



# **Zoning Rules!** THE ECONOMICS OF LAND USE REGULATION



WILLIAM A. FISCHEL

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THE ECONOMICS OF LAND USE REGULATION

WILLIAM A. FISCHER

 LINCOLN INSTITUTE  
OF LAND POLICY  
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## Preface

Zoning has shaped American cities since 1916, when New York City adopted the first comprehensive ordinance. The title of this book expresses my thesis that zoning should be thought of as an active force rather than a background rulebook that is occasionally glanced at by developers and public officials. When landowners have plans to change the use of their property, they must first consult the rules in the local zoning ordinance. The rules are not immutable, but neither are they paper tigers that crumble at the whim of developers.

*Zoning Rules!* is the successor to the book I published 30 years ago, *The Economics of Zoning Laws* (1985). Enough has changed in the political arena of land use regulation as well as in the scholarship about zoning that I thought that a new title was in order. My own views have shifted as well, not least because I have written three other books about local government in the meantime: *Regulatory Takings* (1995), *The Homevoter Hypothesis* (2001), and *Making the Grade* (2009). The roles of property law and constitutional doctrine figure less in the present work than the demands of local residents, especially homeowners.

From my historical inquiries about its origins, zoning now looks to me more like a bottom-up institution. The development and spread of zoning are less about the planning profession—a necessary but not sufficient ingredient—and more about the changes in transportation technology that have made homeowners eager to try a new approach to controlling conditions in their

communities. Modern proposals to reform zoning will go awry unless they understand the concerns that brought about the acceptance of zoning and its spread in the twentieth century.

One of the lessons I learned from my 1985 book on zoning is that many readers approached it selectively. It has been on many college and university reading lists, but almost always as selected chapters. Even I have used it that way in my course in urban and land use economics at Dartmouth. The present work is organized to form a sequential and (I hope) coherent narrative, but most chapters have been composed to be read independently. (Chapters 6 and 7 are best paired, as are chapters 8 and 9.) This creates some redundancy that I hope the reader of the entire book will forgive. The following outline of the themes of each chapter may also help readers who navigate the book outside the sequential box.

The law and institutions described in this book are almost entirely from the United States. My international students at Dartmouth, however, have had little trouble adapting this knowledge when undertaking research about urban regulations in their home countries, which have included Australia, Canada, China, Denmark, Finland, Germany, Lithuania, Singapore, and Thailand. This adaptability makes me suspect that the economic behavior that drives American zoning has shaped institutions in other nations as well.

### **Outline of the Book**

Chapter 1 offers an overview of land use in the United States. Its most important observation is how little land is used for urban and other built-up activities. We are not about to run out of land for farming or other rural uses. Nonetheless, I do argue that excessive suburbanization—sprawl—is an important problem. Urbanization is a critical part of a productive and growing economy, and the major benefit of urban life is that people can work and live in close physical proximity to one another. Zoning and related land use controls are necessary to manage the intimacy of urban life, but they also can be applied so strenuously that we become strangers to one another.

Chapter 2 describes how zoning works and the recent trends in land use regulation. I emphasize here that zoning is not a single-valued constraint. It is a complex, locally generated web of regulations, and cutting any single strand is not likely to compromise its overall strength. I also defend the role of the often-maligned board of zoning appeals on the ground that local knowledge is critical to sensible land use decisions. The major trend in land use regula-

tion since 1970 has arisen from the initiatives undertaken by the states and the federal government. In the few instances where they have displaced local authority, state and federal regulations have tilted zoning mostly toward more restrictiveness. They have seldom made local governments accept developments that local residents do not want. The starting point for discussions about land use policy still has to be the local zoning map.

Chapter 3 reviews judicial supervision of zoning and related matters, focusing on decisions of the U.S. Supreme Court. In contrast to my earlier work, this book places less stock in the courts as agents for promoting rational land use. The main reason for this change in emphasis is that intelligent land use decisions require a degree of local knowledge that is difficult to transmit to judges far removed from the facts. I demonstrate this by closely examining one of the earliest zoning decisions of the Court, *Nectow v. Cambridge*, 277 U.S. 183 (1928), in which the Court made a dubious decision because it did not understand the neighborhood involved or the effect of new automotive technology. The Court's saving grace is that it has been reluctant ever since to become the national board of zoning appeals. The chapter also reviews the influence of the regulatory takings doctrine, which would have governments pay compensation to developers frustrated by unreasonable regulations. The Court has prevented states from abolishing the doctrine, and it has established broad parameters that deter some extreme regulations, but it has otherwise not been inclined to develop a robust and clear standard for when it should apply. Despite concerns by planners and environmentalists about recent decisions that limit land use exactions, no one should expect the Court's hands-off attitude to change.

Chapter 4 shows how closely integrated zoning is with other local government functions such as property taxation, municipal infrastructure, and public schools. The focus of the chapter is a debate among economists about how to think about the property tax. I show that zoning has the capacity to make the local property tax into a fee for public services, which implies that it is not really a tax at all. The fiscal powers of zoning are sometimes clouded from economists' view because zoning is also used by local governments to promote other objectives such as job growth and preservation of pleasant environments. This chapter also challenges the notion that suburban communities are invariably hostile to social and economic diversity within their borders. Diversity may actually be a local public good, and communities' use of "exclusionary zoning" can be seen as a device to rationalize fiscal transfers to the poor rather than avoid them altogether.



Chapter 5 offers a new history of zoning as a “bottom-up” movement rather than the conventional story about the progressive planners and pioneering lawyers who created its intellectual infrastructure. Zoning is the product of popular government; in this instance, the elites who developed it were the servants of the people. The cause of zoning’s amazingly rapid adoption and spread in America was the expansion of low-cost freight trucks and jitney buses in the 1910s. As a result, suburban homeowners could no longer rely on the distance of their neighborhoods from the city center and from rail lines to keep industry and apartments at bay, and they quickly embraced an institution that had few antecedents in American law. The major shift in zoning was the rise of growth controls in the 1970s. I argue that this was largely the result of the rapid construction of the interstate highway system in the preceding decade, as well as the 1970s inflation in home values, which transformed owner-occupied homes from consumer goods into investment goods. The growth control movement is critical to understand because of evidence that it is contributing to the national segregation of the poor from the rich and reducing access by workers to high-productivity urban areas in the Northeast and West Coast sections of the United States.

Chapter 6 uses graphical expositions of economic principles to develop an analytic framework for zoning. As in my 1985 book, the core of this framework is the Coase theorem. Land use regulation favors the interests of existing community residents, but developers can bargain with local officials to change zoning. The possibility of rezoning and the blandishments of developers present an opportunity cost to local officials and make them aware of the demands of prospective community residents and businesses. I explore in this context the regulatory takings doctrine, which would make governments pay for excessive regulations. The doctrine’s drawback is not, as some critics argue, that governments are incapable of responding to an economic cost if they have to pay for the consequences of regulation. The problem (as argued in chapter 9) is that the doctrine itself can be applied in so many other situations that popular government would drown in its demands.

Chapter 7 applies the Coase theorem approach to the process of community development. It focuses on a paradigmatic town, Acton, Massachusetts. Like many other Boston suburbs, Acton shifted from accommodating development in an orderly fashion in the 1950s to implementing growth controls in the 1970s and 1980s. The graphical model to examine this transformation is borrowed from the local public finance literature on the Tiebout model. The shift from developer-influenced zoning to growth controls was facilitated by

the legal tools of the environmental movement and the expansion of legal standing to nongovernmental organizations and individuals. An important insight from another article by Coase is how irreversible “conservation easements” help local governments commit to a growth control regime. While such policies are rational for each suburban community, they can be collectively problematic, as argued in chapter 8, for the economic and environmental health of the larger metropolitan area.

Chapter 8 examines the problem of excessive decentralization—sprawl—in a metropolitan context. A major cause of sprawl is growth-control zoning in desirable, close-in suburbs, which sends developers out to the farther reaches of the metropolitan area to create “edge cities” and excessively low-density residential development. The chapter considers two alternative approaches to dealing with sprawl, one epitomized by Portland, Oregon, and the other by Houston, Texas. Portland’s urban growth boundary does appear to contain sprawl, but it may have the side effect of monopolizing the urban housing market and retarding overall regional growth. Houston is the only large city that lacks zoning. It continues to grow exuberantly, but its low housing prices may reflect the risks of homeownership in an unzoned city. I advance a middle ground for zoning, the “good-housekeeping” model, as a path between these two extremes.

Chapter 9 addresses how zoning might be restored to the “good-housekeeping” model and away from the excesses of growth controls. I had in previous work supported the regulatory takings doctrine as a means of promoting local decisions that paid attention to the demands of outsiders. The theoretical virtues of regulatory takings, however, are in this chapter brought face to face with the extreme difficulty of administering this legal doctrine and containing it within reasonable bounds. The alternative that I promote is to reduce the demand for growth controls. The most promising way of doing this is by changing federal income tax rules that subsidize housing relative to other investments. Reducing excessive investment in owner-occupied housing is likely to be the most effective means of tempering the anti-growth syndrome that has caused excessive sprawl and promoted a lopsided distribution of income and wealth within and among America’s metropolitan areas.

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manuscript and provided helpful comments. Specific comments by individuals are acknowledged in the text, but I will single out here those of Bethany Berger, Peter Buchsbaum, Peter Ganong, Alex von Hoffman, Gideon Kanner, Nicholas Marantz, Danny Shoag, and Michael Wolf. The book's dedication to my students is heartfelt; their papers and class presentations over many years have filled gaps in my knowledge and often provoked me to look in corners I would otherwise have ignored. My wife, Janice G. Fischel, as always was encouraging and helpful, but for this book she made a specific contribution: its title!

Hanover, New Hampshire  
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## CHAPTER 1

# Land Use and Land Economics

In the United States there is more space where nobody is than anybody is. This is what makes America what it is.

—GERTRUDE STEIN, *THE GEOGRAPHICAL HISTORY OF AMERICA*, 1936

The fundamental premise of this book is that land use controls are best analyzed as collective property rights under the control of economically rational voters. The present chapter is devoted to some tasks preliminary to developing this theme. The first of these is to outline some facts about land use in order to set the parameters of what is to be regulated. The focus is on urban development and population pressure on land resources. Here, my major conclusion is that we are in no danger of running out of land for nonurban purposes due to population growth or development. The second task of this chapter is to review some elements of land economics. In order to comprehend the role of public property rights in allocating land, one must understand the basic forces by which private land uses are determined. The most powerful and least clearly understood of these is urban agglomeration economies.

### 1.1 How Much Land Is Urbanized?

A persistent concern about urbanization is that, left unchecked, it will “pave over” America’s farmland. An advocacy group, the American Farmland Trust, declared on its website, “Every minute of every day, we have been losing more than an acre of agricultural land to development.” To put this claim in perspective, I have for several decades posed the following thought experiment to my students in urban economics: Divide the current United States population into households of four persons and house them at the

density of one acre per household. What percentage of the total land area of the 48 contiguous states would be taken up? I explain to my students that an acre is approximately the size of a football field without the end zones, but I offer no other data. I ask them to write down a response before I poll them in order to reduce conformity bias.

The answers have been amazingly consistent over the years. Each group's guesses range from over 90 percent to less than 10 percent, but the median guess is almost always between 30 and 40 percent. Nearly everyone offers guesses considerably above the correct answer: 4 percent. I have also posed this question at academic and policy forums on land use and zoning, and the responses are usually the same. The only two exceptions are academic geographers and commercial developers. The geographers' average guesses are extremely high, on the order of 50 to 70 percent, and the developers get it almost exactly right, with median guesses of less than 10 percent.

What explains the consistently high guesses? I have talked with students about this, and the misperception could be the result of two factors. One is the projection of personal experience onto a larger stage. Most Americans live in suburban areas. As the distinguished rural geographer John Fraser Hart (2001) has noted, "Each one of us can think of rural areas that we have seen converted to urban uses. We yield to the perfectly normal human temptation to assume that our observations and experiences are typical, and we project them to the status of Universal Truths" (540). (Hart later concludes, "There are good and compelling reasons for concern about the expansion of urban areas into the adjacent countryside, but attempts to block or control it cannot be justified on the grounds of loss of good cropland/farmland" [542].) The other factor is a systematic bias in public sources of information. Farmland preservation has a remarkably strong press because of nostalgia for rural life and aesthetic norms ("amber waves of grain") and because tracts of suburban housing have long been derided in popular culture as "little boxes made of ticky tacky," as the Malvina Reynolds song would have it.

One may object to my heuristic calculation. Average household size is smaller than four (it was 2.60 in 2010), and other activities besides housing need to be counted. The facts, however, show that my simple calculation is not far off as a measure of development's encroachment on rural land. A number of modern studies (some discussed below) that use remote sensing devices and geographic information systems (GIS) make it clear that the fraction of land that is in any realistic sense urban or built-up remains re-

markably small, usually on the order of 3 to 4 percent of the non-Alaska U.S. land area.

An objection to these figures is that they do not indicate the *rate* at which rural uses are converted to urban purposes. One well-publicized study indicated that this rate had increased alarmingly in the 1970s (National Agricultural Lands Study [NALS] 1981). The alarm turned out to be false. I subsequently did a study of the data used by NALS and showed that the methods used were not credible (Fischel 1982). Julian Simon and Seymour Sudman (1982) came to the same conclusion as I did, and the more sober-minded researchers at the U.S. Department of Agriculture eventually backed us up (Thomas Frey 1983). The lack of credible data to support the farmland preservation cause made it difficult for the NALS people (who went on to found the American Farmland Trust) to convince Congress to nationalize the cause of farmland protection (Tim Lehman 1995).

The issue of urban and suburban development can be put in perspective by looking at table 1.1, which shows the major classes of land use for the 48 contiguous United States. (Including Alaska would increase land area by about one-fifth, most of it in the forest and rural parks category: Half of the land area of the National Park System is in Alaska. Hawaii is too small to

**TABLE 1.1**  
**Major Land Uses in the Contiguous United States, 2007**

This table ranks land uses, from unarguably open spaces (top) to clearly developed areas (bottom). The last two categories, urban areas and transportation zones, seem to comport with what most people think of as developed land, making it 4.6 percent of the total 48-state area.

Forests (30.4%) and Rural Parks (5.8%) =	36.2%
Grassland Pasture and Range =	32.3%
Cropland (active and reserved) =	21.5%
Miscellaneous Areas (swamp, desert, bare rock, unclassified rural) =	3.6%
National Defense (military bases and reserves) =	1.2%
Farmsteads and Farm Roads =	0.6%
Rural Transportation Zones (highways, railroads, airports) =	1.4%
Urban Areas (includes urban transportation) =	3.2%
Total of 48-state land area (1.89 billion acres) =	100.0%

Source: U.S. Department of Agriculture, Natural Resources Conservation Service. 2007. National Resources Inventory (NRI), <http://www.ers.usda.gov/data-products/major-land-uses.aspx>.

Notes: Entries in the "Special Use" category of the NRI, which include rural parks, national defense, rural transportation, and farmsteads and farm roads, were assigned to separate lines in this table. The NRI "Miscellaneous" category appears to be a residual classification (especially "unclassified rural"), and its "desert" and "bare rock" categories do not include most of the arid and mountainous areas that the NRI classifies as forest and rural parks and rangeland.

move any of the decimal points.) The table shows that 90 percent of American land is in three indubitably rural categories: forests and parkland, pasture and range, and cropland. Should an “Earth probe” from an alien planet crash in a random spot in the United States, it would be unlikely to hit any human habitation.

One hazard in looking at table 1.1 is a tendency to view each category as if it were fixed for all time or uniquely suited for its present purpose. This is not true, as but one example will show. From the beginning of the twentieth century, cropland expanded from 319 million acres to a peak of 478 million in 1949; it then declined to 443 million in 1964. In response to unusual increases in international grain demands (chiefly from Russia), farmers expanded cropland to 470 million in 1978. And then it declined again, to 408 million acres, in 2007. But the decline did not occur because the land came to be used for urban or other developed purposes.

Most of the reduction in cropland has resulted from conversion to other rural uses, most commonly pasture or forest land (Hart 2001). The American Farmland Trust’s alarming figures cited at the beginning of this section neglect this source of “loss,” which is entirely reversible. Indeed, during the five-year “loss” of 34 million acres of cropland between 2002 and 2007, the combined categories (1) forest and (2) pasture and range (the first two lines of table 1.1) *increased* by 45 million acres. During the same period, the category for urban areas, which is based on U.S. Census data (which by those dates had adopted consistent definitions based on geographic information systems) expanded by a total of 975,000 acres, or an average of 175,000 per year. (The Farmland Trust’s alarming figure of an acre per minute “loss” to development would work out to more than 525,949 acres per year and cannot be taken seriously even if all urban development were at the expense of farmland.)

A much better, though not repeating, study was done by Marcy Burchfield et al. (2006), who used aerial and satellite images from the mid-1970s and early 1990s to get a fine-grained look at the process of suburbanization. The authors found that “only 1.9 percent of the [coterminous] United States was built upon or paved by 1992. Two-thirds of this was already in urban use by 1976, while the remaining one-third was developed subsequently” (588).

Well, this is good news and bad news. Good because the 1.9 percent is even lower than most measures of urban development. We are not in danger of paving over America. Nonetheless, cities are indeed spreading out more rapidly than before. (Keep in mind that not all of this expansion is on farmland.) How else could one-third of all detectable urban development in 1992 have

occurred in a mere 16-year period? That is, while it took hundreds of years of settlement to arrive at the 1976 figure for urban land coverage, it took only 16 more years to increase it by one-third. (Note, however, that ongoing development fills in at least some of the spaces within the already developed area [Richard Peiser 1989].)

Sprawl—the mildly pejorative term for excess suburbanization—does appear to be a problem. My point here is that the problem is not about running out of farmland in any aggregate sense. Sprawl is an urban problem and, in an indirect way, an environmental problem (from excessive energy consumption and greenhouse gas production), but not a food problem. Chapter 8 will deal with sprawl in more detail, but its bottom line is that sprawl is largely caused by the excesses of local land use regulation. Among the excesses is zoning land for agriculture when it would be better used for urban development. One of the greatest promoters of sprawl is, paradoxically, the urge to preserve farmland.

## 1.2 U.S. Census Definitions of Urban Areas

In order to evaluate urban land use and its trends, it is necessary to understand some official definitions. The most widely used classification for urban data has been the Metropolitan Statistical Area (MSA), which is the basic unit for understanding American urban statistics. To be included in an MSA, an urban area must have a population of at least 50,000 people in one or more central cities. The MSA includes these cities *and the entire area* of surrounding counties that are economically linked to the central city. (The exception is the New England states, where only surrounding towns are included.) About 84 percent (as of 2010) of the U.S. population lives in MSAs. Another 10 percent of the population lives in a more recent urban classification, the Micropolitan Statistical Area. (It is abbreviated  $\mu$ SA, the Greek *mu* being a handy substitute for the Roman M.) The  $\mu$ SA has a core city or cities of at least 10,000 plus the surrounding county or counties.

The common element in all of these measures is the county. Every state is blanketed with counties or county equivalents, such as parishes in Louisiana, boroughs in Alaska (not to be confused with the small municipalities so named in New Jersey and Pennsylvania), and Virginia's 39 independent cities (cities not subject to separate county government), plus the independent cities of Baltimore and St. Louis. Because MSAs and  $\mu$ SAs include so much rural area, they are not appropriate for measuring population density. A better



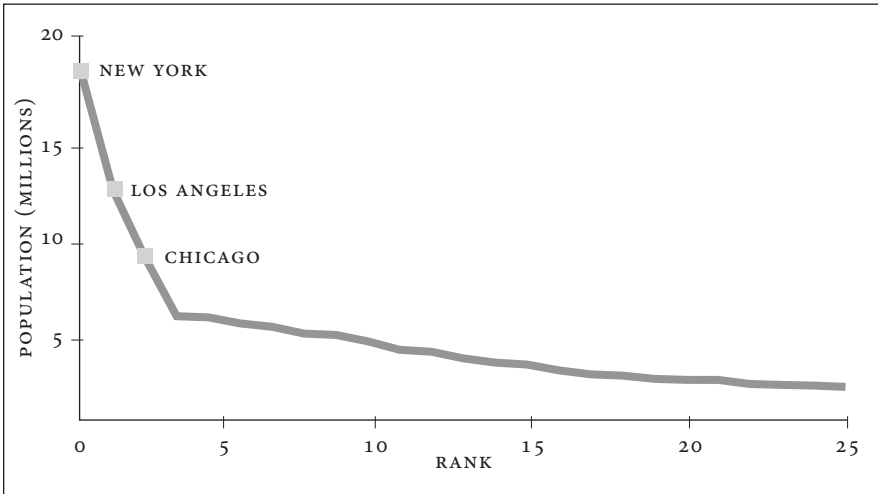
measure of urban land is the Urbanized Area (UA). The UA is the built-up, contiguous part of an MSA. This does not mean just the central city of the MSA; rather, the UA includes surrounding suburbs, but its extent is based on population density rather than political boundaries. The density criteria for being included in a UA are not too demanding: A suburban housing development that has one house for every two acres can be included so long as it is adjacent to the rest of the UA.

In addition to Urbanized Areas, which have a population minimum of 50,000, the census for the year 2000 collected data on “Urban Clusters” for areas with centers that have between 2,500 and 50,000 people. Every Micropolitan Area (minimum population 10,000) has an Urban Cluster at its core, but, somewhat confusingly, some Urban Clusters are so small (less than 10,000 but more than 2,500) that they are not necessarily within MSAs or  $\mu$ SAs.

The reason for including the smaller places is that 2,500 was the minimum population for the Urban Place, for which data are available back to the first U.S. census in 1790. The problem with the Urban Place was that it sometimes included too much territory, as it once counted everyone within a municipality regardless of how rural, and it often ignored built-up areas that were not within a municipality. The shift away from the Urban Place to the Urban Cluster, whose baseline density now defines all Urban Areas, has been facilitated by high-quality satellite images and the development of geographic information systems. The U.S. Census Bureau deserves credit for adapting its collection methods to modern remote sensing technology, and its inventory of American urbanization is now highly inclusive (it does not miss much that is arguably urban) and reasonably limited (it does not count much rural land as urban). Thus the 3.2 percent of the 48 states’ land area that is now classified as urban in table 1.1 is a reasonable representation of urban settlement, which contained 80.7 percent of the U.S. population in 2010. We do not use up much land, and we are certainly not as a nation running out of farmland.

### 1.3 City Size and Urban Agglomeration

Most people are accustomed to talking about the distribution of population among urban areas as if it were linear. We refer to “big,” “medium,” and “small” cities. In fact, however, the distribution of urban areas by size class is nonlinear and highly skewed. The distribution of population by size can be



**FIGURE 1.1 Population Rank and Size of the 25 Largest U.S. Urbanized Areas, 2010**

Source: U.S. Bureau of the Census, Largest Urbanized Areas, 2012. <https://www.census.gov/dataviz/visualizations/026/508.php>.

seen in figure 1.1, which plots the 25 largest UAs from largest to smallest. The plot approximates a rectangular hyperbola, not a straight line. In urban texts, this relation is called the rank-size rule, and it is found to apply to a remarkable degree both across time and across countries (Rosen and Resnick 1980).

A consequence of this skewed population distribution is that aggregate population data for urban areas will be dominated by the largest ones. Figure 1.1 shows how exceptional New York, Los Angeles, and Chicago are compared to UAs elsewhere. The big three contained about 40 million people, which, in 2010, was over 15 percent of the U.S. urban population and about 13 percent of the entire U.S. population.

The skewness of the distribution also complicates evaluation of land use policies. Bigger cities almost always have higher housing prices; the more people who are squeezed in a given area, the greater the scarcity of land. Many studies of zoning's effect on housing prices compare cities with strong regulations to those with weak regulations, often limiting the sample to "large cities." But as the rank-size rule indicates, a large city is not a useful term of art. Portland, Oregon, which has strong growth boundaries (as discussed in chapter 8), has been said to have high housing prices, but no higher than those of San Francisco. But the Portland urban area has a population that

is less than one-half of the San Francisco urban area. Given that housing price elasticity with respect to urban area size is about 10 percent (Edward Glaeser 1998), Portland should have housing prices that are 10 percent *lower* than those of San Francisco, and both cities should have prices lower than those of Chicago, which is twice the population of San Francisco. (Chicago housing prices are actually lower than prices in either place, which is indicative of the regional variation in housing prices discussed below in chapter 5.)

Big cities do not just have more people than small cities. They are different in a number of ways that are important to keep in mind when studying the effects of land use controls. First and foremost, average worker productivity—and thus average wages—are higher in bigger cities. An urban area with twice as many workers pays wages that are about 10 percent higher than the wages that similar workers would earn in the smaller area. Wages in big cities are higher because workers are more productive when they operate in close physical proximity to one another, and a competitive labor market results in higher pay. (The benefit of higher pay is largely offset by the aforementioned higher housing prices, so not every worker will want to move to the biggest city.)

The proximity effect is illustrated by a conversation I had with a friend some years ago. Phil is a lawyer with a central-city Boston firm. He lives in the suburbs and was complaining about his commute. I said to him, “Phil, you’re a partner in the firm. Why not just have the offices relocated to the suburbs to be closer to you?” (I would guess most other partners’ commutes would be reduced, too.) Phil looked at me as if I had suggested that he fly to the moon. He replied simply, “Out of sight, out of mind.” His firm depends on frequent contact with clients, and the contacts have to be up front and personal. He has to know not just how their businesses are doing but also how their kids are faring in school and how their tennis games are going—my examples of building social capital among adults—if he is to maintain the level of trust that being a lawyer or most any other well-paid professional requires. (This, by the way, is why residential colleges and universities have little to fear from competition by online courses. If the means of mastering a course of study at a distance were a threat to universities, they would have been put out of business by Gutenberg.)

Proximity effects are generally promoted by high densities. Because many firms benefit from proximity, developers build tall buildings in a small area to accommodate the demand to be close. The land on which sky-

scrapers rest is much more costly than land just a few miles away. Buildings themselves are physical manifestations of an algebraic term, the capital/land ratio, which will be important for analyzing the effect of zoning in urban areas. Their dramatic size—as in the skyscraper—can sometimes lead students into a kind of circular reasoning: The buildings are tall because the land is costly, but it is the costly land that induces the developer to put up tall buildings. The true source of both phenomena (expensive land, tall buildings) is that businesses and related activities are more productive when they are close together.

Proximity or density effects are part of what economists call “agglomeration economies.” The other major aspect of agglomeration is size itself, which I illustrate with the career of another friend, a New York surgeon named Keith. He is one of the world’s best within his specialty. If you have the type of cancer he operates on, you should go see him, even if you live many miles away. He is among the best not just because he is a well-trained, smart, hardworking, and dexterous guy, but because he developed his skills in a surgical market that is so large (the New York area) that he sees many patients per day to operate on one type of cancer. As a result, there are almost no variations of this disease that he has not seen and, in many cases, published scientific papers about. Many smaller-city surgeons may have the same kinds of intellectual and manual skills that Keith does, but few would be able to match him for experience. Smaller town docs have to fill up some of their time doing a variety of surgeries.

The context in which I have illustrated these two types of agglomeration effects makes them seem entirely comparative, explaining why wages and land prices and housing costs are higher in Boston and New York than in Worcester and Albany. But this can obscure the role of cities as engines of economic progress generally. Maps of the world showing the economic well-being of countries match rather closely with maps showing the extent of urbanization of populations. (The few exceptions are lightly populated nations that are mineral rich.) Urbanization does not simply parallel prosperity. As Jane Jacobs has explained in *The Economy of Cities* (1969), invention and application of technologies are cooperative and serendipitous processes that occur most frequently in places where many people meet in close proximity to one another. Edward Glaeser (2011), who is also a Jacobs fan, has persuasively argued that societies that manage to accommodate these interactions are destined to be more prosperous than those that discourage immigration to cities and unduly restrict the upward climb of buildings at their cores.

Land use regulations are, of course, intended to discourage some types of immigration and the upward climb of many buildings. It would be a mistake to condemn them for this, since some types of immigration (of, say, junkyards to residential areas) and some building sizes are economically as well as aesthetically inappropriate for some settings. The multistory Soviet-era “panel buildings” that still blight the suburbs of Eastern Europe come to mind, as does the mile-high residential tower that Frank Lloyd Wright envisioned but never built.

The normative problem is to balance the desire for regional prosperity and the “quiet enjoyment” of one’s residence and neighborhood. As I will argue in later chapters, the issue is not likely to be resolved by a higher government’s command to local governments to accommodate new development, even if the command is accompanied by offers of compensation. Zoning and related land use regulations are the most jealously guarded local prerogatives, and attempts to override them are likely to be resisted or subverted. The better way, I shall argue, is to facilitate voluntary transactions between communities and would-be developers and to reduce the importance of home values in most residents’ financial portfolios.

#### **1.4 Urban Land Trends in the Rest of the World**

This book is almost entirely about land use regulation in the United States, but this section gives a nod to urban trends in the rest of the world. My task is facilitated by a remarkable study called *Atlas of Urban Expansion* by Shlomo Angel et al. (2012). The core of the book consists of 120 maps of a sample of larger urban areas (that is, with populations over 100,000) along with corresponding economic and demographic data. The maps were generated by satellite images taken roughly ten years apart, centering usually on 1990 and 2000. The most striking conclusion (to me) is that suburbanization and reduced urban density are worldwide phenomena. All but 16 of the 120 urban areas on every continent grew outward and reduced their overall population densities in the last decade of the previous millennium, even as almost all of them grew in total population.

This is not to say that urban population densities are similar across the world. The American cities in the atlas’s sample generally had the lowest densities, ranging from about 20 to 30 persons per hectare. (A hectare is about 2.5 acres, so this would be about eight to 12 persons per acre.) European cit-

ies have densities on the order of two or three times that figure (with wide variation). The highest densities are in the cities of Africa and eastern and southern Asia, with persons per hectare amounting to between 200 and 400, or more than ten times that of comparably sized American cities. In a separate essay examining the same data, Angel, Sheppard, and Civco (2005) reported statistical tests used to examine the differences in densities. The most important and consistent variable that explained variation in density is the material prosperity (GDP per capita) of the nation in which the city was located. Richer countries have lower-density cities. The decline of the crowded urban tenements that so concerned American reformers like Jacob Riis in the early twentieth century may have had less to do with housing legislation than with the growing prosperity of the nation. Families with rising incomes demand more housing, and developers are willing to respond.

The point that Angel et al. emphasized in their study is the high rate of urbanization in developing nations. The cities of Asia, Africa, and South America are the vessels of economic development in their nations, but their recent rate of development appears to be much more rapid than that of the Euro-American cities of the nineteenth and twentieth century. Angel and his coauthors warn that the developing nations need to accommodate these rapidly urbanizing and suburbanizing cities with plans that reserve transportation corridors and public spaces before private developments make them excessively difficult to obtain. They caution, on the other hand, that attempts simply to halt urbanization are both unlikely to work and likely to have adverse effects on economic development and the eventual condition of the cities. Faced with the inevitability of growth and suburbanization, perhaps what is needed is a “smart sprawl” plan that accommodates this trend with the sensible policies that Angel and his coauthors recommend.

My favorite historical example of futile restrictions were the many monarchical commands to restrict development around the city of London, as related by Robert Bruegmann (2005). An institution within the area not to be developed was the Church of St. Martin in the Fields. I had heard the name of the church from the recordings of a music group, the Academy of St. Martin in the Fields. I had always envisioned the person of St. Martin standing in the fields and blessing wildlife in the manner of St. Francis. Sadly, “in the fields” refers to the location of the church, not the saint. The church was originally built in what was then regarded as a remote area, much like the Manhattan apartment house called the Dakota, which was built on the edge of the wilds

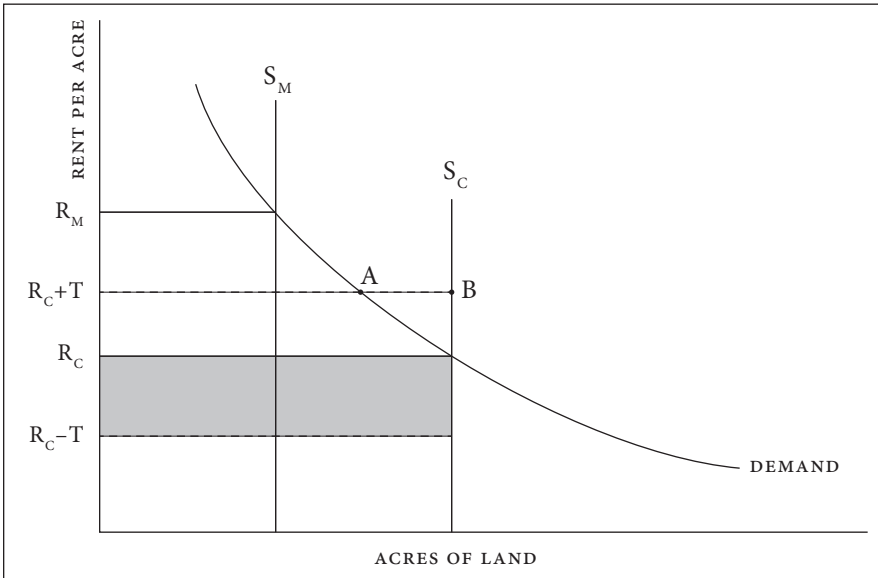
of what is now Central Park. The fields around the London church have long been converted to urban uses despite royal edicts. A tourist can now view St. Martin in the Fields in Trafalgar Square, in the heart of the city that engulfed it.

### 1.5 Land Rent and Land Taxes

The price of land, computed per unit of time, is usually called rent. Rent can be confusing because the same term is sometimes applied to income from all real property such as apartments and commercial space. It is also used by economists to describe the income from an asset whose supply curve is perfectly inelastic (such as Picasso drawings) or any profits in excess of those required by a firm to continue in business. The latter usage is often called “economic rent.” Here I use “rent” in its classical sense: as income derived from selling the services of a unit of land, independent of the services of capital or labor.

Most prices of vacant lots or agricultural plots are not pure rents. There are two causes for the divergence between market prices and rents. The first is that land quality is influenced considerably by past and current investments. Drainage, soil management, grading, utilities, and transportation access are investments that contribute to the value of the asset. Separating these contributions to value from pure rents is very difficult for individual parcels. The second cause is that land prices reflect landowners’ market-seeking and risk-bearing activities. Seldom is the most valuable use of land in urban areas evident to the casual observer. Identifying such locations for investments and assuming the risk of loss if one is wrong are important entrepreneurial functions. The reward for such activity is often at least part of the capital gain made by reselling the land at a higher price. Thus, even without any tangible physical investments, land prices may include more than just the classical notion of rent.

The usual discussion of land rent in economics texts proceeds by drawing a vertical supply curve ( $S_c$ ) and a conventional demand curve, as shown in figure 1.2. The vertical supply curve is sometimes confusing. For any given parcel of land, the supply is completely inelastic, since land cannot be moved. For all land taken together (that is, the stock of land), the supply is also inelastic: As Mark Twain quipped, they aren’t making any more of it. (This is true only in the sense of location, not dry and buildable land, which has been abundantly supplemented in most major cities of the world by filling parts of their bays, harbors, lakes, and rivers.) But for land to be used for a particular

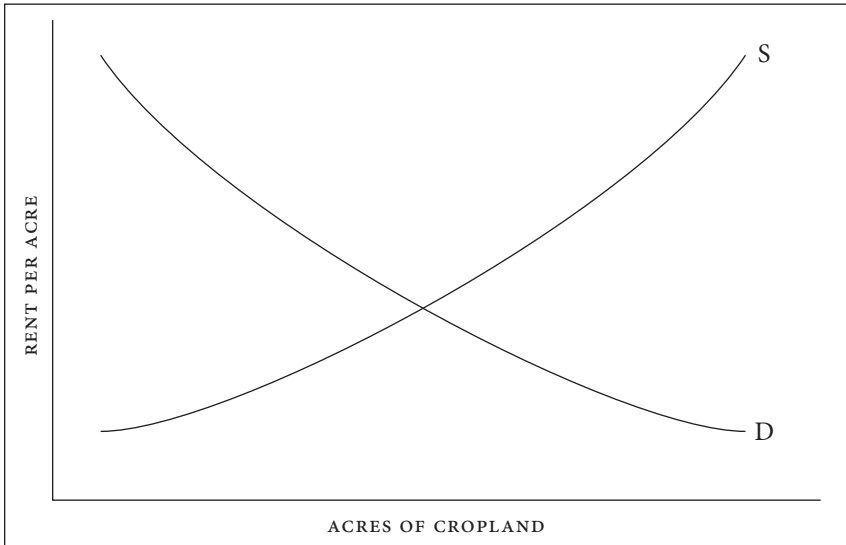


**FIGURE 1.2** Supply and Demand and Taxation of a Fixed Stock of Land

purpose, the supply curve is not vertical. As mentioned earlier, prices for wheat and corn rose dramatically in the 1970s, and the demand for cropland shifted to the right, raising its price. This encouraged farmers to convert other land to cropland, as shown in figure 1.3 (p. 14). The upward sloping supply curve does not contradict the vertical supply curve of figure 1.2, since having more acres of cropland reduces the number of acres for some other use (typically forest and grazing land) by the same amount.

The distinction between a tax on all land and on particular uses is helpful in understanding some aspects of land use policy. Economists agree that a tax assessed on specific parcels of land or on immutable characteristics of land (such as “all land within New Hampshire”) will be borne entirely by landowners and not shifted to other parties. Precisely because of this incidence, the tax is also efficient: The revenue that the government gets will exactly equal the revenue that the landowners lose. They cannot remove their land to another jurisdiction. Nor can they avoid the tax burden by selling the land, because buyers will offer a lower price as a result of the tax, reflecting the continuing obligation to pay taxes on it. Landowners can no more pass the tax onto tenants than they can pass on the cost of an operation





**FIGURE 1.3** Supply and Demand for Farmland

for their mothers. (When there is inflation, either exigency may be used by landowners to justify an increase in nominal rents.)

Figure 1.2 demonstrates the previous point graphically. A tax of  $T$  dollars per acre of land applied to all parcels making up  $S_c$  (say, all land within a 20-mile radius of Pittsburgh) will generate revenue indicated by the shaded area. It will not reduce the supply of land for any use. If landowners were to respond by increasing rents to  $R_c + T$ , as in figure 1.2, a surplus of land (the line segment  $A-B$  in the figure) would develop, because the demanders of land would substitute other factors of production for land (for example, building two-story houses instead of one-story houses). This surplus would be eliminated only when landowners reduced rents to  $R_c$ . Competition among landowners would ensure that this occurred.

The efficiency characteristics of the land tax just described are sometimes misconstrued to be applicable to *any* type of land tax. Many taxes on land are assessed at different rates according to use. An example is the widespread practice of assessing agricultural, forestry, or open space at a smaller fraction of value than that of developed land (Bowman and Mikesell 1988; Anderson and England 2014). The supply of land for these purposes is at least somewhat

elastic, so the owner can avoid some land taxes by choosing the use to which the land is put. This does not mean that such tax systems are wrong; their very purpose may be to encourage the supply of land for one purpose and to discourage some others. But as such, the classical model of the incidence and efficiency of land taxes cannot be applied.

### 1.6 Why Not a Land Tax?

The previous section indicated both the virtues and drawbacks of a land tax. The chief virtue (at least to economists) is its efficiency: Land will not go anywhere if you tax its income or value at a high rate. Owners of land essentially just have to shrug their shoulders and pay; they cannot alter their economic behavior in response to high rates. Economists call this a “non-distorting” tax, and many give an approving nod to the nineteenth-century reformer Henry George (1879) for his vigorous advocacy of such a tax. For example, a theoretical model by Richard Arnott and Joseph Stiglitz (1979) found that a land value tax whose revenues are dedicated to local infrastructure and services will result in a more efficiently developed city—a result dubbed the “Henry George theorem.”

If economists like this tax so much, why does it seem so rare in practice? One reason is administrative. The difficulties of disentangling land value from present and past owners’ contributions of capital and labor are not just theoretical (Steven Bourassa 2009). In order to apply a land tax to a parcel, the value of the parcel must be assessed by a public official. Assessors are essential in administering the most widely used form of local taxation, the property tax. Property taxation is typically applied to all private real property within a jurisdiction. “Real” property, also called “realty” (as opposed to the portable or disembodied “personalty” [*sic*]), consists of land and buildings and other features that are not intended to be moved when its owners depart the scene. Most land of any value within a community already has something attached to it and is already subject to taxation.

To administer a land value tax, local assessors have to distinguish the value of a home or office building from the value of its underlying land. For many assessors, this task makes as much sense as trying to separate the value of the first floor of the house from the second floor. (Practicing assessors said as much in Daniel Holland [1970].) The building and its land are intimately related—that is what makes them collectively “real” property—and they

are almost always sold as a unit. The sales of vacant lots in some communities, occasionally resulting from “teardowns” of existing homes, offer some basis for comparisons on which land values could be assessed (Dye and McMillen 2007). But vacant land is often so special in its situation (there may have been some unusual reason it remained vacant or the previous building was demolished) that assessors are naturally skeptical of using it as a basis for assessing other land.

One way of dealing with administrative and assessment problems is to tread lightly into land value taxation by adopting a hybrid model called the “split rate” system. The general idea is to tax land at a higher rate than buildings. This does not eliminate any of the aforementioned assessment issues, but it does make errors in assessment less important. If assessors underestimate the value of land on some properties, they may implicitly make it up on building valuations, and vice versa. The advantage of this system is that it makes clear to property owners that their property taxes will not rise very much if they add a new room to their house or add a floor to their office building. As more development takes place, land values rise generally, and tax collections increase, all without discouraging investment in structures.

Does the split rate tax work as advertised? The state with the largest collection of municipalities that have adopted the split rate tax is Pennsylvania, and it has not gone unnoticed by scholars of property and land value taxation. Several econometric studies have been done to see if the Pennsylvania cities that have adopted split rate taxation have done better economically, as measured by new construction, than those that have not. Most of the studies find that the split rate tax system seems to promote more construction and general prosperity. The magnitudes are not overwhelming, but the positive direction is consistent (Oates and Schwab 1997; Banzhaf and Lavery 2010).

The main problem with this evidence is its limited political success. It looks like split rate taxation is an economic winner. If so, why is it that more cities in Pennsylvania have not adopted the system? Since 1913, Pennsylvania’s constitution has allowed cities to adopt a split rate system. (The previous constitutional objection to it was the uniformity requirement in property taxation.) The number of cities that have done so, however, is not large. As of 2000, 18 cities had adopted a split rate system. (Pennsylvania has more than 2,500 municipalities.) The two largest cities with the split rate, Pittsburgh and Scranton, adopted it in 1913. All of the rest have adopted it since 1975, when

the class of municipalities that were permitted to opt for the split rate system was expanded. (Several cities adopted it at the urging of Georgist advocate Steven Cord [1983].)

The discouraging news is that cities that adopted the split rate seem to be moving back to the uniform property tax assessment system that prevails in the rest of the state (and in all other states). Five Pennsylvania cities dropped from the list between 2000 and 2006, and there have been no new additions (Banzhaf and Lavery 2010). The most distressing reversal was that of Pittsburgh in 2001, since its split rate system has been extensively studied and generally been given some credit for promoting the city's comeback after the steel industry declined so much in the 1970s (Oates and Schwab 1997). Pittsburgh voters nonetheless rejected their longstanding tax system after a countywide reassessment revealed to voters that a small and a large home in the same neighborhood could have the same land values and thus pay close to the same amount of taxes (Bourassa 2009). But such disparities are inherent in any system of land value taxation and are indeed one of its supposed virtues, according to economists. The owner of the small house is not discouraged from building more rooms, as would be the case under a normal property tax system. Popular feelings about the fairness of property taxes—people in larger houses should pay proportionately more—seemed to have trumped such issues.

Or maybe not. Perhaps the reason most American communities do not embrace land value taxation is that they have turned the regular property tax into something like a land tax. The neglected aspect of property taxation is the management of the property tax base by means of zoning. As I shall argue in chapter 4, zoning allows municipalities to tailor the type and intensity of development it allows. If a community permits only office buildings not higher than five stories in a commercial zone (a common enough requirement), and office buildings of that size are in fact an efficient use of land in that zone, a tax on land and buildings in that zone is pretty much the same as a tax on land alone in that zone. The main exception to this rule arises when there is little demand to build, say, office buildings anywhere in the city. Most of the cities in Pennsylvania that adopted the split rate tax system, which is essentially a subsidy for building, were older, built-up cities and boroughs that were losing much of their employment base. For cities in decline, not taxing buildings can be a good strategy to help reverse the decline.

## 1.7 Government Land Ownership

The largest landowner in the United States is the federal government. It holds title to nearly one-third of the nation's land area (a quarter of the 48 contiguous states' area and most of Alaska). Its holdings outside Alaska are largely in the dry and mountainous areas west of Denver. The per-acre value of this land, with the exception of some mineral holdings, is not large. Most of the valuable farmland is now in private hands, and most urban land is likewise privately held.

At one time, of course, the federal government or the colonies owned nearly all of the land. (Here I adopt the Eurocentric view of ownership and decline to examine aboriginal claims.) The disposition of this land was a major focus of political debate throughout the nineteenth century (Marion Clawson 1968). Questions of private ownership and monopoly were constantly raised. Federal policy was originally aimed at selling land for revenue purposes. Later, land policy was more deliberately designed to fulfill the Jeffersonian ideal of a nation of independent yeoman farmers. One need not admire the policy or its consequences in order to agree that the idea of fee simple ownership of land was consciously chosen; it was not an accident of history, as is sometimes asserted.

Nor was the way American land was laid out an accident. After the American Revolution, the U.S. government assumed control of nearly all of the land west of the Appalachian Mountain chain. The Louisiana Purchase nearly doubled the size of what became known as the public domain. Driven by republican principles that lauded widespread ownership of land and by the need to obtain revenue to pay its debts, the federal government embarked on what may have been the biggest land sale in world history.

To facilitate the sale of public land, almost all of it was divided up into squares that measured six miles a side (Andro Linklater 2002). These "townships" were then divided into square-mile "sections" and further into acreage-size subsections (the acres of "the south forty" in many a Western movie). Even Texas, which was not subject to the U.S. Public Land Survey—it had been an independent country—adopted a state lands survey that functioned very similarly. The western provinces of Canada undertook similar surveys.

This massive, top-down enterprise had some disadvantages. The system that it replaced (and that continued to be used in states formed from colonies before the American Revolution) was the "metes and bounds" survey. This was the generic, "bottom-up" method of acquiring land titles. Claimants would

measure off the land they wanted to buy, often using natural features such as streams and mountain ridges for boundaries, then register their claim with state or local authorities.

Metes and bounds had the advantage of respecting natural boundaries. The straight-line township and range system (“ranges” being part of directional designations, though land areas are called only “townships”) ignored natural boundaries, and so farmers often plowed furrows that ended short of a more natural turning point. It was possible to modify the grid. Thus, towns that developed along riverbanks or railroads that did not parallel the east-west, north-south grid sometimes adjusted their town sites to parallel the river or railroad so that intracity roads would not have to cross the border too often. In rural areas, farmers could purchase or swap land with neighbors to make more sensible layouts. But the persistence of the grid lines, still clearly evident from the air or satellite mapping pictures, suggests that the original legal boundaries had staying power.

The great advantage of the grid system was that it made land easily saleable. Once the land had been surveyed—a massive but durable public investment—it was relatively simple for the government to dispose of it. A buyer could indicate that the parcel wanted was the southeast quarter section (160 acres) of the 17th section of the township designated T10N, R5S of the sixth principal meridian. The local land office could check to see that it was not previously sold or reserved for the school fund, and the transaction could be consummated without much difficulty. Equally important was that the land could be resold again and again without incurring further surveying costs. In contrast, the metes and bounds system was often irregular in its survey methods and deed registration, and the possibility of conflicting claims from generations back haunted every transaction. Abraham Lincoln said that his father emigrated from Kentucky, which was surveyed by metes and bounds, to Indiana (surveyed by the public lands system) because of the difficulty he encountered in obtaining clear title to land in Kentucky (David Donald 1995).

More systematic evidence of the advantage of the standardized survey is provided by Gary Libecap and Dean Lueck (2011). They found that a large area of Ohio called the Virginia Military District, located between the Scioto and Little Miami Rivers, had been settled under the metes and bounds system of Virginia. (The district was not used for military purposes but as a reward for Revolutionary War veterans, most of whom sold their land vouchers to others.) The rest of Ohio had been divided for sale under the standardized township and range method that became the rule for the rest of

the new territories of the United States. Libecap and Lueck obtained detailed census and economic records from locations on either side of the Military District's borders to see how the adjacent areas fared over time. Both areas had similarly varied topography (some level, some hilly) and a similar mix of early settlers, most of whom were initially from other parts of the United States and from Germany.

Libecap and Lueck calculated that the standardized survey added considerably to farmland values. Flat land in a rectangular survey area sold for 25 percent more than similar land in the metes and bounds area (the Military District) in 1860. Interestingly, the premium was smaller for hilly areas because the more nuanced metes and bounds survey method allowed for holdings that made more geographic sense. More remarkable is the persistence of the differences in farmland value and other indicators of economic development—population density and manufacturing employment—right through the twentieth century. The legacy of grid-style land measurement is surprisingly large, and, as Libecap, Lueck, and Trevor O'Grady (2012) show in another paper, apparently appreciable in other nations of the world. Economists such as myself are often critical of top-down government initiatives that impose uniformity across the nation, but this seems to be an instance in which it worked pretty well.

### **1.8 Does Feudalism Still Govern European Planning?**

The reader might ask what Libecap and Lueck's finding has to do with modern land use regulation, which began in earnest in the United States in cities, not rural areas, and developed robustly only after about 1910, long after the Public Land Survey was done. The answer has to do with how easily land can be sold or otherwise transferred. The American rectangular survey system is not the only difference between the United States and much of the rest of the world. Developable tracts in the United States can be easily purchased by an amateur land developer. Even in the states carved from the original British colonies, where metes and bounds still prevail, rural land is owned in fee simple. This means that a single party (individual, family, or business) can arrange the sale. Fee simple ownership was in fact one of America's chief attractions for land-hungry European immigrants (James Ely 1992). In England and most of Europe, there is a distinct possibility that a would-be buyer of land will have to deal with the claims on the land of many parties, several of whom may not even be known to the would-be buyers and sellers of land.

The European pattern is the legacy of centuries of feudalism, in which fee simple ownership of land was the exception rather than the rule. Dan Bogart and Gary Richardson (2008) note that under English feudal landholding, a “complex spectrum of overlapping privileges (common, communal, clerical, feudal, familial, statutory, and royal) enforced by an array of courts (manorial, county, clerical, and royal) pertained to most plots of land” (1). Bogart and Richardson go on to describe periodic parliamentary efforts to cut away these impediments to modern development, and they commend the resulting adaptability. But the process of clearing up feudal law did put Parliament in the center of national land policy, and many of the traps for unwary developers of rural land remained in place. As a result, conversion of English rural land (and most probably that of other nations with feudal legacies) to urban uses is not a job for unsophisticated developers.

The modern manifestation of feudal inhibitions on rural development is that the pattern of suburbanization in Europe is distinctly different from that of the United States. I have noticed this looking out of the window of airplanes over the years (as did Robert Bruegmann 2005), and I have confirmed it with more systematic tours of American and European cityscapes via Google Earth. An example I do for my students is to compare suburban land use in Cleveland, Ohio, and Frankfurt am Main, Germany, which have similar population sizes and are surrounded by farmland subject to similar weather conditions, thus making the pattern of rural land comparable.

Set the eye elevation at about 20,000 feet at the center of the city, tilt up a bit, and “fly” out to the suburbs for 20 miles. In the Cleveland area, the density of housing and other buildings declines gradually. Farmland eventually appears, but it is almost constantly interspersed with low-density housing and business structures that are most probably not farm related. The Frankfurt flight looks far different. There is a distinct line between the city and surrounding farmland. The farmland is almost entirely without on-site habitation or buildings. There are many suburbs, but these show up as islands of buildings whose density appears to be almost as great as that at the edge of the main city itself.

Europe has plenty of suburbanization, but most suburbs appear to have grown up around ancient towns and grown outward in high-density accretions. The European suburban pattern looks like so many beads of mercury scattered about the big city, while the American pattern looks like a blob of molasses spread out at continuously declining depths away from the big city. The European pattern has some benefits and some drawbacks compared to



that of the United States. The benefits of the compact suburbs are that residents have a walking community; they do not have to get into cars to visit neighbors or get some groceries. Most European suburbs also appear dense enough to be able to support public transportation to get to the central city for work or pleasure.

The drawback for European suburbs is that homes in these compact villages offer much less interior and exterior space. American suburbs usually require car-based commuting, but they offer the compensation of homes and yards that are more spacious than those closer to the city center. European suburbs look a lot like miniature central cities but with longer travel times to get to work if the residents work outside their village, as most surely do.

I have long been curious about the source of this difference between North American and European city land use patterns. The usual explanation is that land use regulation in the United States is local, while in Europe land regulation, especially conversion from rural to urban use, is controlled by the national government or the state-size subnational government. This begs the question of how such systems developed, a question too large to address with more than some hints and suspicions on my part. Centuries of wars surely contributed to the centralization of power (as they have to a lesser extent in the United States), but that by itself does not explain why the national government should adopt a compact-growth policy. Indeed, I argue in chapter 8 that in the United States, larger-area governments are apt to be more favorable to development than smaller communities.

A more likely explanation is that European rural land has always been difficult to convert to urban uses because of its legacy of feudalism. A British book on rural land development indicated that it is even difficult to determine who owns a given parcel of rural land (Goodchild and Munton 1985). The impediments to converting rural land to urban uses very likely tilt the political tables in favor of less development. American rural landowners know that their land can easily be sold for a profit if the demand arrives sometime in the future, and they form a political force against regulations that would prevent them from profiting. European rural owners are a less cohesive force politically because their opportunities to profit are difficult to realize without a great deal of negotiation with the many potential claimants to their land. In Europe, political forces that oppose development are more influential because development-minded rural landowners do not have much fight in them.

### 1.9 Monopoly Ownership?

Concentration of farmland ownership in a few hands could lead to a monopoly. The increasing average size of farms and the growth of holdings of land by large corporations have worried some for this reason. But as vast as these land holdings can be, they must be evaluated in terms of the land market of the entire country, and perhaps of much of the rest of the world. In this broader market, even the largest holdings of agricultural land amount to infinitesimal fractions of the possible substitute sites (James MacDonald 2011). Only a national cartel enforced by government sanctions—which is what agricultural price supports enforced by inducing farmers to set aside cropland amount to—can have any effect. Even this program does not work very well as a price support, since farmers then substitute other factors of production, such as machinery and fertilizers, for land.

Monopoly of land for urban uses would seem more likely than monopoly for agricultural or forestry uses. In a single metropolitan area, an owner of undeveloped land would need to control far less developable land to affect the price of land for new housing, especially if it were concentrated in the suburbs. There is no evidence, though, that such concentration exists in any metropolitan area. It is true that the land development industry, particularly for housing, has become more concentrated (Tsuriel Somerville 1999), but these developers typically have to amass many parcels from independent owners, and they seldom hold on to them for long because of the carrying costs. As a large-scale developer once remarked to me, “Land eats money.”

A confusion that seems endemic in the land use literature is the identification of land rent with monopoly returns. This confusion may stem from the modern usage by economists, who classify all supernormal returns, such as those a monopolist might get, as “economic rent.” Monopoly returns and land rent are quite different, though. In figure 1.2, the supply of land was denoted by  $S_C$ . Its competitive return is  $R_C$ , and no single owner dares to charge more, lest tenants flee to other sites. If only one owner controlled all sites, this owner could artificially restrict their supply to, say,  $S_M$ , which would result in greater revenues. As section 7.9 will demonstrate, however, even a government-enforced monopoly on land is complicated by land’s durability and the difficulty of convincing current buyers that more supply will not be released in the future (Ronald Coase 1972).

Land rent is often referred to as “unearned” income. This does not mean that the income is the result of no *previous* exertion or forbearance on the part

of landowners. They or their forebears may have labored and saved for a long time to acquire title to the land. The sense in which rent is “unearned” derives not from a theory of deservingness but from the already observed quality of fixed supply. There is no current activity that the landowner can undertake to increase the land’s rent.

### 1.10 Land and Inequality

Monopoly power is not the only concern about concentration of land ownership. Many worry that unequal private ownership of land contributes to inequality of income and wealth. There are two statistical issues here. First, how unequally held is land? Second, is income from land a large fraction of national income? Unfortunately, we can offer only tentative answers to both questions. Most aggregate data fail to separate the value of physical capital from the value of land. The much-discussed work on inequality by Thomas Piketty (2014) lumps land ownership with capital ownership.

We do know that ownership of real estate contributes less to inequality than does ownership of other assets, especially corporate stocks (Edward Wolff 1983). A large fraction of land’s value is in owner-occupied housing and farms. Although most residential parcels are small, their location in urban areas usually makes them disproportionately valuable. Nearly two-thirds of all households own their homes, and most farms are owner-managed, even when the nominal form of ownership is corporate. Land ownership in the United States is widely dispersed, if not equally distributed. “Rental income of persons,” the closest category for annual land rent in the national income accounts, is less than 5 percent of GDP, but this does not count corporate holdings or the capital gains (or losses) that accrue to homeowners and other owners of land. Nonetheless, this number suggests that redistribution of land or national taxation of land rents would not equalize the distribution of income and wealth to a significant degree.

While land ownership itself does not appear to contribute much to inequality, it is possible that land use regulation does. Inequality due to regulation has two dimensions, which will be examined more closely in later chapters. The first is the long-standing concern about exclusionary zoning in the suburbs. This is said to bottle up the poor in the central cities and deny them access to better housing and public services, most notably the better public education offered in suburban schools (Anthony Downs 1994; Jonathan Rothwell 2012). The second is more subtle and recent. It appears that the rise

of land use regulation in the 1970s has reduced migration from low-income *regions* of the United States to higher-income regions. This seems to have contributed to the rise in income inequality in the last 40 years (Ganong and Shoag 2013). This topic will be an organizing principle of my account of the history of zoning in chapter 5.

### 1.11 Conclusion: Malthus's Paradox and Robert Frost's Question

Thomas Robert Malthus is famous for articulating what economists now call "the law of diminishing returns." Successive inputs of labor and capital added to a fixed factor of production (namely, land) will eventually result in smaller and smaller additions to total output. Given a fixed quantity of natural resources, any positive growth rate of population is bound to result in a standard of living (output per person) that is not sustainable.

Most economists shrug and talk about technological progress when Malthus's grim projections are brought up. The world has become much more populous (by a factor of about seven) since Malthus published in 1798, and most of the world's diet and other indicators of standard of living have improved considerably since then (Robert Fogel 2004). But a more direct challenge to the principle of diminishing returns is the general success of cities. Cities occupy a very small part of the earth's surface, and people and buildings have been crowding together in them at an increasing rate. Yet the impact of population growth on the growth of urban output per capita seems to be positive. Societies with more urban populations are more prosperous than others, and the biggest cities generally have the highest standard of living. The power of agglomeration economies is a source of the technological progress that has kept the Malthusian wolf at bay.

The survey of land use in this chapter indicates that there is no danger that development will impinge on the stock of land for nonurban uses. We are not running out of farmland. Even India and China, which have more than a third of the world's population, are in no danger of running out (Ausubel, Wernick, and Waggoner 2013). The latter part of this chapter points out that land has substitutes and that land rent is only a small fraction of the national economy. This may provoke some readers to wonder why I have written a book about land use controls. The answer is that although the amount of *land* may not be crucial, the way we *use* it is, especially in urban areas.

Let me close with the basic problem of land use regulation. The productive advantages conferred by urban agglomeration economies are so strong

that they can overpower other aspects of urban life that people value. The profit from adding more buildings and workers can often seem like a good reason to sacrifice just a little more street space, take away just a little more of the afternoon sun, add just a few more vehicles to the streets, make the block just a little less safe, reduce air quality just a smidgen. The cumulative effect of such private decisions can yield an urban environment that is a good deal less healthy and pleasant for its citizens unless governing institutions can put some brakes on uncoordinated private activity. In the next chapter, I will describe the main regulatory institutions that people have developed to tame and channel the economic energy of the city. These institutions, however, have the capacity to be too exclusive, a topic that will be explored at considerable length. We economists always have two hands, balancing benefits and costs. The larger problem in land use is to balance the competing goals of people in urban areas or, as Robert Frost put it in the poem “America Is Hard to See,” “how to crowd and still be kind.”