

Determinants of Suburban Development Controls: A Fischel Expedition

John F. McDonald and Daniel P. McMillen

[Paper first received, January 2002; in final form, December 2002]

Summary. In addition to land-use zoning, development controls in the suburban municipalities of metropolitan Chicago include architectural reviews, appearance regulations, historical preservation areas, enterprise zones, tax-increment financing districts, development impact fees and regulations pertaining to group homes, mobile homes, factory-assembled homes and adult uses. Results of a factor analysis imply that development control policies tend to cluster into quality development regulations, regulations aimed at lower-class development and growth controls. Subsequent econometric analysis suggests that larger suburbs make greater use of nearly all types of development control. Suburbs with new housing and high median household incomes tend to have complex single-family zoning provisions. Suburbs with lower incomes, larger minority populations and greater poverty rates are more likely to use Enterprise Zones and TIF districts, have more complex zoning for apartment buildings and tend not to have development impact fees.

1. Introduction

This paper is an empirical study of the determinants of a reasonably comprehensive list of local development controls used by suburban municipalities in metropolitan Chicago. The development controls examined include zoning ordinances, but we also include numerous other provisions such as whether the municipality has a recent comprehensive plan, whether there are architectural reviews, appearance regulations and historical preservation areas. We also examine whether the suburb has an Illinois enterprise zone, tax-increment financing districts, development impact fees and regulations pertaining to group homes, mobile homes, factory-assembled homes and adult uses. All of the municipalities in the study employ zoning in some fashion, but only some use the other types of

development control. The zoning ordinances vary a great deal in complexity. The purposes of the study are to identify the characteristics of suburbs that are associated with the adoption of these development controls and then to compare those results with implications that are drawn from the various theories of the motives for their use. It is worth noting at the outset that the State of Illinois places little or no restrictions on the use of these policies by local governments. There are no state-mandated requirements for growth management, 'inclusionary' zoning to promote housing diversity or other exogenous policy factors that would inhibit the residents and property-owners in a suburb from pursuing their interests as they see fit. Templeton (2002) provides a detailed dis-

John F. McDonald and Daniel P. McMillen are in the Center for Urban Real Estate (MC 144), College of Business Administration, University of Illinois at Chicago, 601 S. Morgan Street, Chicago, IL 60607, USA. Fax: 312 413 2360. E-mail: mcdonald@uic.edu and mcmillen@uic.edu.

cussion of the relevant state and local policies in Illinois, and these are discussed in the final section of the paper.

The paper begins with a discussion of the motives for zoning and the other types of development control. Data sources and empirical methods are discussed and then empirical results are presented. The next-to-last section of the paper discusses the empirical results in light of the various theories underlying the adoption of development controls and other empirical studies. The general conclusion of the study is that our results are consistent with the view that suburban development controls are used in the interests of the dominant political group, the home-owners. However, the interests of home-owners vary from suburb to suburb depending upon the prospects for growth and the level of prosperity enjoyed by those home-owners.

2. Motives for Development Controls

Zoning is the type of development control that has been studied the most by economists. As Rolleston (1987) notes in her study of the determinants of restrictive zoning, three motives for zoning are normally cited by economists. The first is to promote the general welfare by separating land uses in order to mitigate negative external effects. Zoning corrects the market allocation of land that is inefficient because of externalities that are not internalised. The second motivation for zoning is known as fiscal zoning, where municipalities view the fiscal implications of alternative development patterns. Municipalities may use zoning (and other regulations and inducements) to influence the size of the local tax-base and the demand for local government services. A third motive is to use zoning and other regulations in an exclusionary fashion in order to maintain community homogeneity and/or to keep out particular population groups.

The topic at hand falls within the larger field of the political economy of government regulation. Formal economic analysis of politics in general probably originates with

Downs (1957) and Olson (1965). In a classic article Stigler stated that

The central tasks of the theory of economic regulation are to explain who will receive the benefits or burdens of regulation, what form regulation will take, and the effects of regulation upon the allocation of resources (Stigler, 1971, p. 1).

He argued that often the purposes of government regulation turn out to be those of the industry that is being regulated. His examples at the time were occupational groups that are licensed by state governments, the domestic airline industry, trucking and railroads. Peltzman (1976) formulated a generalisation of Stigler's argument. Peltzman (1976, p. 212) stated that regulation is the "fulcrum upon which contending interests seek to exercise leverage in their pursuit of wealth" and that producer interests tend to prevail over consumer interests. Peltzman formulated a theory of the optimum size of political coalitions that operate within a political process. Smaller groups that possess a narrow focus and high per-capita stakes tend to be more effective at securing regulations in their interests than are larger groups with diffuse interests and free-rider problems.

At roughly the same time, Ellickson (1977) published his lengthy and classic economic and legal analysis of suburban development controls in which he argued that this form of government regulation is adopted for the benefit of the owners of existing real property in the municipality. It is interesting that Ellickson (1977) made no reference to Stigler's (1971) theory, but rather used an argument that is based on the tyranny of the majority that worried the founding fathers.¹ It is also interesting that Stigler (1971) did not refer to the writings of James Madison. Ellickson summarised his analysis as follows

Economic theory indicates that the burdens of suburban antigrowth programs usually fall primarily on land-owners, not housing consumers. When consumers are injured, those worst affected (in dollar

terms) are not the households that have been excluded (as has usually been thought) but those that actually buy housing at prices inflated by the anti-growth measures. The chief beneficiaries of a suburb's development charges and development restrictions are the individuals who own its existing houses and apartments.

Home-owners can be expected to dominate the politics of small suburbs. Their most profitable strategy is to capture the producers' surplus of owners of vacant land by means of sub-division exactions and other development charges and, when there are no close substitutes for the suburb, to gain monopoly profits by limiting the output of new housing. Home-owner cartelisation programs create inequities among land-owners and consumers that lead to the usual efficiency losses that arise from monopoly (Ellickson, 1977, pp. 509–510).

Home-owners can be expected to dominate the politics of smaller suburbs because most suburban households are home-owners, they have a common interest in exclusion and their own property values, they have wealth and are not transient, and they have some political sophistication. Pro-development interests are far outnumbered and can succeed only if the home-owners are poorly organised. The smaller suburb is fertile ground for the majority to implement Madisonian 'plans of oppression'.

Ellickson (1977)—and James Madison—recognised that the 'influence model' of politics, in which special interests determine outcomes, is more likely to be applicable as the electorate increases in size and as issues become more numerous. Developer interests are thus more likely to be dominant in large, complex suburbs with many renters and a diverse population of home-owners. Here local officials can be expected to 'sell' favours to development interests. Ellickson (1977) also argues that there is less interest in development controls among home-owners with lower incomes located in poorer suburbs. Indeed, much of the discussion has been in

the context of a suburb that is prosperous and has potential for appreciable growth. We would add that home-owners in older, poorer and declining suburbs would seem to have very little interest in development controls.

Ellickson recognised the University of Chicago Stiglerian theory of regulation shortly after the publication of his 1977 article. Ellickson and Tarlock (1981, pp. 236–238) reached the conclusion that the land-use agenda is more likely to be 'captured' *a la* Stigler (1971) by development interests in the larger, more heterogeneous jurisdiction, but continued to maintain that the Madisonian 'majoritarian' problem is the likely outcome in smaller, more homogeneous suburbs.

In several publications that culminated in a book, Fischel (1985) built upon the work of Stigler (1971), Peltzman (1976), Ellickson (1977) and many others to formulate the collective property rights approach to zoning and development controls. Fischel believes that zoning usefully can be thought of as a method for redistributing property rights from the owners of undeveloped land to others in the municipality. Fischel's analysis of the political economy of zoning brought him to the following conclusion

I submit that the degree of restrictiveness of a community is greatest for small, homogeneous suburban jurisdictions and least for large, heterogeneous cities and very rural areas. Small cities and the larger suburbs fall in between these extremes. The chief reason for these differences is that size and location have an impact on political organisation. In larger places, voters more often live and work in the same jurisdiction, and their political process allows for logrolling, vote trading, and other devices that roughly balance development interests with home-owners' concerns (Fischel, 1985, p. 228).

The conclusion reached by both Ellickson and Tarlock (1981) and Fischel (1985) regarding large central cities was supported by the results of the latest referendum on zoning in Houston, the only large city in the US

without zoning. As McDonald (1995) reported, the proposed zoning ordinance was defeated in November 1993 largely by the voters in the lower-income Black and Latino areas of the city. Zoning was supported by voters in the Black and Anglo middle-class areas of Houston. Another study of voting returns for a growth-control referendum in San Diego County by Dubin *et al.* (1992) showed that support for growth controls was higher in precincts with a larger proportion of home-owners and in precincts where nearby roadways were more congested.

There is a sizeable literature in political science, sociology and planning on the sources of support for local growth controls. A review of this literature by Baldassare and Wilson (1996) shows that support for growth controls is not consistently related to home-ownership and higher socioeconomic status of residents. For example, Baldassare and Protash (1982) and Protash and Baldassare (1983) found that growth controls were present in growing suburban areas that were not affluent. Instead, Baldassare and Wilson (1996) report that negative community perceptions are the most consistent predictors of citizen support for the slowing of development. Negative community perceptions include low evaluations of local services, low overall quality-of-life ratings and high perceived local growth rates. A basic conclusion that can be reached from the studies surveyed by Baldassare and Wilson (1996) is that residents favour growth controls when they feel that their community is being overwhelmed by rapid growth.

In his most recent book, *The Homevoter Hypothesis*, Fischel hypothesises that, because much of their wealth is tied up in the home,

mercenary concern with property values, especially that of home-owners, motivates citizens to organise and make personal sacrifices for such things as public schools and amenable environments (Fischel, 2001, p. 18).

He reiterates his earlier position

Because majority rule, rather than rule by special interests, seems to apply in most local governments, the prospect of capital gains and losses to home-owners is the most consistent motivator of local government activity (Fischel, 2001, p. 96).

Fischel's (2001) evidence to support this hypothesis includes discussions of the causes and consequences of school finance centralisation in California and environmental protection at the local level, a brief history of zoning and analysis of case studies of new municipality formation in suburban Seattle. These case studies reveal that residents were motivated by local control of land use and were not willing to rely on the county government or a larger neighbouring municipality to make land-use policy that is consistent with their preferences.

Since the publication of Ellickson's article (1977), urban economists have created a theoretical literature that explains the underlying motivations of absentee and resident land-owners, home-owners and renters. This literature includes articles by Brueckner (1990, 1995, 1998), Brueckner and Lai (1996), Cooley and LaCivita (1982), Engle *et al.* (1992), Epple *et al.* (1988), Frankena and Scheffman (1981), Helsley and Strange (1995), Sheppard (1988) and White (1978). These models provide three types of explanation for the interest on the part of the politically dominant home-owners in establishing growth controls: creation of amenities, restriction of the supply of housing and strategic interaction with other local governments. A detailed examination of this theoretical literature is beyond the scope of this paper.

Hanushek and Quigley (1990) discussed the use of limitations on commercial development. They concluded that such policies limit employment and thus may reduce the demand for housing in the jurisdiction. The gains to home-owners must come through fiscal or amenity factors, but their examination of the limitation on office space growth in San Francisco questions whether a positive fiscal effect exists. Their conclusion is to

question the rationality of this particular growth limitation.

Another strand in the literature examines the increase in the use by suburbs of development impact fees or land-use exactions to pay for needed infrastructure and the other costs of development. The economic, political and legal issues of land-use exactions are discussed well in the book by Altshuler and Gómez-Ibañez (1993). The use of development impact fees is in the interest of the home-owners because they do not wish to pay the costs of development for new residents, but it is also true that development impact fees may be used to extract producers' surplus from developers. In California, the passage of Proposition 13 left local governments with very limited ability to raise taxes to pay for infrastructure projects. The problem was addressed in 1982 by the passage of the Mello-Roos Community Facility Act. This law permits local governments to set up special districts which can issue tax-exempt bonds backed by special taxes levied on new properties in the special district.

This brief survey of the motives behind local development controls concludes with a summary of the role of the professional land-use planner as expressed in one of the field's leading textbooks. The book by Kaiser *et al.* (1995) was originally written by F. Stuart Chapin in 1957, and is in its fourth edition. The book has been a basic part of the professional education of land-use planners for almost two generations and serves as one useful guide both to the methods used by planners and to the motives behind their work. Kaiser *et al.* start by informing the student that

Local land use planning and decision-making can be seen as a big-stakes game of serious multiparty competition over an area's future land use pattern. To win the game is to gain adoption and implementation of the future land use plan, development regulations, and development decisions that most benefit your role or organisation (Kaiser *et al.*, 1995, p. 5).

For Kaiser *et al.*

The goal of the land planner is not simply to accommodate market demand for development, but to guide the market towards producing good communities. ... [Consequently,] Active land use planning affects the development market by identifying land that is available or planned for development; by limiting the type, location, timing, and density of development that can take place; by programming the infrastructure to support development and allocating its costs between the public and private sectors; and by specifying the standards under which development proposals will be reviewed (Kaiser *et al.*, 1995, pp. 8–9).

Clearly Kaiser *et al.* (1995) conceive of the role of the professional land-use planner as quite comprehensive. A 'good community' is one in which three types of value are in some sort of optimal balance. The first value is social use value, which considers the connections between the physical environment and the quality of life. Quality of life includes good urban form, convenient activity systems and vital and supportive neighbourhoods. Clearly, many urban planners believe that the market will not necessarily produce urban development with high social use value. The second value is market value, in which the market allocates parcels of land to the 'highest and best use'. The third set of values is ecological values, which emphasise the importance of the efficient use of natural resources, maintenance of the integrity of natural systems and the preservation of nature. The maintenance of the integrity of natural systems through the careful design of infrastructure and the establishment of the carrying capacity of an area is a critical role of the land-use planner. The analysis of the carrying capacity of land sets use limits that are consistent with the local ecology and the nature of the site itself, and provides the link between ecological values and social use values.

The economist's reaction to this discussion of the role of the urban land-use planner might be that it is all about taking into ac-

count the external costs and benefits that are produced by alternative development patterns. Such a reaction is correct as far as it goes, but it is fair to say that planners see a much larger and more comprehensive list of externalities than most economists would recognise. In addition, the planner is responsible for formulating plans for infrastructure and community facilities, which include transport systems, sewerage facilities, water supply, stormwater systems, schools and recreation facilities (and probably others as well). All of these facilities and the zoning and other development controls must be mutually consistent. There is much work for the urban planner to do even if the municipality does not have a zoning ordinance.

The land-use design is implemented through a development management plan, the heart of which is a programme of actions that include a development code, a programme for infrastructure expansion, a capital improvement programme, a land acquisition programme for future public needs and a programme of taxes, fees and financial incentives. The elements of the development management plan are the subjects of the empirical study in this paper. We seek to discover the types of suburb that make use of the various components of the Kaiser *et al.* (1995) comprehensive development management plan.

The book by Kaiser *et al.* (1995) is a fine survey of the field of urban land-use planning and we recommend it to our economist colleagues. The existence of competing interests is recognised throughout the book, but it is interesting that Kaiser *et al.* (1995) did not attempt to analyse the political economy of land-use policy. They made no reference to the principal works in this field by Ellickson (1977) and Fischel (1985), for example. Kaiser *et al.* (1995) really provide the student of urban land-use planning with very little guidance concerning what types of municipality are likely to pursue which goals and use which policy instruments. For example, the standards for parks and sewerage systems in Houston are discussed, but no mention is

made of the fact that Houston does not have a zoning ordinance.

3. Development Controls in Chicago's Suburbs

The suburbs that surround the city of Chicago use a variety of development controls. The purposes of this section are to describe these policies and to present a factor analysis that describes how the use of particular policy instruments tends to be correlated. The database consists of 198 suburban municipalities in metropolitan Chicago for the year 1995. All of the suburbs are in Cook, DuPage or Lake County. Data on the use of local policies were compiled by Index Publishing Corporation (1996). All of the municipalities have a zoning ordinance, but data on the level of complexity of the ordinances are not readily available for all 198 suburbs. Details of the zoning ordinances for 102 suburbs are discussed below. This section examines the use of development controls other than zoning.

The list of development controls in this study is as follows

- The suburb has a comprehensive plan that has been adopted since 1990.
- The suburb has a system of architectural review.
- The suburb has appearance regulations for buildings.
- The suburb contains a historic preservation district.
- A formal capital improvements programme exists.
- The suburb contains an Illinois Enterprise Zone.
- The suburb uses tax-increment financing districts.
- The suburb imposes development impact fees, exactions or donations.
- The suburb has regulations pertaining to group homes or community residences.
- The suburb has regulations pertaining to mobile homes or house trailers (including their prohibition).
- The suburb regulates factory-assembled or

Table 1. Development controls and initiatives: full sample of 198 suburbs

Type of development control	Percentage of suburbs with the control	Factor scores		
		Factor 1	Factor 2	Factor 3
Comprehensive plan adopted since 1990	47.5	0.1028	0.1359	0.3822
Architectural review	45.5	0.7136	0.0261	0.0545
Appearance regulations	42.4	0.7151	-0.0002	0.0009
Historic preservation	32.3	0.2334	0.1098	-0.0042
Capital Improvements programme	69.7	0.3199	0.2060	-0.0940
Enterprise zones	14.1	0.0027	0.1078	-0.4742
TIF	44.9	0.0986	0.3054	-0.3756
Development impact	50.5	0.1544	0.0996	0.4753
Fees/exactions/donations				
Groups homes/Community residences	56.1	0.2657	0.4700	-0.0465
Mobile homes/House trailers	58.1	-0.0624	0.4886	-0.0434
Factory-assembled/Modular homes	63.6	-0.0170	0.4230	0.1457
Adult uses	46.5	-0.0345	0.4633	-0.0174

modular homes (including their prohibition).

—The suburb regulates adult uses (including their prohibition).

Brief explanations are required for two items. The Illinois Enterprise Zone programme was enacted in 1982 and permits municipalities to apply to the State of Illinois to designate an area of up to 10 contiguous square miles as an Enterprise Zone. Enterprise Zones were awarded on the basis of a high local unemployment rate (20 per cent greater than the state average), low income, poverty or population loss. A total of 90 Enterprise Zones was authorised by state law and awarded in the 1980s and 1990s. Firms located in an Enterprise Zone receive an exemption of the 7 per cent sales tax on building materials, a state income tax credit of 0.5 per cent for investment in machinery, equipment or buildings, and a state income tax credit of \$500 for each job created in the zone if at least 5 jobs are created and certified dislocated or disadvantaged workers are hired to fill them. See McDonald (1993) for a further discussion of the details of this programme

and an econometric evaluation of its impacts on employment. Tax-increment financing (TIF) districts are created individually by a local ordinance that stipulates that any increase in property tax revenue collected from the TIF district will be used to pay for public infrastructure improvements in the district. The dedication of future property tax revenue increases for this purpose permits the local officials to issue municipal bonds that are used to finance the infrastructure improvements. It is fair to say that Enterprise Zones and TIF districts are policies designed to stimulate private development in designated areas.

As we mentioned in the introduction, not all suburbs use all of the development controls listed above. Table 1 lists the development controls and the percentage of the 198 suburbs that use each one. With the exception of Enterprise Zones (which require application to the state and are limited in number by state law), each of the development controls is used by about one-half of the 198 suburbs. The policy in most widespread use is a formal capital improvement programme (69.7 per cent, 138 out of 198

suburbs) and only 64 suburbs (32.3 per cent) contain a historical preservation district. Enterprise Zones are located in 28 suburbs.

A useful method for summarising the data on the use of these 12 policies by 198 suburbs is to conduct a factor analysis. Factor analysis is a standard technique for reducing the dimensionality of a data-set, in this case from 12 to a smaller number K by producing composite variables called factors F that represent patterns of covariance that exist in the original data-set (Harmon, 1976; and Kim and Mueller, 1978). Factor analysis expresses each variable x as a linear combination of the K common factors plus a unique component u_i . In equation form,

$$x_i = \sum_k b_{ik} F_k + u_i,$$

where, $i = 1, 2, \dots, 12$ and $k = 1, \dots, K$.

In matrix form, $\mathbf{X} = \mathbf{BF} + \mathbf{U}$. The set of estimated coefficients b_{ik} comprises the factor pattern matrix $\mathbf{B}$, which is one of the primary outputs from factor analysis. The K factors (in this case $K = 3$) define a three-dimensional vector space that is a subset of the original 12-dimensional vector space.² Heikkila (1996) is an interesting application of factor analysis to local census tract data. Lankford and Wyckoff (2001) also have an interesting application of factor analysis, using it to reduce 21 variables representing various attributes of students and parents into 3 factors when analysing the choice between private and public school attendance.

The results of the factor analysis are shown in Table 1. The three b_{ik} coefficients are shown for each of the 12 original variables. Recall that all of the original variables are dummy variables (i.e. one or zero). It is clear that factor number one is primarily driven by the architectural review and appearance regulation variables (and to a lesser extent by historical preservation district, capital improvements programme and group homes regulations). Suburbs that score highly on factor number one tend to be concerned with a high-quality appearance. In contrast, factor number two is a function mainly of regulations governing group

homes, mobile homes, factory-assembled homes and adult uses (and to a lesser extent by the use of TIF districts). Suburbs that score highly on factor number two are concerned with the possible adverse effects of developments that tend to have a lower-class image. Lastly, factor number three is driven negatively by Enterprise Zones and TIF districts and positively by development impact fees and recent adoption of a comprehensive plan. Suburbs that score highly on factor number three are concerned with the impact of growth and are not interested in policies that are used to stimulate growth (i.e. Enterprise Zones and TIF districts).

We believe that the factor analysis results in Table 1 provide a useful summary of how suburbs tend to combine the various types of development control policies. Which types of suburb tend to use these combinations of policies? This question is investigated in the next section. We shall refer to the three factors in Table 1 as

- quality development regulations;
- regulation of lower-class development; and
- growth control.

4. Choice of Development Controls by Suburbs

In this section, we present econometric results showing the characteristics of suburbs that are associated with the different types of growth control discussed in the previous section. The explanatory variables are listed in Table 2, along with their descriptive statistics. We measure the location of the suburb as distance from the Chicago central business district (CBD) and by location within one of the two high-growth counties in metropolitan Chicago (DuPage and Lake Counties; the alternative is Cook County). The population of the suburb from the 1990 Census is included along with its median household income and racial composition. The age of the suburb is indicated by the proportion of housing built before 1940 and from 1980 to 1990. The data-set also includes the overall

Table 2. Descriptive statistics for community characteristics: full sample of 198 suburbs

Variable	Mean	Standard deviation	Minimum	Maximum
Distance from the Chicago CBD	25.9111	11.2451	9.0000	59.0000
DuPage County	0.1515	0.3595	0.0000	1.0000
Lake County	0.2374	0.4266	0.0000	1.0000
Population (10 000s)	1.8187	1.8341	0.0150	10.5929
Median income (\$10 000s)	4.9031	2.2171	1.4032	12.5074
Proportion Black	0.0824	0.1896	0.0000	0.9910
Proportion Hispanic	0.0547	0.0736	0.0000	0.5790
Proportion of housing stock built before 1940	0.1205	0.1421	0.0000	0.7250
Proportion of housing stock built in 1980s	0.1719	0.1608	0.0000	0.7790
Crime rate (crimes per 100 residents)	0.4106	0.7724	0.0130	10.5800
Proportion of families with income below the poverty level	0.0378	0.0497	0.0000	0.4810
Unemployment rate (percentage)	4.4672	2.9696	0.0000	26.0000
Factor score 1	0.0000	0.8197	-1.1864	1.3789
Factor score 2	0.0000	0.7438	-1.6181	1.3763
Factor score 3	0.0000	0.6874	-1.7245	1.1036

crime rate in the suburb, proportion of families in poverty in 1990 and the 1990 unemployment rate.

The 198 suburbs in the database vary a great deal on all of the variables shown in Table 2. Population varied from 150 to 105 929 and median household income varied from \$14 032 to \$125 074. The percentage of the population that is Black (Hispanic) varied from zero to 99.1 per cent (57.9 per cent). The percentage of families in poverty ranged from zero to 48.1 per cent, and the unemployment rate varied from zero to 26 per cent.

The dependent variables in the first econometric results are the three factor scores for the 198 suburbs—their scores on quality development regulations, regulation of lower-class development and growth control. The three estimated equations are displayed in Table 3. The first column of results in Table 3 shows clearly that the propensity to use quality development regulations is positively related to the population of the suburb (i.e. its size) and median household income. The coefficient of no other variable attains statistical significance. The positive effect of income is as one would expect. The effect of the size of the suburb suggests that larger

suburbs have the greater resources to devote to this type of regulation.

The determinants of the propensity to have regulation of lower-class development are shown in the second column of Table 3. Population size again enters with a positive coefficient and suburbs with higher crime rates also tend to have these regulations. Median household income enters with a negative sign and marginal statistical significance ($t = 1.89$). The results show that the regulation of lower-class development is of concern in larger suburbs with higher crime and lower income. The third set of results in Table 3 shows the determinants of the propensity to use growth controls. This propensity is greater, the greater is distance to the Chicago CBD and if the suburb is located in DuPage County, the highest-growing county in the metropolitan area in the 1970s and 1980s. The propensity to have growth controls is lower in suburbs with larger minority populations (both Black and Hispanic) and in suburbs with higher crime rates. Note that the size of the suburb is not a determinant of the propensity to use growth controls. Further discussion of these results is included in the final section of the paper.

Separate probit analyses were computed

Table 3. Development control factor score regressions

Variable	Factor 1 Quality regulations	Factor 2 Lower-class regulations	Factor 3 Growth controls
Distance from the Chicago CBD	0.0017 (0.206)	0.0036 (0.489)	0.0209 (4.147)
DuPage County	-0.1850 (1.092)	0.1949 (1.298)	0.5401 (5.220)
Lake County	-0.1417 (0.649)	0.0744 (0.384)	0.2371 (1.778)
Population (10 000s)	0.1421 (4.325)	0.1292 (4.435)	-0.0104 (0.521)
Median income (\$10 000s)	0.0911 (2.775)	-0.0550 (1.891)	-0.0010 (0.051)
Proportion Black	0.5928 (1.177)	0.4091 (0.916)	-0.7106 (2.309)
Proportion Hispanic	1.2112 (1.372)	0.5649 (0.722)	-1.1961 (2.219)
Proportion of housing stock built before 1940	0.2770 (0.588)	-0.4395 (1.052)	0.1739 (0.604)
Proportion of housing stock built in 1980s	0.1245 (0.260)	0.0738 (0.174)	0.3054 (1.045)
Crime rate (crimes per 100 residents)	-0.0021 (0.028)	0.1728 (2.580)	-0.1264 (2.739)
Proportion of families with income below the poverty level	-0.3652 (0.166)	-3.1027 (1.592)	-2.2404 (1.669)
Unemployment rate (percentage)	-0.0499 (1.163)	0.0310 (0.815)	0.0066 (0.252)
Constant	-0.6200 (1.993)	-0.2215 (0.803)	-0.4988 (2.625)
R ²	0.1717	0.2089	0.5606

Note: The dependent variables for the regressions are the factor scores derived for the 12 development controls from the full sample of 198 suburbs. Absolute *t*-values are in parentheses.

for each of the 12 policies listed in Table 1 and Table 4 presents selected results.³ As shown in column 1 of Table 4, larger suburbs tend to have a formal capital improvements programme and no other variable seems to matter. Column 2 shows that suburbs with higher poverty rates tend to have an Enterprise Zone (as the state's rules require) and that suburbs located farther from the Chicago CBD tend not to have an Enterprise Zone. The results in column 3 show that tax-increment financing districts tend to be used in suburbs with greater population size and with larger proportions of minority populations (both Black and Hispanic), but that poverty is negatively associated with the use of TIF districts. It may be that suburbs with greater poverty do not use TIF districts because their bond ratings are relatively low.

The fourth column in Table 4 shows that the probability of using development impact fees increases with distance from the Chicago CBD, population size and the proportion of the population that is Hispanic (the last with marginal statistical significance). Use of development impact fees is negatively associated with older housing (proportion built before 1940), unemployment and poverty (the last with marginal statistical significance). Except for the effect of Hispanic population, these results are as one might have expected. Suburbs located farther from the Chicago CBD are more likely to need additional infrastructure to accommodate development and suburbs with older housing are probably less likely to attract development. And suburbs with poverty and unemployment need development.

One consistent result in both Tables 3 and 4 is the positive effect of population size on the use of any policy or combination of policies. Population size has a strong positive effect in five of the seven equations estimated and displayed in these two tables. This pattern of results suggests that there are economies of scale in formulating and implementing many of these regulations.⁴

5. Determinants of Zoning Complexity

The next set of econometric results is pre-

sented to examine the determinants of the complexity of the zoning ordinance adopted by a suburb. Data are readily available from Olcott (1990) on 102 suburbs in metropolitan Chicago, 97 of which are located in Cook County (the central county in metropolitan Chicago). Descriptive statistics for these 102 suburbs are shown in Table 5. These 102 suburbs are closer to the Chicago CBD, have somewhat greater proportions of Black and Hispanic populations, and have somewhat older housing and slightly greater crime than the 198 suburbs shown in Table 2 above.

The measures that we use are the numbers of zoning categories for single-family residential use, apartments, commercial use, manufacturing and other uses.⁵ Our presumption is that the number of zoning categories that pertain to a particular use is an index of the level of complexity and detail used to regulate this sector. A cursory examination of the data makes it clear that small suburbs often have very simple zoning ordinances and that zoning complexity increases with the size of the suburb. It is also clear that apartments and manufacturing are excluded from some suburbs.

Our first approach is to examine the complexity of zoning for each of the five types of use in isolation. We estimate Poisson models of land-use zoning category counts for each of the five uses. The Poisson regression model assumes a discrete Poisson-distributed random variable, $Y = 0, 1, \dots$ where, Y is the count of zoning categories for a particular use. The Poisson model is written

$$\ln [\text{Prob}(Y=y_i)] = -A_i + y_i \ln A_i - \ln y_i!$$

where, $\ln A_i = \beta'x_i$. The mean and the variance of y_i are both A_i . The function $\ln A_i = \beta'x_i$ is estimated to maximise the log-likelihood function.

The Poisson regression results are shown in Table 6. The results show that the complexity of zoning in all five categories is strongly a positive function of the population size of the suburb. There are only a few other coefficients that attain statistical significance. The number of zoning categories for single-

Table 4. Probit models of development control programmes

Variable	Capital improvements programme	Enterprise zones	TIF	Development impact fees/exactions/ donations
Distance from the Chicago CBD	-0.0060 (0.570)	-0.0425 (2.046)	-0.0197 (1.624)	0.0615 (4.646)
Population (10 000s)	0.3262 (3.752)	0.0823 (1.055)	0.2142 (3.589)	0.2133 (2.689)
Median income (\$10 000s)	0.0576 (1.022)	0.1356 (1.320)	-0.1080 (1.529)	-0.0566 (0.808)
Proportion Black	-0.7370 (0.813)	0.0615 (0.051)	5.6031 (3.719)	2.0579 (1.616)
Proportion Hispanic	1.9551 (1.027)	0.1140 (0.059)	4.3161 (2.511)	4.3878 (1.911)
Proportion of housing stock built before 1940	-0.6180 (0.741)	-1.4278 (1.190)	-1.3325 (1.476)	-3.2553 (2.624)
Proportion of housing stock built in 1980s	-0.2457 (0.296)	-0.4623 (0.303)	-0.5341 (0.593)	0.9732 (1.003)
Crime rate (crimes per 100 residents)	0.2007 (0.918)	0.8266 (1.551)	0.2337 (1.148)	-1.0779 (1.743)
Proportion of families with income below the poverty level	-0.7306 (0.191)	19.6318 (2.835)	-15.3459 (2.562)	-11.5362 (1.844)
Unemployment rate (percentage)	0.0797 (1.087)	0.0112 (0.101)	-0.0594 (0.677)	-0.2821 (2.798)
Constant	-0.4282 (0.752)	-1.9602 (2.099)	0.8259 (1.295)	0.0586 (0.076)
Log-likelihood value	-107.484	-50.952	-101.805	-79.986

Notes: The dependent variables are indicator variables that equal one when the development control programme is present in the suburb. The number of observations is 198. Absolute z-values are in parentheses.

Table 5. Descriptive statistics for community characteristics: sub-sample of 102 suburbs

Variable	Mean	Standard deviation	Minimum	Maximum
Distance from the Chicago CBD	19.6118	6.8491	9.0000	37.0000
DuPage County	0.0098	0.0990	0.0000	1.0000
Lake County	0.0392	0.1951	0.0000	1.0000
Population (10 000s)	2.0881	1.6698	0.0756	7.6518
Median income (\$10 000s)	4.5051	1.8565	1.7194	12.3705
Proportion Black	0.1225	0.2279	0.0000	0.9840
Proportion Hispanic	0.0612	0.0840	0.0010	0.5790
Proportion of housing stock built before 1940	0.1406	0.1715	0.0010	0.7250
Proportion of housing stock built in 1980s	0.0981	0.1054	0.0020	0.5040
Crime rate (crimes per 100 residents)	0.4148	0.2776	0.0600	1.4500
Proportion of families with income below the poverty level	0.0401	0.0454	0.0000	0.2480
Unemployment rate (percentage)	4.9971	2.8968	1.3000	20.3000
Factor score 1	0.0000	0.7721	-0.9196	3.1941
Factor score 2	0.0000	0.7660	-1.1751	2.4521
Factor score 3	0.0000	0.3352	-0.7318	1.1115

family residential use is also a positive function of median household income, and the complexity of zoning for apartment use is a positive function of the poverty rate and a negative function of the unemployment rate (with marginal statistical significance). The complexity of zoning for both commercial and manufacturing uses is driven only by population size. The complexity of zoning for other purposes (such as churches and other institutions) is a positive function of the age of the suburb measured as the proportion of housing built before 1940. These results reveal little about the behaviour of these suburbs except that higher-income suburbs have more complex zoning for single-family residences.

A more complete analysis would take account of the relationships across sectors in the complexity of zoning. For example, do suburbs with complex zoning for single-family residential use have complex zoning for other uses as well? This question is investigated by first performing a factor analysis on the zoning count data for the 5 uses in the 102 suburbs. In this factor analysis, the data are reduced from 5 dimensions (5 uses) to 3 dimensions—i.e. 3 factors.

The results of the factor analysis are

shown in Table 7. The first column of figures in Table 7 shows for each use the mean, standard deviation and range for the zoning category counts. The other three columns display the factor scores for zoning counts for each of the five uses as they enter the three estimated factors. Factor number one is driven by the zoning category counts for single-family residential, commercial and other uses. Suburbs that score highly on factor number one have more elaborate zoning regulations for single-family housing, commercial use and other uses. In contrast, factor number two is driven mainly by zoning category counts in the apartment and commercial sectors. Suburbs that score highly on factor number two are concerned with zoning for apartment and commercial use. Lastly, factor number three is driven by the zoning category count for manufacturing use. Suburbs that score highly on factor number three have more elaborate zoning for manufacturing use. These results suggest that suburbs do indeed choose particular combinations of zoning complexity, depending upon the nature of their perceived needs.

The final econometric exercise in the paper is to relate the factor scores of the suburbs on the three factors shown in Table 7 to

Table 6. Poisson models of land-use zoning counts

Variable	Single-family residential	Apartments	Commercial	Manufacturing	Other
Distance from the Chicago CBD	0.0120 (1.042)	-0.0058 (0.370)	0.0013 (0.116)	-0.0166 (0.977)	0.0137 (0.638)
Population (10 000s)	0.1163 (3.199)	0.1578 (3.785)	0.1784 (5.771)	0.1331 (2.748)	0.3053 (5.420)
Median income (\$10 000s)	0.1247 (2.617)	-0.0893 (1.278)	0.0296 (0.607)	0.0276 (0.358)	0.1579 (1.748)
Proportion Black	0.8417 (1.483)	0.0958 (0.136)	0.1306 (0.248)	-0.0466 (0.061)	0.8389 (0.790)
Proportion Hispanic	-1.0085 (0.765)	-0.2541 (0.209)	-1.4614 (1.371)	1.1432 (1.010)	-0.7714 (0.320)
Proportion of housing stock built before 1940	-0.6499 (1.224)	0.0970 (0.166)	-0.5222 (1.129)	-1.1569 (1.620)	-0.1787 (0.195)
Proportion of housing stock built in 1980s	1.0954 (1.797)	-1.3194 (1.200)	0.2058 (0.311)	0.0203 (0.019)	2.4562 (2.343)
Crime rate (crimes per 100 residents)	-0.1439 (0.456)	-0.5241 (1.309)	0.2577 (0.972)	0.3962 (1.081)	0.0319 (0.051)
Proportion of families with income below the poverty level	0.6110 (0.213)	6.3857 (2.046)	2.9011 (1.223)	3.2809 (0.926)	-4.3634 (0.736)
Unemployment rate (percentage)	-0.0628 (1.220)	-0.1062 (1.894)	-0.0620 (1.396)	-0.0468 (0.719)	0.0369 (0.370)
Constant	0.1151 (0.268)	1.2433 (2.198)	0.7600 (1.846)	0.2404 (0.384)	-2.3683 (2.822)
Log-likelihood value	-166.313	-143.000	-175.657	-132.164	-111.975

Notes: The dependent variables for the regressions are the number of zoning ordinance categories within in each land-use group for the sub-sample of 102 suburbs. Absolute *z*-values are in parentheses.

Table 7. Land-use zoning: sub-sample of 102 suburbs

Type of land use	Number of zoning categories		Factor scores		
			Factor 1	Factor 2	Factor 3
Single-family residential	2.6250 (1.891)	[0, 13]	0.6265	0.0209	-0.0759
Apartments	1.7115 (1.188)	[0, 5]	-0.0424	0.6794	0.0746
Commercial	3.1058 (1.795)	[1, 9]	0.4759	0.6367	0.0203
Manufacturing	1.3846 (0.906)	[0, 4]	0.1634	0.2430	0.2898
Other	0.8269 (1.258)	[0, 6]	0.6499	0.1857	0.1472

Note: The mean number of zoning categories is followed by the standard deviation in parentheses and the range in brackets.

the same explanatory variables that have been used above to describe the characteristics of those suburbs. For example, which types of suburb tend to score highly on factor number one (single-family plus commercial)? The regression results are shown in Table 8. Once again, the population size of the suburb is strongly related to the level of complexity of zoning, as measured by the factor scores on all three factors. In addition, a suburb's score on factor number one (single-family plus commercial) is driven by higher median income and newer housing (proportion built in the 1980s). Suburbs with higher incomes and newer housing tend to have a more complex combination of zoning for both residential and commercial uses. The score on factor number two (apartment plus commercial use) is driven positively by the poverty rate and negatively by the unemployment rate. Suburbs with more poverty tend to have more elaborate zoning for apartment and commercial use, probably because poor people tend to reside in apartments and need ready access to commercial establishments. The negative effect of the unemployment rate was not expected. Lastly, the score on factor number three (manufacturing use) is driven only by the population size of the suburb. The variables representing population density and multi-family housing again failed to reach conventional levels of statistical significance.

In summary, the factor analysis of the zoning count data shows that there are associations across uses in the complexity of the

zoning that is employed and that more complex combinations of zoning are associated with the population size of the suburb and a few other variables.

6. Motives for Development Controls Revisited

Do our empirical results inform the discussion about the motives for development controls? Before we answer this question, let us review the previous econometric studies of the determinants of restrictive zoning or growth controls. The study by Rolleston (1987) studied the determinants of residential and non-residential zoning restrictiveness in 1967 for 185 communities in north-eastern New Jersey. Rolleston (1987) examined only 'developable' land (i.e. vacant land). Zoning restrictiveness in residential use was measured by an index that assigned a weight to the proportion of vacant residential land zoned for particular lot sizes. For example, a minimum lot size of less than 1/4 acre was given a weight of 20, while a minimum lot size of 3 acres or more was assigned a weight of 100. Restrictiveness in non-residential use was computed more simply by an index that assigned zero to the proportion of non-residential, developable land designated for industrial use, 30 to land designated for commercial use and 100 to land designated for office/research use. The econometric results show that the restrictiveness of zoning for residential use was positively associated with the percentage of land in residential use,

Table 8. Land-use zoning factor score regressions

Variable	Factor 1	Factor 2	Factor 3
Distance from the Chicago CBD	0.0069 (0.624)	-0.0074 (0.650)	-0.0075 (1.222)
Population (10 000s)	0.2051 (5.664)	0.2761 (7.383)	0.0606 (2.998)
Median income (\$10 000s)	0.1571 (3.416)	-0.0324 (0.682)	-0.0013 (0.052)
Proportion Black	0.3842 (0.773)	0.1071 (0.209)	-0.1071 (0.386)
Proportion Hispanic	-0.7301 (0.848)	-0.5257 (0.592)	0.7420 (1.545)
Proportion of housing stock built before 1940	-0.7633 (1.628)	-0.2855 (0.590)	-0.2442 (0.934)
Proportion of housing stock built in 1980s	2.3026 (3.304)	-0.6813 (0.947)	0.0457 (0.118)
Crime rate (crimes per 100 residents)	0.2712 (1.045)	0.0514 (0.192)	0.1409 (0.973)
Proportion of families with income below the poverty level	-0.6263 (0.243)	8.1509 (3.060)	1.0994 (0.764)
Unemployment rate (percentage)	-0.0026 (0.059)	-0.1292 (2.828)	-0.0062 (0.249)
Constant	-1.4547 (3.722)	0.1408 (0.349)	-0.0453 (0.208)
R^2	0.5087	0.4685	0.1957

Notes: The dependent variables for the regressions are the factor scores derived for the five land-use zoning categories for the sub-sample of 102 suburbs. Absolute *t*-values are in parentheses.

relative fiscal capacity of the suburb, the size of the business tax-base and the variability of income within the suburb. Residential zoning restrictiveness was negatively associated with the percentage of land in non-residential use, larger minority populations and access to employment centres. Rolleston (1987) concludes that there is evidence in these results for both the fiscal zoning and the exclusionary zoning hypotheses. The econometric analysis of zoning restrictiveness in non-residential use yielded few statistically significant results, although relative fiscal capacity was positively associated with this measure of zoning restrictiveness.

A study by Lenon *et al.* (1996) found that the prevailing minimum lot size permitted in Connecticut townships is positively related to median household income and the land area of the township and negatively related to revenues from sources other than the local property tax. The study also attempted to capture interdependence among jurisdictions, but failed to account for the endogeneity of the choices of competing jurisdictions.

The recent study by Brueckner (1998) tested for a variety of influences on the restrictiveness of residential and commercial growth controls adopted by municipalities in California as of 1988. The measure of restrictiveness employed is a count of up to nine growth control policies such as population growth limitations, housing permit limitations, adoption of a greenbelt, square footage limitations, rezoning and commercial building height restrictions. The econometric results indicate that restrictions on growth are greater, the greater are population, education level, proportion skilled workers, house values and democratic votes. Negative effects were estimated for population density, proportion of one-person households and median income. In addition, the variable used to capture strategic interaction is also positive and statistically significant in the econometric results. The coefficient on the strategic interaction variable is less than 1.0, indicating that a jurisdiction does not react 100 per cent to an increase in the restrictiveness of a competing jurisdiction. In sum-

mary, the econometric studies by Rolleston (1987), Lenon *et al.* (1996) and Brueckner (1998) do nothing to shake the belief that suburban development controls (measured in various ways) are used for the benefit of the politically dominant home-owners.

Bates and Santerre (1994) conducted a study of residential zoning in 132 towns in Connecticut for 1970. They found that the proportion of vacant land zoned for residential use declined with larger values of past growth in the town and the amount of non-residential property taxes collected per capita. These variables capture the growth control and fiscal zoning hypotheses. A greater poverty rate was associated with a smaller fraction of vacant land zoned for residential uses. Also, the fraction of vacant land zoned residential decreased and then increased with increases in the fraction of developed land in non-residential use. The U-shaped curve implies that the typical town became averse to additional non-residential use when non-residential use reached 20 per cent of the developed area. Bates and Santerre (1994) found that the average lot size for vacant residential lots was larger, the greater was past growth in the town. They also found that there was a trade-off between the fraction of vacant land zoned for residential use and the average lot size. Either device can be used to control population.

Now let us return to the issue of how our econometric results add to our understanding of the motives for the imposition of suburban development controls. Our survey of the motives for development controls found that nearly everyone agrees that the primary motive for development controls is to raise the property values of the dominant political group, the home-owners. This goal can be accomplished through fiscal effects, supply restrictions, enhancement of amenities and exclusion of certain groups. Do the home-owners in fact rule? Fischel (1985) asserted that they do in smaller, homogeneous suburbs, but that they may not determine policy in large central cities. Larger, more diverse suburbs fall somewhere in between. The expectation therefore is that larger, more di-

verse suburbs will be less restrictive than smaller, more homogeneous suburbs. At the same time, urban land-use planners, as represented by Kaiser *et al.* (1995), take a more comprehensive view of the role of urban development planning and policy than do many economists. They do not make a prediction about how the degree of restrictiveness may vary across municipalities, but seem to suggest that all municipalities need a great deal of planning.

A summary of our econometric results is as follows

- Suburban development control policies tend to cluster into quality development regulations, regulations aimed at lower-class development and growth controls.
- Larger suburbs tend to make greater use of nearly all forms of development controls and more complex zoning ordinances.
- The use of growth controls (including development impact fees) is positively related to the propensity of the suburb to grow and negatively related to factors such as crime, poverty and minority populations.
- The propensities to use quality development regulations and regulations aimed at lower-class development are related positively and negatively to median household income, respectively.
- The amount of complexity in zoning is correlated across uses; for example, suburbs with complex single-family residential zoning also tend to have complex commercial zoning.
- More complex single-family residential zoning is related positively to median household income and new housing, while more complex apartment zoning is positively related to the poverty rate.

It is fair to say that our econometric results also tend to confirm the proposition that suburban development controls are used to benefit home-owners. However, our results are consistent with a broader set of home-owner interests than perhaps has previously been recognised. First, our results are consistent with the idea that there are economies

of scale in development control policy. Other things equal, larger suburbs make greater use of nearly all types of development control. However, this finding also is consistent with the idea that larger suburbs have more market power in the housing market and are therefore better able to drive up housing values by restricting supply *à la* Ellickson (1977). We suspect that both motives are involved, but surely it is important that each development control policy costs money for the suburb to design and implement. Smaller suburbs may simply not be able to afford the whole panoply of policies. Secondly, we have found that suburbs with lower incomes, larger minority populations and greater poverty rates have an interest in promoting growth rather than reducing growth. These suburbs have a propensity to use Enterprise Zones and TIF districts, have more complex zoning for apartment buildings and tend not to have development impact fees. Also, some of these suburbs are concerned with the regulation of lower-class developments such as mobile homes and adult uses. A sizeable number of older suburbs and satellite cities find themselves in this sort of situation. Our other results are consistent with the view that suburbs with higher incomes use a wide variety of development controls that regulate and restrict land use and growth. Madisonian 'majoritarian' rule seems to be alive and well.

7. Development Controls and Policy in Metropolitan Chicago

This final section is a brief discussion of the legal framework for development control policy in metropolitan Chicago. Many observers, such as Downs (1994) and Fischel (2001), believe that local governments use their development control powers to exclude too much activity and produce low-density urban sprawl. Consequently, several states now limit the powers of local governments to control development within their borders. This movement to limit local powers has reached Illinois, but has so far produced very

little that would limit the rights of local governments.

Policy in Illinois is dominated by the home-rule provision in the 1970 Illinois Constitution. The old constitution did not include a general grant of powers to local governments and one major motivation for the new constitution was to address this perceived problem. As stated in the Illinois Constitution, Article VII, Section 6, home rule applies to all municipalities with population of 25 000 or more and provides that a home-rule unit may "exercise any power and perform any function pertaining to its government and affairs". Land-use decisions within municipal boundaries are included under home rule and supersede county and state law. Municipalities have extra-territorial powers over planning and zoning that extend up to 1.5 miles provided that the county has not adopted its own planning or zoning plans. Furthermore, annexation of territory by a municipality is usually a simple process. For example, annexation of vacant land requires only agreement by the land-owners and the adoption of an ordinance by the city council. County and state government cannot prevent annexation that takes place in accordance with state statute. Some suburbs have taken advantage of this situation to annex large amounts of vacant land in advance of development. Templeton (2002) provides case studies of the old satellite city of Aurora and the small town of Huntley, suburbs on the western fringe of the metropolitan area that have actively annexed territory in recent years. Huntley does not have general home-rule powers because its population is less than 25 000, but it does have the power to annex territory. Municipalities in Illinois also have the power to levy development impact fees provided that they pertain to costs that can be specifically attributed to the development in question. The procedures necessary to make this attribution are not regulated by state statute except in the case of road impact fees. Here, the state has adopted a statute that is so burdensome that only one county (DuPage County) imposes road impact fees.

As noted above, the adoption of growth controls (including development impact fees) is positively related to the propensity of a suburb to grow and negatively related to crime, poverty and minority population. However, given the legal framework in Illinois, these tendencies regarding the adoption of growth controls do not mean that there is a coherent urban growth policy at the fringe of the urban area (or anywhere else, for that matter). Aurora and Huntley are two municipalities at the urban fringe that are aggressively pursuing a pro-growth strategy. Many observers suggest that a coherent urban growth policy requires a combination of state and federal initiatives. Downs (1994) argues that the use of regional agencies to co-ordinate federal funds, coupled with state requirements for local comprehensive planning, offers the best possibility for urban growth policy in the US. Fischel (2001) recommends that local autonomy should be exercised within a system of external controls imposed by the courts and the state and federal governments. Unlike some observers, Fischel (2001) is concerned to preserve the role of local government. He worries that, "Frustration with localism's parochial land-use politics is already engendering state and federal interventions that sacrifice many of the true virtues of localism" (Fischel, 2001, p. 289). Thus far, there is little danger of such intervention in Illinois.

Notes

1. In Federalist Papers No. 10, James Madison writes

When a majority is included in a faction, the form of popular government, on the other hand, enables it to sacrifice to its ruling passion or interest both the public good and the rights of other citizens. To secure the public good and private rights against the danger of such a faction, and at the same time to preserve the spirit and the form of popular government, is then the great object to which our inquiries are directed (Hamilton, *et al.*, 1961, p. 80).

2. We selected the number of factors through a combination of statistical analysis and an assessment of the economic significance of

the results. The factor analysis was implemented using the statistical package STATA, which selects the number of factors by an analysis of the eigen-values of the correlation matrix for X . STATA retains factors with positive eigen-values. This procedure results in six factors in our analysis of development controls and three factors in the analysis of land-use zoning. The eigen-values for the six development control factors are 1.44, 0.95, 0.71, 0.25, 0.10 and 0.02. We chose to retain only three factors because we did not find any meaningful results in the last three factors and the eigen-values for the last three factors are much smaller than for the three analysed factors.

3. The county dummy variables are omitted from the probit models because the combination of discrete dependent and explanatory variables results in extremely high standard errors for the county variables.
4. We also tried specifications with various combinations of two additional variables—population density and the percentage of multi-family housing in the suburb. Neither variable reaches conventional levels of statistical significance in the estimated equations.
5. The 'other' category includes such things as churches, government buildings and various special districts.

References

- ALTSHULER, A. and GÓMEZ-IBÁÑEZ, J. (1993) *Regulation for Revenue*. Washington, DC: The Brookings Institution.
- BALDASSARE, M. and PROTASH, W. (1982) Growth controls, population growth, and community satisfaction, *American Sociological Review*, 47, pp. 339–346.
- BALDASSARE, M. and WILSON, G. (1996) Changing sources of support for local growth controls, *Urban Studies*, 33, pp. 459–471.
- BATES, L. and SANTERRE, R. (1994) The determinants of restrictive zoning: Some empirical findings, *Journal of Regional Science*, 34, pp. 253–263.
- BRUECKNER, J. (1990) Growth controls and land values in an open city, *Land Economics*, 66, pp. 237–248.
- BRUECKNER, J. (1995) Strategic control of growth in a system of cities, *Journal of Public Economics*, 57, pp. 393–416.
- BRUECKNER, J. (1998) Testing for strategic interaction among local governments: the case of growth controls, *Journal of Urban Economics*, 44, pp. 438–467.
- BRUECKNER, J. and LAI, F. (1996) Urban growth controls with resident landowners, *Regional Science and Urban Economics*, 26, pp. 125–143.
- COOLEY, T. and LACIVITA, C. (1982) A theory of growth controls, *Journal of Urban Economics*, 12, pp. 129–145.
- DOWNES, A. (1957) *An Economic Theory of Democracy*. New York: Harper and Row.
- DOWNES, A. (1994) *New Visions for Metropolitan America*. Washington, DC: The Brookings Institution.
- DUBIN, J., KIEWIT, D. and NOUSSAIR, C. (1992) Voting on growth control measures: preferences and strategies, *Economics and Politics*, 4, pp. 191–213.
- ELLICKSON, R. (1977) Suburban growth controls: an economic and legal analysis, *Yale Law Journal*, 86(3), pp. 385–511.
- ELLICKSON, R. and TARLOCK, A. D. (1981) *Land-use Controls: Cases and Materials*. Boston, MA: Little-Brown and Company.
- ENGLE, R., NAVARRO, P. and CARSON, R. (1992) On the theory of growth controls, *Journal of Urban Economics*, 32, pp. 269–283.
- EPPLER, D., ROMER, T. and FILIMON, R. (1988) Community development with endogenous land use controls, *Journal of Public Economics*, 35, pp. 133–162.
- FISCHEL, W. (1985) *The Economics of Zoning Laws*. Baltimore, MD: Johns Hopkins University Press.
- FISCHEL, W. (2001) *The Homevoter Hypothesis*. Cambridge, MA: Harvard University Press.
- FRANKENA, M. and SCHEFFMAN, D. (1981) A theory of development controls in a 'small' city, *Journal of Public Economics*, 15, pp. 203–234.
- HAMILTON, A., MADISON, J. and JAY, J. (1961) *The Federalist Papers*. New York: Mentor Books.
- HANUSHEK, E., AND QUIGLEY, J. (1990) Commercial land use regulation and local government finance, *American Economic Review, Papers and Proceedings*, 80, pp. 176–180.
- HARMON, H. (1976) *Modern Factor Analysis*. Chicago, IL: University of Chicago Press.
- HEIKKILÄ, E. (1996) Are municipalities Tieboutian clubs?, *Regional Science and Urban Economics*, 26, pp. 203–226.
- HELSEY, R. and STRANGE, W. (1995) Strategic growth controls, *Regional Science and Urban Economics*, 25, pp. 435–460.
- INDEX PUBLISHING CO. (1996) *Suburban Fact Book*. Chicago, IL: Index Publishing Co.
- KAISER, E., GODSCHALK, D. and CHAPIN, F. S. (1995) *Urban Land Use Planning*. Urbana, IL: University of Illinois Press.
- KIM, J. and MUELLER, C. (1978) *Introduction to Factor Analysis*. Newbury Park, CA: Sage.
- LANKFORD, H. and WYCKOFF, J. (2001) Who would be left behind by enhanced private school choice?, *Journal of Urban Economics*, 50, pp. 288–312.

- LENON, M., CHATTOPADHYAY, S. and HEFFLEY, D. (1996) Zoning and fiscal interdependencies, *Journal of Real Estate Finance and Economics*, 12, pp. 221-234.
- MCDONALD, J. (1993) Tax expenditures for local economic growth: an econometric evaluation of the Illinois Enterprise Zone Program, *Public Budgeting and Financial Management*, 5, pp. 477-505.
- MCDONALD, J. (1995) Houston remains unzoned, *Land Economics*, 71, pp. 137-140.
- OLCOTT, G. (1990) *Olcott's Land Values Blue Book of Chicago and Suburbs*. Chicago, IL: G. C. Olcott and Co.
- OLSON, M. (1965) *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.
- PELTZMAN, S. (1976) Toward a more general theory of regulation, *Journal of Law and Economics*, 19(2), pp. 211-240.
- PROTASH, W. and BALDASSARE, M. (1983) Growth policies and community status, *Urban Affairs Quarterly*, 18, pp. 397-412.
- ROLLESTON, B. (1987) Determinants of restrictive suburban zoning: An empirical analysis, *Journal of Urban Economics*, 21(1), pp. 1-21.
- SHEPPARD, S. (1988) The qualitative economics of development control, *Journal of Urban Economics*, 24, pp. 310-330.
- STIGLER, G. (1971) The theory of economic regulation, *Bell Journal of Economics and Management Science*, 2(1), pp. 1-21.
- TEMPLETON, J. (2002) Land use planning tools in Illinois: preventing or promoting sprawl?, in: W. WIEWEL and J. PERSKY (Eds) *Suburban Sprawl: Private Decisions and Public Policy*, pp. 62-87. Armonk, NY: M. E. Sharpe.
- WHITE, M. (1978) Self-interest in the suburbs: the trend toward no-growth zoning, *Policy Analysis*, 4, pp. 185-204.

Copyright of Urban Studies is the property of Carfax Publishing Company and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.