FEDERALISM AND METROPOLITAN GOVERNANCE

IN CROSS-NATIONAL PERSPECTIVE

The Case of Urban Sprawl

Jefferey M. Sellers
Department of Political Science
University of Southern California
237 Von KleinSmid Center
Los Angeles, CA 90089-0044
sellers@usc.edu

Abstract

This article employs a “bottom-up” approach to analyze efforts to curb exurban sprawl in cross-national perspective. Based on local housing and environmental data in a total of eleven French, German and U.S. urban regions, the analysis demonstrates that policies and institutions addressed to urban governance made more of a difference for outcomes than did federalism and other aspects of vertical integration at the heights of national states. This result highlights the importance of both local policy determinations and the supralocal institutional infrastructures in which they nest.

Over several decades in Europe and more recently in the United States, the spread of low-density urban settlement that consumes open space and other resources, a process known as "urban sprawl", [1] has attracted the growing attention of policymakers and citizens. Efforts to combat sprawl exemplify an emerging set of policies that incorporate and often depend upon localized decision-making. This article argues that an understanding of what makes a difference for effective policy in such domains requires cross-national analytic frameworks that look beyond federalism and other aspects of national governmental structures. For analysis of these domains to be fully satisfactory, it must incorporate decision-making within urban regions themselves, and national and intermediate-level institutions and policies addressed specifically to this urban governance. In Germany, despite the obstacle that federalism might seem to pose to national governing capacities, nationwide policies and institutions have enabled urban regions to curb most dimensions of sprawl effectively and consistently. In France, despite the capacities that vertically integrated governmental organization might seem to give policymakers, effective control of sprawl has varied greatly. Much like in the federal United States, control there has depended on initiatives within urban regions.

My analysis focuses on efforts to address sprawl in eleven disparate but similar service centers located in different regions of Germany, France and United States. After a discussion of the general problem to be addressed, subsequent sections will outline how patterns of sprawl diverged, then examine how local and supralocal initiatives contributed to this divergence.

[1] For the most rigorous attempt to define indicators for the multiple dimensions of sprawl, see Galster *et al*. (2000).

Sprawl and Institutional Capacities for Multilevel Governance

Especially in the urban service centers of advanced industrial societies, sprawl has posed similar challenges. Beyond the political will of national policymakers, and the territorial structure of arrangements at the highest levels of states, an account of efforts to meet those challenges must also consider efforts within urban regions themselves, and the wider set of policies and institutions at higher levels that form the context for those efforts.

Although dispersed settlement may in fact be desirable in certain respects (Gordon, Richardson and Winter 1997), little disagreement surrounds many of the problems it poses (Real Estate Research Corporation 1974; Burchell *et al.* 1998). Sprawl destroys open space and natural habitats, promotes higher levels of air pollution and greenhouse gases, and especially in the United States and Latin America, promotes the growing secession of privileged citizens from society. Control of sprawl, whether defined as "growth management" or "smart growth," requires some form of political control over land use markets. The multiple localities that usually make up urban regions may find cooperation itself difficult (cf. Scharpf 1988). Both shopping by metropolitan residents for packages of taxes and services, and competition among towns for tax revenues can compound urban sprawl (cf. Tiebout 1956).

To compare efforts at control requires a framework that takes account of both national differences and domestic contrasts in policy among subnational and local units. (Lewis 1995; Leo 1998) (Table 1). Institutional capacities can be as critical to these variations as choices of policy. Comparative cross-national policy analysis, viewing these capacities from the top down, has traditionally stressed vertical integration at the higher levels of states as a main determinant of whether policies can be effective (Pierson 1994). In France, for instance, the unitary,

centralized, parliamentary system should have provided some of the strongest capacities among advanced industrial countries to coordinate around effective, consistent policy. (Schonfeld 1966; Zysman 1983; Hall 1986). In the US, by the same token, the federal, decentralized territorial structures and the separation of powers might seem to undermine policymaking at the top even when policymaking elites pursue common ends. Variations in local and state-level initiatives here should yield a highly inconsistent pattern of local outputs. The intermediate place of Germany along this spectrum of vertical integration should yield capacities somewhere in between. Although federal constitutional authorizations give Land governments authority in regional planning and other domains, constitutional fiscal equalization, a parliamentary system and the accompanying close executive-legislative relations still assure moderate vertical integration.

[insert Table 1 about here]

A second set of influences highlighted in bottom-up analyses of policy (e.g., Mazmanian and Kraft 1998) as well as cross-national studies of urban policy (e.g., Wolman and Goldsmith 1991, Keating 1992) leads to different expectations about these outcomes. As in most established domains of policymaking in contemporary developed countries, a specialized array of policies, organized interests and institutions specifically addresses decision-making in urban settings. Combined with local initiatives themselves, these "infrastructures of urban governance" exert the most direct influences on local capacities for the governance of sprawl.

In Germany, this infrastructure furnishes capacities beyond those apparent in federalism. What Goldsmith, Page and others have identified as a Northern European pattern of local government relies on decentralized administration through a national system of local

bureaucracy under a common civil service (Page & Goldsmith 1987; Page 1991; Goldsmith 1995). A "centralized society" of national interests organized through strong parties, corporatist organizations and bureaucratic representatives (Katzenstein 1987) sets much of the policies that local governments administer. Within the economies of urban regions, parapublic arrangements, strong legal authorities over property, public land ownership and other measures provides capacities for more effective, more consistent control than governmental institutions at higher levels of the state alone could assure.

In France, the infrastructure of urban governance could easily undermine the capacities that governmental structures at the top might seem to provide. Typical of the Prefectoral system prevalent in southern Europe and beyond, local territorial officials rather than local governments themselves administer centralized policy. At the same time, weaker party organizations, less organized interests and a less powerful local bureaucracy than in northern Europe detract from the potential for consistently effective local control. Especially in the larger cities, local political entrepreneurs can mobilize local parapublic organizations and clientelistic opportunities as well as representations at supralocal echelons of government around local policy. But these conditions also make effective policies to curb sprawl largely contingent on local initiatives.

In the U.S., relations between the localities and the states resemble those between the federal government and the states.[2] Despite a requirement of state authorization for local government under Dillon's Rule, and considerable variation among states, home rule legislation has in practice generally fostered decentralized, fragmented policy and administration within

[2] Indeed, American authors regularly apply the "federal" label to state-local as well as to state-federal relations (e.g., Peterson 1995), or speak of "state and local government" in the same phrase (Harrigan 1996; Stein 1999).

urban regions. State and federal governments have also remained open to political entrepreneurship from below. At the same time, the parties, interest organizations and local bureaucracies seldom approach the high levels of organization present in northern European democracies. Public-private partnerships, participatory procedures, weak local regulatory powers and fragmented territorial and functional administration have reinforced the role of business and other private actors in local policy.

Especially in the two European countries, the consequences of urban infrastructures for local capacities to govern sprawl thus differ from the implications from structures at the heights of the state. These divergent implications set the stage for a test of what makes the most difference for effective policy.

Dimensions of Sprawl: An Overview of the Outcomes

My analysis focused on efforts to contain sprawl in a total of eleven similar urban regions scattered throughout France, Germany and the United States. The degree that the dispersed settlement linked to sprawl accompanied metropolitan growth furnishes an initial indicator of how policies and implementation varied within and among the three countries. In Germany, this dispersal was clearly controlled the most effectively and consistently.

All of the eleven study cities resembled each other in crucial respects. Each comprised a mid-sized urban center with some 100,000 to 300,000 residents in the central city, and from 250,000 and one million in the surrounding metropolitan region. In each case, services and high-tech activities linked to universities and administrative centers had grown by the 1970s into the predominant component of the central city economy. As the increasing density of all eleven

urban regions indicates (Table 2), service expansion produced metropolitan growth. In each instance, rates of growth in outside the central city exceeded the rate within it.

[insert Table 2 about here]

Unlike the more traditional accounts of policymaking that simply "map forward" from the actions of elites at the heights of states, my analysis incorporates what Elmore has labeled "backward mapping" of policies from results to the efforts (1980) to influence those results. . Doing so, in combination with comparative analysis of urban regions under different national and intermediate governments, enables a comparison of the difference that influences at more than one level of government made for what policymaking in fact accomplished.

The first step in this analysis requires comparison of how much urban sprawl in fact took place. The *density gradient,* an established measure of how much the population density falls with greater distance from the center of a city region at any given time, captures some of the most important dimensions of sprawl.[3] Although the overall levels of sprawl that this indicator demonstrates (Table 2) reflect longstanding traditions and settlement patterns, the rate that settlement has spread out from the 1970s to the end of the 1980s reveals the extent of effective

[3]The density gradient derives from an ordinary least squares regression that employs the natural log of the density for census tracts to estimate:

$$D^*(x) = D_0^* - \succ x + u,$$

where $D(x)$ is the gross population density at distance x from the city center, D_0 is density at distance zero, $\succ$ is the density gradient, u is a random normal error term, and * indicates the natural log. Following established practice, my calculations weighted the gradient according to the area of jurisdictions (see MacCauley 1985).

control. Where faster growth generates greater market pressures for new housing, lower rates of dispersion provide evidence that this control has taken place.

Even a first glance at this data suggest the overriding importance of infrastructures for urban governance to effective policy. Despite the implications from federalism for control in Germany, the limited dispersion in all four German urban regions verifies what anyone who has traveled extensively around western Germany cannot fail to note (Jackson 1985: 295). Even in the fastest growing German city of Freiburg, the rate of sprawl through the 1970s and 1980s differed by at most three thousandths of a point from the other cities. Nor did the varying density among the urban regions appear to make a difference for sprawl. In France, the parallel figures undermine presumptions from an account of institutional capacities that looks solely to the centralized, unitary state and initiatives at higher levels. The results in the fastest growing cities over the 1970s and 1980s varied as much patterns in the United States cities. The cities that grew most, Rennes and Montpellier, diverged the most. Around Rennes, exurban settlement produced a rate of dispersion less than half that around Montpellier. The U.S. results, belying the frequent depiction of uncontrollable sprawl as the rule in the U.S. (Jackson; Downs 1993; Nivola 1999), affirm that efforts to curb sprawl have also register a comparative successes. The example of Madison demonstrates that at least one U.S. urban region had controlled this dimension of sprawl up to the late 1980s with success that approached those of the German cities.[4]

At the same distance from an urban center, development might either concentrate in exurban centers or spread out further among them. Other, less uniformly available indicators for

[4] Portland, Oregon furnishes another example (Leo 1998; Abbott 1983).

various types of open space partly confirm the consistent German success in limiting more general processes of conversion. In three of the four German urban regions, the overall proportions of land in forest rose slightly from the end of the 1970s to 1993; and even the one net loss over this period in Münster amounted to only .04 percent a year.[5] In Dane County around Madison, the sole U.S. setting with parallel statistics, effective efforts to control other aspects of sprawl had failed to halt losses of an average of .34 percent in the proportion of forest from 1980 to 1990.[6] Parallel data for the French cities, although only partly accurate, indicated net losses of forest in at least two of the four.[7] In only one respect, the preservation of agricultural land, had the German urban regions generally failed to stem sprawl.[8] But even the consistency of this comparative shortcoming suggested a more uniform pattern of governance than the federal arrangements there might be expected to cause.

To understand what caused these divergences within and between countries requires a closer look at the policies and other initiatives undertaken at multiple levels. A combination of

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[5] Around Bielefeld, Freiburg and Göttingen, proportions of land surface in forestland rose by .24 percent, .83 percent and .31 percent a year between 1979 (or in the case of Bielefeld, 1978) and 1993. The area around Münster recorded the average annual decline of .04 percent between 1978 and 1993 (All figures from Land statistical offices).

[6] Figures from Dane County Planning Board.

[7] In the areas surrounding Rennes and Nancy, comparable censuses from 1970 and 1988 indicate an annual average loss of .05 percent and .27 percent in the proportions of forested land. For the regions surrounding Clermont-Ferrand and Montpellier, these figures show annual average gains of .09 and .62 percent over the same period. But especially for Montpellier the base figures are probably incomplete. Fifty six percent of communes there and 22 percent in and around Clermont-Ferrand, compared to only 4 percent around both Nancy and Rennes, reported no forest for 1970. Since several of the same communes around Montpellier reported half or more of their land in forest in 1988, this earlier figure appears in many cases to have been inaccurate. Data from I.N.S.E.E. (1988): Ministry of Agriculture (1971).

[8] Average annual losses of farmland there over the late 1970s to 1993 ranged from .13 percent to .27 percent. This rate compared with an average loss of only .13 percent around Madison, the sole other urban region with comparable data.

backward mapping with forward mapping, by comparing these initiatives with results, will confirm the role that urban governance and the accompanying infrastructures played.

The Sources of Control: A Multilevel Analysis

The policies that produced these results emerged through choices beyond as well as within each urban region. In every case where efforts to curb sprawl succeeded, elements at both scales played some role. Both comparative analysis and closer examination of the measures that contributed to control in each case serve to illuminate these choices. In each country, local choices and infrastructures of urban governance proved more decisive than vertical integration of the state at higher levels.

An index that measured shifts in development from previous patterns throughout each metropolitan area enabled a closer assessment of effective control over time. Census data on the construction dates or overall levels of housing for different periods offered the basis for a more finely calibrated cross-national indicator of these temporal shifts.[9] To gauge how patterns of new construction altered existing settlement in a given period, an Index of New Housing systematically compared the patterns of housing constructed during that period with the pattern

[9] To calculate the index for the French metropolitan areas, where municipal boundaries had remained stable, I used the total housing units in the five censuses from 1962 through 1990. For the German and U.S. settings, changing municipal boundaries and less frequent censuses over the same period necessitated an alternative approach. In these two countries, responses to the most recent census (1990 in the U.S., 1987 in Germany) provided data on the age of housing units that could be taken as an archaeology of how development had evolved over the preceding three decades. Although replacement of housing posed a problem in different ways for each of these methods, these anomalies are unlikely to account for variations between metropolitan areas within countries. Moreover, parallel calculations using both methods in the French settings and in greater New Haven, where local boundaries had also remained the same, generated equivalent results.

of all housing at the beginning of the period. Calculated for each local jurisdiction, this index divided the proportion of all metropolitan housing units constructed over the relevant period in a given local jurisdiction by the proportion of all the pre-existing metropolitan housing stock in that place.[10] With a reading of one, the town had received precisely the same proportion of metropolitan construction in that period as its share of the pre-existing housing units. A reading above one indicated that new housing construction had shifted toward the town; below one, that the town had received a lower share of new construction than previously.[11] To measure shifts of development in response to the attempts of policymakers to protect environmentally sensitive areas, this index could then be compared with local indicators of environmental vulnerability. For this purpose I employed three measures: the distance from the metropolitan center to the

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[10] Mathematically, the index for each town in a metropolitan area corresponds to:

$$\frac{(c_i / C_i)}{(t_{i-1} / T_{i-1}),}$$

where c_i = the housing units constructed in that town over period *i*, C_i = overall construction of housing units in the metropolitan area over that period, t_{i-1} = the total housing units in the town at the beginning of period *i*, and T_{i-1} = the total housing units in the metropolitan area at the beginning of period *i*.

[11] In the French settings, the figures from each census specified the values of t_{i-1} and T_{i-1}. I calculated $c_i = t_i - t_{i-1}$ and $C_i = T_i - T_{i-1}$. In the other two countries the most recent census provided totals of housing constructed in successive periods. These figures could be assigned values of c_i and C_i. The total housing units in the latest census, or t_f, provided the information to estimate

$$t_{i-1} = t_f - \left(\sum_{i=1}^{n} (c_i)\right),$$

where n = the number of periods $(i, j, k, \ldots)$ between t_{i-1} and t_f. A parallel calculation for aggregate metropolitan figures produced an estimate for T_{i-1}.

town, the proportions of local land in forests or open space, and either the proportion of local land in farms or a substitute indicator derived from the proportion of employed residents in agriculture. A positive correlation with greater distance from the urban center during a given period, for instance, indicated that new development had spread further into the urban periphery by comparison with previous patterns; a negative correlation manifested a shifted of development back toward the central city. Similarly, negative correlations with proportions of open space, forest land or agricultural land in towns demonstrated that new development had shifted away from places with these resources. Calculated by municipal jurisdictions rather than by more precise spatial coordinates, correlations with the New Housing Index furnished a proxy for more place-specific measures of how much new development actually consumed farmland or forest within a locality. But this indicator measured variations by the municipal governments with direct responsibilities for planning and permitting.

The shifts these correlations measured might take place as a result of either supply or demand in metropolitan land use markets. Where possible, I supplemented correlations that showed housing shifted away from protected areas need with further evidence that constraints on markets had brought about the result. Rising prices, or at least a persistent volume of construction, helped to demonstrate that demand for housing in those areas did not simply subside. Although the German and U.S. cities were generally located in states or *Länder* with potentially divergent policies, analysis of efforts at control at intermediate as well as national and local levels over time took account of these domestic variations.

Germany. This closer examination of sprawl in the German urban regions shows that housing markets there have come increasingly under control. Despite federalism, a nationwide framework of rules has imposed increasingly consistent, generally effective local patterns of land use. The initial sources of this control stemmed largely from measures at the Land and local levels.

Correlations between the New Housing Index and the indicators of sprawl for three successive periods permit an overview of this evolution (Table 3). In general, after 1958-1968, the correlations with distance from the center and proportions of forest either turned increasingly negative or persisted at markedly negative levels. A range of local trajectories fit into this common trend. In the Land of North Rhein-Westphalia, development around Münster manifested little evidence of effective control at the start of this period. There and around neighboring Bielefeld, new development moved as early as the 1970s back toward the central city. By the 1980s, and in Bielefeld well before, a shift away from forests accompanied this spatial trend. Around Freiburg and Göttingen, each of them in a different Land, development persisted in previous patterns of spatial concentration, but after 1978 moved away from forested areas. Although declining overall growth in housing suggests a receding market push in favor of sprawl, the negative correlations had sometimes grown despite relatively small changes in overall construction. At the same time, in every urban region but Freiburg, new development shifted toward agricultural towns.

[insert Table 3 here]

The regulation that brought about these patterns originated in a long tradition of protections on such sensitive environmental domains as the Black Forest, and the pioneering

nineteenth-century efforts of German municipalities to introduce land use controls. Since the interwar period, professional planners in the local governments of cities and in technical university faculties across the country had worked to develop these rules. In 1960, the first national construction code prescribed limits to construction in the so-called "outer areas" beyond urbanized parts of the metropolitan area (BBauG § 35). Spurred by such nationwide environmentalist organizations as BUND as well a proliferation of local movements, the national he Social-Liberal coalition of the 1970s extended environmental policies in numerous areas. These efforts culminated in a mandate of the Natural Protection Law of 1976 that losses of natural areas to development be compensated through creation of new protected natural areas (NaturG §8).

An array of policies in other domains reinforced these constraints on new development in urban peripheries and ecologically sensitive lands. In the domain of transportation, a gas tax six times as high as in the United States has supplemented a variety of measures that limit and control automobiles or promote public transit (Pucher and Lefèvre 1996: Ch. 3). Prohibitions on construction of larger supermarkets outside urbanized areas limited shopping opportunities that might invite more dispersed housing. Even in 1995, one report found only 22 percent of retail sales space in Western Germany outside urbanized areas (Bunge and Spannagel 1995: 41). Subsidies for farmers discouraged conversion of agricultural land (Nivola 1999). Finally, systems of urban and regional planning that developed at local and Land levels over the 1950s and 1960s received national sanction under a national law of 1965. Additional laws under the Social-Liberal coalition prescribed legal frameworks for urban renewal itself. Such measures

systematically encouraged urban governments to relieve pressures for exurban expansion through new development in already urbanized areas.

In North Rhein-Westphalia, the Land government for Münster and Bielefeld had begun metropolitan and regional planning before the legislation of the 1970s. As the surge of development outward from Münster during the 1960s suggests, maintenance of centralized settlement in these metropolitan areas was by no means foreordained. But over the following decade, with the introduction of regional planning frameworks, the initiation of urban renewal and major redefinitions of municipal boundaries, the falling correlations with distance from the center testify to growing control over dispersion from both urban centers. After 1978, with the passage of national environmental legislation that placed new restrictions on development of forested land, protections on forests that regional planning had already helped secure around Bielefeld ushered in increasingly negative correlations with forest in both regions. Although new development in both regions took place increasingly through conversions of farmland, the newly developed housing continued to concentrate closer to the urban center. Between 1980 and 1990, land prices that rose faster in each surrounding urban region than in the central cities manifested how regulation and planning had stemmed persistent pressures for exurban development.[12]

In the other two German metropolitan areas, effective local control had generally preceded regional planning at higher levels. Although Baden-Württemberg initiated its first plan at the Land level in 1971, and another in 1983, the region surrounding Freiburg only issued its

[12] In Münster the ratio of construction-ready land prices in the central city to those in the rest of the metropolitan area fell from 4.48 to 4.03 over this period; in Bielefeld the same ratio dropped from 1.95 to 1.41 (Data from North Rhein-Westphalia Statistical Office).

first plan in 1980. In Lower Saxony the Land government legislated its first plan in 1982, and the region surrounding Göttingen only issued its own plan under this scheme in 1987. But especially in and around Freiburg, the correlations demonstrate that protective policies had directed new development as early as the 1960s away from forests, agricultural land and peripheral areas. In both metropolitan areas, steady or even rising overall rates of construction accompanied these trends into the 1970s. In both urban regions, as in their counterparts to the north, development since the protective legislation of the 1970s had increasingly spared forested areas. As in North Rhein-Westphalia, the protections stopped short of preventing development in agricultural areas. Around Freiburg, though not around Göttingen, rising peripheral land prices in relation to those in the central city indicated growing demand for outlying development despite the accumulating restrictions.[13]

Even before national legislation systematized policy from above, the national system of regional cooperation and planning had enabled increasingly consistent formulation and implementation of policy from below. Around Bielefeld and even more around Freiburg, controls in place by the early 1970s had made protection of natural and peripheral land a foregone conclusion even prior to the growth of national legislation. In the other two metropolitan areas--in Münster under the same Land government as in Bielefeld--systematic

[13] In Freiburg the ratio of prices for construction-ready land in the central city to that in the surrounding Landkreis fell from 1.96 in 1975 to 1.42 in 1990 (Sellers 1994: 645). In Göttingen, the central city there had made only limited land available for development in the central city during the 1980s. There prices in the central city rose in relation to the surrounding area. Since Land statistics on Göttingen do not separate out the central city figures from those from the rest of the Landkreis, these figures are not precisely comparable those elsewhere. In 1970, the ratio of city prices for construction-ready land to those for the entire Landkreis stood at 1.27. Over 1986-1990, this ratio averaged 2.15. At the same time, the amount of construction-ready land that changed hands in the city fell from over 300 square meters per year to under 100 square meters a year (Lower Saxony Statistical Office 1971; 1990).

local protections followed national initiatives. By the 1980s, development in all four metropolitan areas had shifted at least marginally away from wooded areas and the urban periphery, but just as consistently now focused in the agricultural areas.[14]

France. The crucial comparative question about France arose out of the resemblance between results in the French and U.S. outcomes. In France, unlike in the United States, national efforts to manage aspects of urban sprawl had been undertaken from the late 1960s. Even under the unified, centralized French state, the divergent results of these efforts in settings like Rennes and Montpellier manifests the importance of urban governance and the associated infrastructure for effective policies toward sprawl.

In France, the correlations show a broad shift from a generally centralized pattern of new construction to an increasingly dispersed, differentiated one (Table 4). Everywhere but around Clermont-Ferrand, development in 1962-1968 correlated negatively with all the indicators. In 1968-1975, as national Gaullist initiatives to promote growth and development around the country took effect, concentrated new development in the urban centers of all four regions brought even stronger, more uniformly negative correlations. After that period, however, the correlations point increasingly to random variations with the environmental indicators. By 1982-1990, in the fast-growing urban region around Montpellier as well as the slow-growing region around Nancy, individual indicators began to show incursions of new development into

[14] Except for the negative correlations with forestland around Münster and Göttingen, these correlations also registered statistical significance at a level of .05. Changes in the subsidies and rules the federal and Land governments applied to housing cannot account for these shifts either. Legislative efforts to encourage the sort of owner-occupied housing that predominated in the periphery expanded over this period (Hassis 1987: 70-71).

agricultural or forested areas. In the moderately growing regions around Rennes and Clermont-Ferrand, increasingly negative indicators for distance and farms on the one hand and forest on the other suggested emerging controls on aspects of sprawl.

[insert Table 4 about here]

At the national and intermediate levels of the state, unitary, centralized authorities might appear to possess the means to bring about more effective environmental policymaking than in Germany. This conclusion would fail to take account of the systematic influence from infrastructures for local implementation on the application, and ultimately the explicit aims of national rules. Since the 1950s, as in Germany, the supply of legal provisions that might be applied as direct protective constraints on local land use had proliferated. Introducing within one year of the German Construction Law, the French *Code d'Urbanisme* had ballooned from 216 pages in 1964 to 919 pages in 1988. The much-discussed decentralization of local government authorities in the early 1980s centered around transmission of powers for planning and construction permitting to cities. Yet even at the beginning of the 1990s these rules imposed manifestly less strict constraints on local land use markets than in Germany. The origins of the qualifications lay at least partly in the same localized interests that shaped decentralization in general (e.g., Grémion 1991). The result would help perpetuate both the administrative regulation and the entrepreneurial opportunities of the infrastructure for local government.

The other policies that shaped the demand side of land use markets also provided less reinforcement to land use control than in Germany. In contrast to most northern European countries, postwar France concentrated transportation policies on "a vast programme of investment in roads and the automobile" (Pucher & Lefèvre 1996:65) that remained

uncoordinated with land use policies. Programs to provide financial incentives for property ownership added to incentives for city dwellers to move to the urban periphery. Until the 1990s, efforts to control the spread of shopping centers into the periphery also remained limited and contingent. Passed in 1973 at the urging of threatened artisans and retailers in the downtowns, the Royer Law had empowered departmental commissions composed of representatives from organizations of consumers and shopkeepers as well as local officials to deny permits supermarkets beyond a moderately large size (Auby & Périnet-Marquet 1995: 131). Around Clermont-Ferrand, Montpellier and Nancy, as in much of the rest of France, these arrangements only partly braked the spread of large stores and discount outlets into the urban periphery.[15] Political favors, even rumored bribes to local officials on the Commissions helped to undermine the process (Keeler 1985). Only in 1993, with a moratorium on construction and subsequent new rules, did the national government intervene to tighten these rules effectively. Some of the most generous farm subsidies in the EU discouraged agricultural conversion (Nivola 1999), but had not prevented the extensive sale of farms around cities like Clermont-Ferrand and Montpellier.

The most direct efforts at control took the form of a nationwide initiative at the departmental level among such national officials as the Prefect and Regional Directorates of the Infrastructure and Planning Ministry. Approved by the Prefect under national procedures, a *schéma directeur* established corridors around existing urbanized centers for new development, and designated peripheral forested and agricultural areas to be protected as off limits to new

[15] For a balanced assessment, see Dezert, Metton & Steinberg (1991: Ch. 8).

construction. Along with the permitting process itself, transportation and other programs related to patterns of land use in city regions were to follow and reinforce these prescriptions.

In comparison with the consistency of the German policies, the divergence of local policy trajectories under these policies from above is striking. Especially in the two fastest growing city regions of Rennes and Montpellier, divergent local choices produced a particularly stark contrast in local results. In Rennes, the history of efforts under Mayors Freville in 60s and 70s and Herve after 1977 demonstrates how essential local political entrepreneurship was to successful control. Local political elites linked to the mayoral majority in the central city had worked on a *schéma directeur* for much of city region in 1974, another in 1982, and another in 1994. Cooperative arrangements within a district that extended to just under half of the communes in the urban region undergirded policies to control development. The decentralization of planning and permit authorities from the central state to the municipal level in the 1980s enhanced local capacities for control. By the 1990s, as the number of communes belonging to the district expanded, cooperative arrangements extended beyond a shared planning and permit agency to a shared tax base.

Overall, these arrangements yielded comparatively slight evidence of control within the urban region at large. Following the wave of construction toward the city center in the 1950s, correlations with distance from the center, with agricultural concentrations and with forestland averaged slightly negative. But within the communes of the District, the negative correlations rivaled those of the German settings (Table 5). In particular, as in Germany, local efforts had maintained more centralized development and avoided exploitation of local forestland. Here the enhancements to local capacities as a result of decentralization made a more obvious difference.

Correlations of new housing with all three indicators shifted even more decisively negative in the 1980s, as the average correlation fell to a new low.

[insert Table 5 about here]

In Montpellier, however, national officials were unable to secure sufficient agreement among local officials to issue a *schéma directeur*. In the 1960s and early 1970s disagreements between the central city mayor, François Delmas, and others on the interlocal commission forestalled approval of a *schéma directeur* like those in the other metro areas. Under Mayor Freche in 1980s and 1990s, the central city engaged in constant competition for shopping centers, housing and other new development with surrounding towns. In answer to the mixed use riverside development that Frêche had christened Port Marianne on the River Lez in Montpellier, a rival mayor in the neighboring commune of Lattes downriver secured approval of a another mixed-use riverside project called Port Ariane. In response to the growing accumulation of hypermarchés in the towns of the periphery, Frêche and his planners had sought to construct new commercial centers within the limits of the central city. The continued efforts of the Prefect and other national officials to control this competition through such procedures as environmental impact review often fell short. By the late 1970s, as development shifted out from the urban center, correlations with distance from center, forestland and farmland turned slightly positive. Here the decentralization of the 1980s had an opposite effect on control from that around Rennes. As outlying towns mobilized with growing effectiveness around competitive new development, the correlations of new housing with two of the three environmental indicators edged higher.

In the urban regions around both Nancy and Clermont-Ferrand, the evidence of control remained more limited than around Rennes. In both settings, the *schémas* emerged too late to bear responsibility for the more centralized patterns of development that persisted into the early 1970s. Thereafter, evidence of effective protections remained more mixed despite fewer pressures from development markets than in Rennes. Around Clermont-Ferrand, where more forest had been retained, the average correlations fell slightly below zero. In Nancy, development shifted away from forested areas but strongly toward agricultural ones. In neither setting did new construction move decisively back toward the center.

Looking at efforts to control sprawl clearly belies any conclusion that the centralized, unitary French state insured consistently effective control. Rather, inconsistent local versions of national policy produced divergent local results. In the urban region surrounding Rennes, local political entrepreneurship and interlocal cooperation enabled increasing control. In and around Montpellier, local entrepreneurship disabled the efforts of national officials. Newly decentralized capacities that enhanced control around Rennes had aggravated sprawl around Montpellier. Weaker commitments among national policy elites on behalf of control than in Germany helped enable such divergences. Yet supralocal commitment alone cannot explain why the lesser overall control took the form of greater variation among urban regions rather than uniform tendencies like those apparent among the German cities.

United States. For the U.S., the surprise in the local results lay in the comparative success of efforts to control sprawl in Madison. The established view of US policy points both to lack of commitment as well as fragmented, limited systems of governance as reasons to expect

less effective control of sprawl across the country (Plotkin 1987; Downs 1993; Nivola 1999). As in France, closer examination reaffirms the limits to policies and institutions at the national and intermediate level as determinants of local policy, and ultimate results. The example of Madison demonstrates how that a combination of local efforts with adequate supportive infrastructures at the state level could still produce levels of control that rival those of German urban regions.

Correlations with available environmental indicators confirm how far this success diverges from results in the other U.S. cities, but also manifest its limits (Table 6). In the 1970s, new development shifted toward areas of more farmland, indicating accelerated conversion, and a strong correlation with centrality shrank by half. By the late 1980s, however, as more of development moved away from the most environmentally sensitive areas, all three correlations fell below zero again. This result was especially striking in light of the growing pressures for development evident in the rising overall rate of new housing. In the area around Durham, by contrast, new development continued to take place more in the areas of forests, farms and greater distance from the center. But there, an even more pronounced acceleration of new housing rates in the late 1980s had also corresponded to a shift of new development toward the downtown. In New Haven, evidence of emerging curbs on sprawl remained the weakest. In the late 1980s, even as new housing corresponded less systematically with distance from the center, it moved increasingly toward towns with more open space and farmland.

[insert Table 6 about here]

The comparative success of Madison in braking sprawl resembles results ascribed to Portland and a growing number of other U.S. cities (Leo 1998; Lewis 1996). Beginning in the 1970s, city and county officials brought an array of localized policies to bear to slow urban

sprawl beyond the boundaries of the central city. The Dane County Planning Commission established an urban growth boundary in 1973 that limited development in most areas beyond the central city boundary. Initially, declining or disappearing negative correlations with distance from the center and with farmland suggest that regulation accelerated sprawl. But the city government eventually developed means to reinforce the boundary. Reinforced through the exercise of municipal zoning powers beyond the city limits, city officials required that outlying areas be annexed in order to receive the water and sewer services the government owned. Officials in surrounding towns and the County Planning Commission also encouraged farmers to take advantage of property tax credits for farmland preservation. These explicit choices reinforced implicit decisions that limited the expansion of roads, shopping centers and other services beyond the central city. Although Lake Mendota imposed a natural barrier to the spread of development northward from the city center, these initiatives brought development on other sides of the city increasingly under control.

This comparative success came despite the homeowner subsidies, automobile supports and other policies that many analysts have taken as more or less uniform impediments to control of sprawl in the U.S. As with other U.S. successes such as Portland (Abbott 1983), authorizations and incentives specific to the state of Wisconsin bore part of the responsibility. In addition to the authorizations for county as well as city planning and regulation, Wisconsin supplied legal authorizations for annexation, extralocal zoning jurisdiction, and tax credits for farms (93-94 Wis. Stats. 62.021; 62.23(7a); 62.075). Without these added elements of infrastructure, local officials could not have exercised what control they did.

Durham and New Haven demonstrate the difference that the absence of these coordinated multilevel efforts could make. Around Durham, local officials had taken advantage of similar authorizations for county planning and extralocal jurisdiction (1987 N.C. Stats. 160A-46; 160A-360) only later and to a lesser degree. In the late 1980s Durham had established an urban growth boundary, and neighboring Orange County had established a rural buffer. Although effects from these measures may be evident in the declining correlations with distance, and the urban boundary in Durham remained so extensive as to permit continued sprawl. Unlike in Madison, fragmentation among counties also hindered coordination around a wider set of policies to apply to the entire metropolitan area. During the late 1980s in New Haven, despite local activism and zoning in outlying towns, new housing continued to perpetuate sprawl more than in any other setting.

The comparative success of Madison reaffirms the importance of governance within metropolitan areas to control over sprawl. Capacities for that governance still depended in part on the authorizations and other elements of infrastructure that the state government had supplied. A strong federal policy against sprawl would be difficult to imagine in a country with landscapes as diverse as those of the United States. Yet comparison among these U.S. cities shows that even in this country effective governance of sprawl relies partly on supralocal initiatives.

Conclusion

Clearly urban governance and the infrastructures that frame it not only qualify the difference between federal and unitary regimes, but can override vertical integration of the state at higher levels as influences on policy toward sprawl. With the partial exception of protections

on agricultural land, Germany manifests a national political will to control sprawl. But despite the apparent weakness that federalism entails for governmental capacities at higher levels, more consistently effective policies have also enabled more control of sprawl than in the other countries. Not only increasingly uniform practices of metropolitan cooperation and planning across the country, but accumulating national legislation and parallel local efforts within towns have contributed to this result. In France, despite national initiatives, the centralized, unitary state has carried out policies toward sprawl that depend as much on local contingencies for effectiveness as in the decentralized, fragmented United States. As the examples of Rennes and Montpellier show, localized political entrepreneurship and especially interlocal cooperative arrangements made a critical difference for this outcome. In the United States, despite an absence of commitment as well as lesser organizational capacities in state and federal governments, local efforts could nonetheless sometimes bring about a degree of control over sprawl with adequately supportive infrastructures at the state level. (Table 7)

[insert Table 7 about here]

Greater commitment among German national policymakers to control sprawl cannot fully account for these patterns. In both France and the United States, the difference from the German practices stems not just from less extensive or successful results on average but from less consistency in local efforts. Testing for this consistency in other areas demands the sort of "bottom-up" analysis conducted here. Throughout advanced industrial countries, as economic and environmental policymaking have depended increasingly depended on localized components, the multilevel policymaking that has emerged seldom consists solely of either autonomous local measures or implementation of commands from above. In Germany, in

Madison, and probably to a degree in Rennes, policies and institutions at supralocal scales proved essential to successful control. But even in the German settings, national policies grew out of and ultimately depended on decisions within urban regions. Only empirical accounts that incorporate the view from the bottom up, and only comparative analytic frameworks that take explicit account of both the local and the supralocal, can fully capture either the determinants or the consequences of policies like these.

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Table 1

Three Sources of Expected Variations in Control Over Exurban Development

I. Variations in Supralocal Intervention

(a) Structures of Government at Intermediate and/or National Levels

Germany (Moderate vertical integration with equalization)	**France** (High vertical integration)	**United States** (Low vertical integration)
Somewhat more effective (contingent by Land)	More effective (consistent)	Less effective (contingent by state)

(b) Infrastructure of Urban Governance

Germany (Centralized policy, decentralized administration, limited intergovernmental entrepreneurship)	**France** (Centralized policy and administration, local intergovernmental entrepreneurship)	**United States** (Decentralized policy and administration, local intergovernmental entrepreneurship)
More effective (consistent)	More effective (contingent)	Less effective (consistent)

II. Variations in Governance Within the Metropolitan Area

(Depends in each country on efforts of local governments and other actors)

Table 2
Overall Density and Density Gradients, 1970-1990

	Overall Density		Density Gradient		
	Persons / km^2	Increase in persons / km^2 (per year)	Gradient	R^2	Change in gradient (per year)
GERMANY (1970-1987)	[1987]		[1987]		
Freiburg	230	1.26	0.190	0.86	-0.0005
Münster	231	0.81	0.124	0.80	-0.0002
Bielefeld	390	0.35	0.098	0.89	-0.0006
Göttingen	219	0.04	0.174	0.75	-0.0003
FRANCE (1975-1990)	[1990]		[1990]		
Montpellier	191	3.36	0.399	0.74	-0.0047
Rennes	322	3.93	0.219	0.94	-0.0018
Clermont-Ferrand	417	2.21	0.268	0.74	-0.0025
Nancy	504	1.22	0.313	0.81	-0.0017
UNITED STATES (1970-1990)	[1990]		[1990]		
Durham	154	2.38	0.180	0.75	-0.0048
Madison	118	1.26	0.250	0.95	-0.0009
New Haven	548	1.75	0.188	0.79	-0.0017

SOURCES: (Germany) Local statistics offices; (France) I.N.S.E.E., Évolutions démographiques 1975-1982-1990, Departmental volumes; (United States) U.S. Bureau of the Census, SMSA Reports for 1970 and 1990.

Table 3

Correlations of New Housing Index with Environmental Indicators in the German Urban Regions, 1958-1987

(a) Bielefeld

	1958-1968	1969-1978	1979-1987
Distance from central city	-.27	-.48	-.43
Land in forest	-.11	-.30	-.39
Land in agriculture	-.31	.17	.20
Average correlation	-.23	-.20	-.21
(without farmland)	-.19	-.39	-.41
Overall rate of new construction ((Units added/Year) / Total Units, 1987)	.025	.023	.014

(b) Münster

	1958-1968	1969-1978	1979-1987
Distance from central city	.16	-.29	-.25
Land in forest	.06	.13	-.09
Land in agriculture	.02	.16	.39
Average correlation	.08	0	.02
(without farmland)	.11	-.08	-.17
Overall rate of new construction ((Units added/Year) / Total Units, 1987)	.014	.015	.010

(c) Freiburg

	1958-1968	1969-1978	1979-1987
Distance from central city	-.39	-.35	-.33
Land in forest	-.28	-.16	-.33
Land in agriculture	.11	.15	.11
Average correlation	-.19	-.15	-.18
(without farmland)	-.34	-.25	-.33
Overall rate of new construction ((Units added/Year) / Total Units, 1987)	.019	.025	.017

(d) Göttingen

	1958-1968	1969-1978	1979-1987
Distance from central city	-.27	-.44	-.24
Land in forest	.02	.16	-.10
Land in agriculture	-.16	-.14	.16
Average correlation	-.14	-.04	-.06
(without farmland)	-.12	-.14	-.17
Overall rate of new construction ((Units added/Year) / Total Units, 1987)	.020	.018	.013

NOTE: Pearson correlations measure average relation of New Housing Index by commune with distance from city center; with proportion of cadastral land in forest for 1979; and with proportion of cadastral land in agriculture for 1979. Housing figures calculated from age of housing units given in responses to 1987 Census. Correlations employ statistics by town for the city and surrounding Landkreise (counties) (n = 39 (Bielefeld), n=49 (Münster), n = 75 (Freiburg), n=29 (Göttingen)).

SOURCES: Statistical Offices for North Rhein-Westphalia (Bielefeld and Münster), Lower Saxony (Göttingen), Baden-Württemberg (Freiburg).

Table 4

Correlations of New Housing Index with Environmental Indicators in the French Urban Regions, 1962-1990

(a) Montpellier

	1962-1968	1968-1975	1975-1982	1982-1990
Distance from central city	-.21	-.40	.02	.02
Land in forest	-.06	-.06	.08	.19
Land in agriculture	-.09	-.19	-.04	.03
Average correlation	-.12	-.22	.02	.08
Overall rate of new construction ((Units added/Year) / Total Units, 1990)	.029	.026	.021	.027

(b) Rennes

	1962-1968	1968-1975	1975-1982	1982-1990
Distance from central city	-.38	-.57	-.14	-.22
Land in forest	-.02	-.11	-.18	.02
Land in agriculture	-.36	-.30	-.0	-.08
Average correlation	-.26	-.36	-.11	-.09
Overall rate of new construction ((Units added/Year) / Total Units, 1990)	.025	.021	.018	.019

(c) Clermont-Ferrand

	1962-1968	1968-1975	1975-1982	1982-1990
Distance from central city	.11	-.15	-.004	-.02
Land in forest	.14	-.17	-.09	-.24
Land in agriculture	.21	-.40	-.02	-.02
Average correlation	.15	-.24	-.05	-.08
Overall rate of new construction ((Units added/Year) / Total Units, 1990)	.028	.022	.015	.014

(d) Nancy

	1962-1968	1968-1975	1975-1982	1982-1990
Distance from central city	-.22	-.13	-.04	-.03
Land in forest	-.04	-.15	.22	-.14
Land in agriculture	-.06	-.09	-.10	.20
Average correlation	-.11	-.12	-.01	.01
Overall rate of new construction ((Units added/Year) / Total Units, 1990)	.025	.016	.018	.011

NOTE: Pearson correlations measure average relation of New Housing Index for housing added per year during each period by commune with distance from city center; with proportion of cadastral land in forest for 1970 (periods 1962-1968 and 1968-1975) and for 1988 (periods 1975-1982 and 1982-1990); and with proportion in agriculture of the population residing in ordinary households in 1962 (periods 1962-1968 and 1968-1975) and proportion in agriculture of active employed cantonal population in 1982 (1975-1982 and 1982-1990). Change in housing for each period represents total at beginning of period minus total at end of period.

SOURCES: I.N.S.E.E., *Recensement Général de la Population de 1962* ; *id., Recensement Général de la Population de 1982: Évolutions démographiques* ; *id., Recensement Général de la Population de 1990: Évolutions démographiques*; *id., Communoscope* (1988): Ministry of Agriculture, *Census de l'Agriculture 1970.*

Table 5

Correlations of New Housing Index with Environmental Indicators in the District of Rennes, 1962-1990

	1962-1968	1968-1975	1975-1982	1982-1990
Distance from central city	-.24	-.45	-.41	-.59
Land in forest	.19	-.65	-.21	-.47
Farm workers (1980)	-.31	-.08	-.05	-.16
Average correlation	-.12	-.39	-.22	-.41
Overall rate of new construction ((Units added/Year) / Total Units, 1990)	.015	.027	.033	.027

SOURCES: I.N.S.E.E., *Recensement Général de la Population de 1962* ; *id., Recensement Général de la Population de 1982: Évolutions démographiques* ; *id., Recensement Général de la Population de 1990: Évolutions démographiques*; *id., Communoscope* (1988): Ministry of Agriculture, *Census de l'Agriculture 1970.*

Table 6

Correlations of New Housing Index with Environmental Indicators in the United States Urban Regions, 1960-1988

(a) Madison

	1960-1969	1970-1979	1980-1984	1985-1988
Distance from central city	-.52	-.24	-.11	-.16
Forest and other undeveloped land	.01	-.12	-.09	-.11
Land in agriculture	-.20	.26	.02	-.11
Average correlation	-.23	-.03	-.96	-.13
Overall rate of new construction ((Units added/Year) / Total Units, 1988)	.018	.024	.019	.021

(b) Durham

	1960-1969	1970-1979	1980-1984	1985-1988
Distance from central city	-.13	-.03	.27	.13
Farm workers (1980)	-.11		-.02	.04
Average correlation	-.12	-.12	.13	.09
Overall rate of new construction ((Units added/Year) / Total Units, 1988)	.018	-.07	.032	.044

(c) New Haven

	1960-1969	1970-1979	1980-1984	1985-1988
Distance from central city	.41	.73	.69	.42
Open space	-.10	.17	,24	.32
Farm workers (1980)	.35	.39	.03	.26
Average correlation	.22	.43	.32	.33
Overall rate of new construction ((Units added/Year) / Total Units, 1988)	.016	.015	.014	.018

NOTE: Pearson correlations employ New Housing Index for housing added per year by town (n=59 (Madison, n=13 (Durham), n= 15 (New Haven)). In all three settings this Index relies on ages of housing given in answers to 1990 census questionnaire. For Madison, the environmental indicators derive from Planning Commission figures for proportion of town in crops or pastures for 1980 (1960-1969 and 1970-1979) and 1990 (1980-1984 and 1985-1988); and for proportion of town in forest for 1980 (1960-1969 and 1970-1979) and 1990 (1980-1984 and 1985-1988). For Durham and New Haven the indicator of farmland uses the proportion of resident workers in agriculture in the census of 1980. For New Haven, the indicator for forest relies on the estimated proportion of land in open space in 1984; no estimate of forest or open space by town for metropolitan Durham was available.

SOURCES: U.S.Census Bureau, *1990 Census of Population and Housing: Social and Economic Characteristics, State Reports*; Dane County Planning Commission; South Central Regional Council of Governments, *Growth and Change: Issues for the 90's* (North Haven, Conn., 1988), p. 26.

Table 7

Expected and Actual Control of Urban Sprawl

	Germany	**France**	**United States**
Efforts at supralocal intervention	Yes	Yes	Few
Expectations from national and intermediate governmental structures about control	Somewhat effective, contingent	Consistently effective	Less effective, contingent
Expectations about control as a result of infrastructures of urban governance	Consistently effective	Contingently effective	Contingently effective
Actual control	Consistently effective (except protection of farmland)	Contingently effective	Contingently effective
Sources of effective control	Central policies, national practices of local cooperation	Central policies, local political entrepreneurship	Intermediate (state) policies, local political entrepreneurship