a particularly nice lake, or because the boundaries of the municipality are so large that alternative sites in different communities are not a realistic choice. In this situation, high exactions may be like the excessively high prices that a commercial monopoly can charge because of its lack of competitors.

One should not necessarily rush to the conclusion that reducing exactions should be the focus of promoting affordable housing, even in the monopoly community. Most of the "profits" of living in a monopoly community are enjoyed by homeowners, who can eventually sell (or borrow against) their ever-more-valuable homes. Capital gains by homeowners in such communities can be had by either charging extra-high exactions for development permits (thus reducing local taxes or further enhancing local amenities) *or by refusing to issue new permits*. The monopoly on issuing building permits is the most valuable resource for the truly exclusionary, monopoly-like community. To tell such communities that they may not charge high exactions for the few permits they do issue would probably result in fewer permits being issued and continued enjoyment of high housing prices by those who will eventually be on the selling end. A better approach to the monopoly community is that of conventional antitrust: break up the monopoly by encouraging formation of new communities.

This discussion is not to counsel a "laissez faire" attitude toward local exactions. It does suggest, however, that the problem of exactions is simply the visible manifestation—and often actually an amelioration—of a more fundamental problem: the community's ability to withhold development permits. I would not join with those who would say we do not need local government control of land. I would join with those who say that we need some oversight of local control of land. Local governments should not be regarded as regulatory islands. Whether the external discipline should come from higher levels of elected government or from the judicial branch is something reasonable people can differ about.

I close by mentioning one of the few regrets I have about this excellent survey. Professor Been chose not to address what I think is an effective means of disciplining local regulatory excess. The regulatory takings doctrine, as expressed by Robert Ellickson (1977) and others, would go a considerable distance in reining in local barriers to affordable housing. I have argued that federal agencies such as the U.S. Department of Housing and Urban

Development should not have a central role in developing this doctrine, but they could make some useful pronouncements about it that would encourage its use in the state courts (Fischel, 1999). Development-minded landowners should not be made to feel that they are second-class citizens in the eyes of the courts and state constitutions. We need to keep in mind that an affordable supply of housing is the product of a system that starts with landowners being able to proceed with reasonable developments without unreasonable conditions. That "reasonable" is subject to interpretation cannot be doubted, but one can question whether the only interpreters should be local officials whose constituents gain wealth from stringent regulations.

Author

William A. Fischel has taught economics at Dartmouth College since 1973, when he received his Ph.D. from Princeton. His research specialties are land use, local government, school finance, and property taxation. Fischel wrote The Economics of Zoning Laws *(Johns Hopkins, 1985),* Regulatory Takings *(Harvard, 1995), and* The Homevoter Hypothesis *(Harvard, 2001). Fischel has had 1-year leaves at the University of California campuses of Davis, Santa Barbara, and Berkeley, and at the University of Washington. He is currently professor of economics and the Barbara and William Hale Chair in the Arts and Sciences at Dartmouth.*

Note

1. Compania General de Tabacos de Filipinas v. Collector of Internal Revenue, 275 U.S. 87, 100 (1927).

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Response to "Environmental Regulations and the Housing Market: A Review of the Literature" by Katherine A. Kiel

James M. McElfish, Jr.
Environmental Law Institute

Professor Katherine Kiel's article is a good survey of the relatively thin academic literature on this subject. The literature focuses chiefly on the costs of the land inputs to housing development. The studies attempt to link environmental regulations with changes in the supply of available land and hence to changes in costs. Studies try to measure changes in per-acre land costs, changes in house sale prices, or foregone amenity values from housing units not built in restricted areas. Interestingly, the collected studies do not address affordable housing separately from other segments of the housing markets examined.

Summarizing the literature, the article says that the following effects can be observed:

- Prices go *up* because developable land is scarcer.
- Prices *stay the same* because environmental compliance costs are capitalized into land costs.
- Prices go *down* because of lower developable densities on environmentally restricted land.
- Prices go *up* because of demand for the environmental amenities created by restrictions (Boyle and Kiel, 2001).

In short, outcomes vary. While the studies cited primarily examine supply, the effects of environmental regulation on housing affordability depend substantially on issues of *demand*.

Many of the studies have been of areas of high demand for housing (coastal California and Florida, Dallas, Houston, waterfront property in Maryland, New Jersey). The leading studies examine high-growth states, expanding metro areas, and coastal zones. Here changes in environmental regulation do affect prices at the margin. Of course, these high-demand areas also are those areas where housing affordability is most at issue. Many environmental regulations, however, apply in different kinds of markets, and the effects on affordability are not always the same.

For example, the same wetland regulations limit development in vernal pool complexes in Orange County, California, and in rural Nebraska prairie pothole areas.[1] The effect on affordability of housing costs, however, can differ profoundly. Such effects may be negligible or nonexistent in Nebraska because of the availability of other developable land but substantial in the high-demand, low-availability-of-land situation in Orange County. On the other hand, in a high-cost, high-demand market, the incremental contribution of environmental regulation to higher costs may be so minor compared with other factors driving cost increases that the effect on the affordable segment of the market is minimal. Thus, context matters.

Three kinds of land-related costs are related to environmental regulation, with differing effects on housing development and availability.

1. Land scarcity (affected by regulations dealing with wetlands, coastal zone protection, flood plain and hazard protection, and habitat, among others).
2. Site preparation (affected by regulations dealing with storm water controls, erosion and sediment, and assessment for hazardous substances, among others).
3. Operating costs (affected by regulations dealing with water and sewer, storm water management, and solid waste management requirements, among others).

These costs have different impacts on affordability in different places. In situations in which impacts occur, we need to focus on identifying *offsets* that can address the affordability issue itself.

For example, where environmental restrictions reduce the amount of land available for development, and this reduction threatens to reduce the availability of affordable housing, offsetting these effects by changing legal subdivision and other requirements that affect housing density is feasible. The same number of housing units can be produced on less land if the relevant zoning and subdivision requirements are adjusted to allow higher density and smaller parcel size. We already see these kinds of offsets for environmental purposes in a variety of settings. They occur in the context of private land trusts for ranchers in the western United States, where cluster development enables the protection of large open space areas for ranching (and habitat and other values) (Muto, 1999). They also occur publicly in connection with agricultural zoning and other rules that provide for clustering of development and smaller parcel sizes (sometimes setting small maximum parcel sizes).[2] Transferable development rights programs also provide a version of this offset approach: schemes endeavoring to maintain, or even increase, the developable land supply even as land availability is constrained by environmental protection limitations.[3]

Merely identifying environmental measures as a contributor to land costs or limitations in land availability is not the end of the inquiry. Local governments have the opportunity to offset adverse effects by using their land use powers to adjust the land supply and rules of development. Where environmental regulations reduce the potential availability of affordable housing in a constrained market, land use authority can be exercised to offset these effects through adjustments to density or other targeted provisions. Even where environmental regulation is largely federally or state-administered, local governments can take action to address affordability by using local land use powers.

Increasingly, local governments are also becoming the locus of environmental regulation as well as land use.[4] They are responsible for storm water regulation in most states, for sediment and erosion control, and for solid waste planning and management. In many states, local governments are responsible for stream buffer and flood plain protection and for implementation of coastal conservation. Many western counties are now preparing

Habitat Conservation Plans under the federal Endangered Species Act[5] to guide their future development in the context of species protection obligations (Cohn and Lerner, 2003). Many states have delegated implementation functions to local governments, as with wetland programs in Massachusetts. Thus, we are beginning to see a confluence of authority for environmental protection and land use regulation in the same level of government (Nolon, 2003; McElfish, 2004). Although in the early 1970s some anticipated that the federal government would hold this authority, local governments have stepped forward as repositories of jurisdiction over density of land development and the rules of development. Thus, local governments can address the cost issues where they exist by using their land use powers and creating offsetting policies.

We also need to pay attention to environmental regulations and affordability effects in already developed areas, such as cities, inner-ring suburbs, and older towns. Environmental regulations can affect affordability in these areas by affecting operating costs and living expenses for owners. For example, older water and sewer systems may need significant upgrades to comply with environmental regulations but are supported by a declining (and poorer) population of ratepayers. Where retrofitting systems to deal with combined sewer overflows, sanitary sewer overflows, drinking water compliance, or storm water management results in higher costs, offsetting local policies may be needed to preserve or improve affordability. These may include targeting of federal and state grant funding, rate buy-downs, and other policies meant to offset the cycle of abandonment and disinvestments (McElfish and Casey-Lefkowitz, 2001).

So what is the bottom line on this Earth Day 2004?[6] The U.S. Department of Housing and Urban Development research agenda needs to examine *offsets* to deal with cases in which a connection exists between environmental regulation and housing affordability. This positive research approach is desirable for the following three reasons

1. It recognizes that consistent environmental regulations do not bite the same way everywhere and that effects on affordability (where they occur) are quite local.
2. It transforms the discussion from how to do away with environmental regulations to how to avoid undesirable secondary effects.
3. It considers environment and land use together, breaking down the artificial distinction that treats these as two separate subjects with no commonality of interest or beneficiaries.

Affordable housing is properly considered a key function of public policy, as is environmental protection. Finding win-win opportunities is both possible and essential.

Author

James M. McElfish, Jr. is a senior attorney and the director of the Sustainable Use of Land Program at the Environmental Law Institute in Washington, DC. (http://www.eli.org).

Notes

1. 33 CFR Part 320-330; 40 CFR Part 230.

2. Calvert County, Maryland, requires cluster development for residential communities in rural areas. Within the Rural District, building lots within designated Farm Communities and Resource Preservation Districts must be grouped onto no more than 20 percent of the site. Within designated Rural Communities, building lots must be grouped onto no more than 50 percent of the site. In areas zoned as Residential (R-1, R-2) that are outside of town centers, building lots must be grouped onto no more than 50 percent of the site. Open spaces created by approved cluster development must

be protected by legal arrangements such as covenants "to assure the preservation and continued maintenance of the open space for its intended purposes in perpetuity." Calvert County Zoning Regulation 5-1.03.

3. For example, N.Y. Envtl. Conserv. Law. §57-0121 (Long Island Pine Barrens).

4. Professor John Nolon of Pace University School of Law has argued that this indicates the advent of a new era of "local environmental law." John R. Nolon, *New Ground: The Advent of Local Environmental Law* (Washington, DC: Environmental Law Institute, 2003).

5. 16 U.S.C. 1531–1544.

6. The U.S. Department of Housing and Urban Development's Research Conference on Regulatory Barriers to Affordable Housing was held on April 22, 2004, which was Earth Day 2004.

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Response to "Environmental Regulations and the Housing Market: A Review of the Literature" by Katherine A. Kiel

David Sunding
University of California, Berkeley

Environmental regulation is a significant hurdle in the development process, as well as a major part of national efforts to protect biodiversity, environmental amenities, and other landscape features, such as wetlands. Governments at all levels routinely conduct environmental reviews of proposed projects to ensure that development is compatible with environmental protection or, at least, that economic and environmental objectives are balanced in some fashion. Interestingly, federal environmental agencies have assumed an increasingly important role in oversight of land use changes, an area traditionally reserved for local governments.

Professor Kiel does a good job at surveying an area that has, by all accounts, received inadequate attention by economists. I do not disagree with many of her conclusions. In this discussion, however, I would like to add some additional information that bears on several of the points raised in her article and also suggest ways of considering how environmental regulation impacts housing projects and who bears the cost of protecting environmental amenities.

The case of wetlands regulation is a good illustration of how environmental regulation affects housing projects. The discharge of material into wetlands is regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. Federal regulations provide that the Corps must examine the following main issues in its review of proposed projects:

- Does the applicant have no practicable alternative that would avoid impacts to wetlands, and has the applicant minimized unavoidable impacts?
- Does the mitigation proposal adequately compensate for any adverse impacts of the project?
- Does the project contribute to significant degradation of the aquatic ecosystem?

- Is the state where the activity is to take place satisfied that the project is consistent with state water quality standards and coastal zone management plans?
- Is the project contrary to the public interest?

The first two issues are handled according to a process called "sequencing," in which the applicant must establish that all practicable steps have been taken to avoid and minimize adverse impacts before the Corps and other agencies will consider the mitigation proposal. Accordingly, the end result of environmental review is often a combination of avoidance and mitigation. Avoidance often leads to a reduction in the overall output of the project (that is, a reduction in the number of new homes constructed), and mitigation becomes one component of the transaction costs of regulation. Other out-of-pocket costs include the need to hire outside experts, such as attorneys and biological consultants, to navigate the permitting process, and the need to redesign the project based on the outcome of the review process.

Another impact of environmental regulation is the delay it causes in completing projects. Sunding and Zilberman (2002) offer some direct evidence on the length of time needed to obtain a wetland permit. Based on a nationwide analysis of individual wetland permit applications, they concluded that the average permit took a total of 788 days to prepare and negotiate. Of this amount, 383 days were required for preparation (from initiation of the process until submission), and the remaining 405 days elapsed between submission and receipt of a decision from the Corps.[1] Environmental review often is the pacing item in a housing development project, especially because local environmental reviews can be impacted by federal decisions about mitigation and avoidance. Project delay causes losses to consumers who must live in a suboptimal location for some period of time, and also to developers and landowners who must wait for receipt of project revenues.

This discussion suggests that environmental regulation has three basic types of impacts on housing projects: (1) increase in development costs, (2) reduced project output to avoid onsite impacts, and (3) delayed completion of the project. To understand how environmental regulation affects the welfare of landowners, developers, and consumers, understanding the process of price determination in the housing market is also necessary.

Housing market equilibrium can be explained with two basic theories, and each can best explain the data in particular circumstances. The most common approach is to assume that the price of housing reflects the marginal cost of construction and development. For example, housing is expensive because land (an input to housing) is expensive. In this view, commonly called the neoclassical approach to housing market equilibrium and taught to every graduate student in urban economics, density will adjust to equate the price of land with its marginal value to consumers. This view also holds that developers do not earn excess profits from their activities.

An alternative approach stresses the importance of regulation, such as zoning and density controls, that limits the supply of housing. In this approach, the marginal cost of construction and development can be far below the market price of a house, because houses are rationed among a number of consumers, and their prices are bid up accordingly. Thus, in the regulation-focused approach, housing prices reflect scarcity more than costs of production. In this view, the value of land with a house on it can be far above the willingness of consumers to pay for an additional unit of lot size.

This distinction between the neoclassical and regulation-focused explanations of the price of housing is important to the impact of environmental regulation on the housing industry. As discussed above, such regulation perturbs the housing market by increasing the cost of development, reducing the output of the project, and delaying completion and delivery of

the housing units. In markets where housing prices reflect marginal costs, the impact of environmental regulation on costs of construction and development and on completion time will be of most importance; the marginal welfare costs of output restrictions are negligible because marginal cost equals marginal utility in the pre-regulation equilibrium.

When housing supply is limited, and houses are rationed as a result, the supply-reducing effect of environmental regulation takes on major significance. By further restricting supply, environmental regulation imposes costs on consumers and results in losses to landowners and developers undertaking projects on conserved land.

Recently, Aaron Swoboda and I implemented a statistical test to identify regulation-constrained housing markets (Sunding and Swoboda, 2004). The approach exploits the fact that in regulation-constrained markets, the price of housing is above the costs of construction and development. In such situations, the value of land with a house on it (called the "extensive margin" value) will exceed the marginal willingness of consumers to pay for an additional unit of land (the "intensive margin" value). This line of reasoning suggests a statistical test of price formation: if the intensive and extensive margin values of land are equal, the neoclassical model best describes the housing market. If, however, the extensive margin value exceeds the intensive margin value, the market is constrained by prior regulation, and these distortions must be accounted for when calculating the cost of additional regulations.

The main difficulty in executing the test to categorize housing markets is how to measure consumers' willingness to pay for land. Mr. Swoboda and I collected information on more than 18,000 new home sales in the "Inland Empire" region of Southern California, one of the nation's fastest growing areas. The study area was divided into 14 subregions along lines used by the regional metropolitan planning agencies. Controlling for other factors, they estimated the contribution of a unit of lot size to the sales price of a home separately for each subregion. In 11 of the 14 areas considered, the extensive margin value of land was above the intensive margin value at a high level of statistical significance. The neoclassical model held only in the most remote, least politically organized areas. Thus, in the study area, housing rationed by prior regulation and imposition of further regulation can cause large increases in the price of housing.

Nationwide, the work of other economists suggests that housing is rationed by regulation in a number of regions. In a less formal study, Glaeser and Gyorko (2002) found that supply appears to be limited in many of the nation's housing markets because they exhibit extensive margin values of land that are far above intensive margin values. Setting aside land for habitat protection in these markets (largely on the West and East Coasts) is likely to have the largest welfare impact and the largest impact on housing affordability.

Taking all this information together, exhibit 1 is an illustration of the welfare costs and equilibrium impacts of environmental regulation. In this exhibit, I have assumed that prior regulation, such as density restrictions and growth controls, effectively ration the number of new houses built at a particular location. In a neoclassical equilibrium, marginal cost would equal demand, and no supply limitation would exist.

In previous work, I have developed simulation models to measure the total economic effects of environmental regulation of housing projects, as well as its impact on particular groups (Sunding, 2004; Sunding, Swoboda, and Zilberman, 2004). A typical simulation scenario envisions a 1,000-unit housing project that is reduced to 800 units as a result of environmental regulation. The demand for the project's units has an implied elasticity of 1.67, evaluated at the initial price and quantity. The pre-regulation cost of development and construction is $200,000 per unit, and regulation adds $10,000 to the price of each unit. The rate of interest is 10 percent, and the permitting process is assumed to delay completion of the project by 1 year.

Before regulation, the equilibrium price of each house in the development is $250,000, and 1,000 units are sold. Regulation increases the price of a house to $280,000 and decreases output by 200 units. The increase in price and the reduction in the number of homes built cause a loss to consumers with a present value of $27 million. The effects on producers are subtler. Although producers lose from the reduction in quantity and the increase in development and construction costs, they also gain from the increase in selling price.

This surplus loss is a present-value loss from a *permanent* reduction in consumption and production. The effects of delay are *temporary*. Although social surplus loss stems largely from a reduction in output, delay cost stems from postponing construction of the units that do get built, plus regional and indirect costs. Thus, delay costs are equal to post-construction consumer and producer surplus, plus external costs, multiplied by the interest rate for each period of delay.

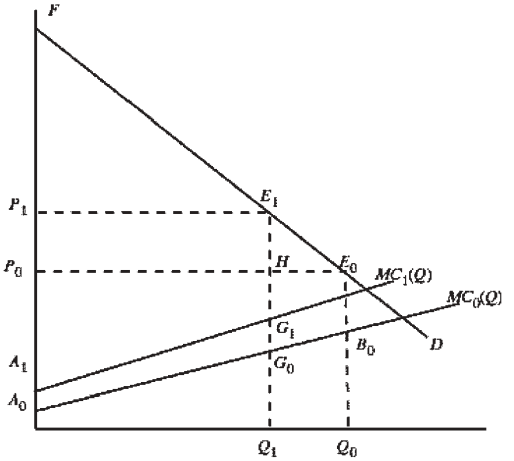
Taking short- and long-run effects together, the total economic impact of environmental regulation is $33 million for this hypothetical project. As a group, consumers bear most of the costs of regulation in this scenario. This finding is quite robust to permutations of market conditions.

An important lesson from the simulation analysis is that permitting costs and land price decreases are a poor guide to the total impacts of regulation. These indicators underestimate true costs and give a biased impression with respect to the incidence of regulatory costs. In cases in which land is scarce and housing is rationed by prior regulation, considering the market effects is important; in all cases, recognizing the costs of delay is also important.

Although not many economists have connected the dots between housing markets and environmental regulation, recognizing that many of the themes and models discussed in the articles on land use, impact fees, and building codes apply to the problem of environmental regulation is comforting. The present challenge is to extend these concepts to gain a better sense of who ultimately pays for the protection of environmental amenities and whether the benefits of regulation exceed the costs.

Exhibit 1

Impact of Regulation on the Local Housing Market



Author

David Sunding is a professor of agricultural and resource economics at the University of California, Berkeley. He is also a senior consultant in Charles River Associates' litigation and energy/environment practices. He specializes in environmental and natural resource economics, land use regulation, water resources and law and economics. Before his current position, Professor Sunding served as a senior economist on President William J. Clinton's Council of Economic Advisers, where he had responsibility for natural resource, agricultural, and environmental policies.

Note

1. These figures are in contrast to the Corps' assertion that it takes only 127 days on average to obtain an individual permit. The discrepancy is largely explained by the "completion game," in which months or years can pass before the Corps deems an application to be complete and, therefore, ready for review.

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Response to "Regulatory Implementation: Examining Barriers From Regulatory Processes" by Peter J. May

Harriet Tregoning
Smart Growth Leadership Institute

Few dispute the notion that many metropolitan areas face a serious housing crisis that threatens the continued economic growth of those regions. Evidence of a housing crisis can include high apartment rents, high home prices, leapfrog development, and an insufficient supply of housing units. The lack of a varied housing stock forces many workers out of the market and can drive households and businesses out of a region, including entrepreneurs and other job-creating enterprises.

Both state and local governments have a legitimate interest in regulating certain aspects of housing development to ensure reasonable safety and health standards and allow for the overall well-being of a community and the preservation of its character. In too many communities, however, developers wishing to create new housing meet resistance—whether at the stage of land acquisition and land planning or later in determining what and how to build.

Developers must meet local zoning laws, satisfy state building and specialty codes as well as local enforcement policies, and interact with state and local appeals boards. Local zoning laws govern what kinds of structures can be built in what parts of town. State building and specialty codes regulate the physical design of buildings. Because state regulations are enforced by local officials, local interpretations of the state regulations can pose additional barriers. Every such barrier has an associated cost, much of which is passed along to the homebuyer or renter.

Affordable housing is important to the vitality of communities, but frankly, many communities remain unconvinced of the desirability or the need to have it. The federal government needs to take the lead in creating new arguments and incentives for housing, including making a more compelling case about the impacts of a lack of housing affordability. States and localities need to take steps to encourage the marketplace to create a broader range of housing types and decline to wield the regulatory process in a manner that raises barriers to housing.

Regulatory Barriers to Housing Construction

Many communities are deeply ambivalent about any kind of growth. Even more have failed to reach a community consensus about the need for affordable housing. As just one example, more than 40 communities across Massachusetts have adopted local provisions that explicitly restrict or ban new construction. Many more communities are expressly reluctant to allow the development of housing appropriate for families with school-aged children because property taxes would not be sufficient to cover the cost of public schools.

Even when a state takes extraordinary efforts to promote affordable housing, local resistance can nullify those efforts. Consider the following examples:

- **A 1969 Massachusetts law known as Chapter 40B—**the Comprehensive Permit Law or "anti-snob" zoning law—gives developers a tool to override local zoning to build affordable housing. But it has become a lightning rod in many communities and fostered antihousing sentiment. According to the Rapport Institute for Greater Boston, the housing backlash has made it difficult to build housing of any kind in the broader Boston metropolitan area.
- **Many Massachusetts advocates championed the Community Preservation Act as an important new source of funding for affordable housing—**but it has been used more frequently to acquire land for parks and open space, sometimes with the effect of removing land from consideration for housing.

Peter May does a good job in his article both identifying possible sources of regulatory process barriers that may raise the cost or reduce the supply of housing and noting the difficulty in assessing the magnitude of those barriers. He identifies the following barriers:

- **Regulatory approvals—**delays associated with permit processes and approvals (which are particular concerns of the development community).
- **Regulatory enforcement strategies and practices—**strict and unsupportive regulatory regimes.
- **Patchy and irregular administrative arrangements—**duplicative administrative structures and gaps in regulatory decision processes.

According to the development community, regulatory process delays and inconsistent, complex, or overlapping requirements are a source of delays in construction, and, perhaps ultimately, barriers to the construction or rehabilitation of housing. They also cite citizen opposition to housing development as a major barrier. Although the development community has been a vocal critic of these sources of delay, researchers have encountered considerable difficulty assessing the extent and impact of these barriers.

Steps Toward Reducing Barriers

Despite the lack of quantitative information about the precise impact of these barriers, many jurisdictions have taken steps to reduce them (or the perception of them as barriers), adopting measures such as the following:

- One-stop permitting and electronic processing
- Third-party certification
- Administrative streamlining
- Consensus building and/or conflict resolution
- Code simplification ("smart codes")
- Facilitative reviews and more cooperative enforcement

Many of these reforms are familiar—they were implemented in Maryland at the state or local level during my time in state government. State-level one-stop shopping for infrastructure and other assistance was adopted for projects being built in smart growth priority funding areas—designated for growth by local government and supported with state infrastructure funds. Administrative "green tape" streamlining and facilitation was instituted in Montgomery County, Maryland—first for the renovation of the city of Silver Spring, then for the city of Wheaton. The state adopted smart codes: a rehab code that was adopted statewide, following New Jersey's model and a model overlay code for new development that was produced with state incentives for local adoption. Across the board, even in Maryland, little research has been done to quantify the efficacy of these solutions. Reports of their success are usually anecdotal.

Where Do We Go From Here? Research and Other Needs

Not surprisingly, May's article calls for research into these issues to better understand their true costs, the implications and impacts of cited barriers, and the actual impact and cost savings associated with various reforms.

May also calls for research into procedural reforms in regulatory decisionmaking and goal setting. This area of research might be particularly fruitful. Several of the articles presented at the conference make reference to the enormous subjectivity in the application of regulations to housing construction and rehabilitation. Community "hospitality," with respect to affordable housing, may be one of the most important factors in determining whether communities wield regulatory requirements legitimately or in an exclusionary way—for instance, subjecting housing proposals to successive waves of public hearings and approval processes.

Clearly, the U.S. Department of Housing and Urban Development and the states face considerable constraints in bringing about change at the local level. Federal influence often has been particularly indirect. Sponsored research into the sources and solutions of regulatory barriers is one role. Sharing best practices and information is another avenue, albeit one that is well advanced among housing practitioners.

A third avenue is sponsorship of demonstration programs at the local level as exemplars. The notion that local hospitality to affordable housing is a significant determinant is an important aspect of any demonstration project. Research should look more broadly into how the federal government can further incentivize states and localities to provide affordable housing. For instance, some additional avenues exist for states and localities to pursue in reducing regulatory barriers to encourage the development of more affordable housing.

Local Actions

- Participate in affordable housing development—with the added benefit that the entity with control over the regulatory process now has more of a stake in the outcome (increasingly, affordable housing may also require grants, tax credits, and other participation by government).
- Allow developers to build housing that fits the historic character of the community on parcels acquired from the local government.
- Where commercial or industrial vacancies (and high housing demand) warrant it, encourage conversion of those properties into affordable housing (as in the example of Santa Monica, California).

State or Federal Actions

- Conduct the necessary research to make the case that links housing affordability to economic prosperity in the region.
- Provide incentives for localities to accept new housing in their midst:
    - Create strong incentives for greater density at strategic transportation nodes in the region through the allocation of transportation funds.
    - Offer significant increases in state or federal aid (including transportation and park and school construction funds) when communities produce an adequate balance of jobs and housing or work with neighboring communities on housing development.

Building a Constituency for Affordable Housing

May's article acknowledges that government must balance regulatory objectives; certainly, not all building safety, environmental protections, and land use considerations should be eliminated in pursuit of affordable housing. Some regulation is clearly necessary. May makes the important point, however, that because the "constituency" for affordable housing is often not politically meaningful, the balancing of regulatory objectives now often tilts away from affordable housing.

In Boston, affordable housing is pursued by the city government with increasing zeal. Housing prices have risen so steeply that not just poor- and moderate-income households but also middle-income households are being forced to find housing elsewhere. The housing issue had to reach crisis proportions, however, before Boston really began to pay attention. It is not uncommon lately for companies to announce their decision to relocate out of Boston or avoid Boston altogether because of the lack of reasonably priced housing for their employees. In Boston and places like it, what is the economic impact of not having sufficient affordable housing? Compared to places that do meet diverse housing needs, what happens to places that don't meet needs in terms of job creation, new business formation, and wealth? What happens to civic engagement, access to opportunities, income disparities, and quality of life? What happens to traffic congestion and air quality? What happens to health? If people do not have a deep and abiding concern for housing all the members of the community, is it possible for research to make the crucial linkages between housing and the issues people care deeply about?

Housing poses one of the nation's more daunting challenges. Part of the answer is regulatory—letting it happen. But another part of the answer is *wanting* housing to happen. That the current regulatory scheme *can* raise the cost of construction, which, in turn, restricts the production of housing, is clear. States and localities can and do often pose unreasonable barriers to housing development, but they need to be convinced of why and how housing affordability is linked to economic prosperity, quality of life, and community vitality. If they want families to be housed at reasonable cost, they already have many of the means to reduce the time, expense, and frustration posed by the myriad regulations governing housing development and rehabilitation. Sadly, however, they often don't want to do so.

Author

Harriet Tregoning is the executive director of the Smart Growth Leadership Institute, a project of the national nonprofit advocacy organization Smart Growth America. She co-founded the Smart Growth Leadership Institute with former Maryland Governor Parris Glendening and served as secretary of planning and as the nation's first state-level cabinet secretary for Smart Growth. Formerly, she was the director of Development, Community, and Environment at the U.S. Environmental Protection Agency.

Regulatory Barriers Conference Roundtable Summary

Steven P. Hornburg
Principal, Emerging Community Markets

The summary session highlighted the political economy of regulatory barriers that face reform advocates. Local governments that promote regulatory barriers are, in fact, often responding to the perceived desires of their electorate. No level of government is in a position or willing to take on this powerful local dynamic. What state government wants to get involved in local land use disputes?

Federal influence is dilute, as authority for localities to regulate land use is mostly defined and controlled by states. To an extent, some argue that federal programs, such as the Community Development Block Grant program and HOME, can be used as leverage to coerce localities into reducing regulatory barriers. But, if the locality is using regulatory barriers already to discourage the development of affordable housing, federal programs that promote affordable housing might not be a high priority in the first place.

Another possible leverage point is the federal-state nexus, a juncture explored by the Kemp Commission. The federal government could incentivize states to be more proactive on regulatory barriers. This approach, however, foundered on economic and political reality. The federal government would never place enough funding at risk to effectively change states' incentive structures to tackle regulatory barriers.

Thus, the final panel generally supported making progress on developing more information on the affordability impact of specific regulatory barriers. While no particular regulation emerged as the highest priority, panelists expressed support for the idea of tackling one regulation at a time to examine the impact in depth and disseminate information on its affordability impact. They also recognized the need for research that challenges the predominant view that affordable housing hurts home prices.

Panelists also recognized that the lack of data hampers effective advocacy research designed to expose barriers. They generally supported efforts to more consistently gather data on a national basis. Finally, panelists recognized that the public often wants policies that may inadvertently increase housing prices and that highlighting this apparent contradiction may be useful.

Author

Steven Hornburg is the Principal of Emerging Community Markets, a policy and research firm dedicated to expanding housing opportunity. He is also a Harvard Fellow with the Joint Center for Housing Studies and an adjunct professor in the Urban and Regional Planning program at the Virginia Tech College of Architecture and Urban Studies. He is on the advisory boards of Cityscape: A Journal of Policy Development and Research *and the Metropolitan Institute at Virginia Tech. As a national housing strategist with more than 20 years of experience in national housing policy and mortgage finance, he is currently working on affordable housing, housing finance, homeownership education and counseling, subprime lending, community development, fair lending, smart growth finance, and U.S. Department of Housing and Urban Development programs.*

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