Piling On: Multilevel Government and the Fiscal Common-Pool

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This article discusses the common-pool problems that arise when multiple territorially overlapping governments share the authority to provide services and levy taxes in a common geographic area. Contrary to the traditional Tiebout model in which increasing the number of competing governments improves efficiency, I argue that increasing the number of overlapping governments results in "overfishing" from the shared tax base. I test the model empirically using data from U.S. counties and find a strong positive relationship between the number of overlapping jurisdictions and the size of the local public sector. Substantively, the "overlap effect" amounts to roughly 10% of local revenue.

From cities and counties to school districts and transit authorities, there are nearly 90,000 governments in the United States with the power to tax. The existence of many local governments is often seen as a source of healthy interjurisdictional competition for mobile residents and capital. However, the proliferation of governments in the United States has resulted largely from the vertical layering of jurisdictions on top of one another rather than the horizontal partitioning of territory into competing units. Territorially overlapping, single-function jurisdictions, including 35,000 special districts and 13,500 school districts, constitute the majority of local governments.[1] In some areas, it is possible to find a dozen or more overlapping layers of local government. Instead of competing with one another for residents, overlapping governments share the authority to tax and provide services to a common population.

A central theme in the recent literature on distributive politics is that an overspending bias emerges when authority over fiscal policy is shared by multiple officials or jurisdictions serving different constituencies.[2] That is, when the benefits of spending accrue disproportionately to a particular group but the costs of taxation are spread over all groups, a problem arises that is analytically similar to the "overfishing" problem seen in environmental economics (Benhabib and Radner 1992; Levhari and Mirman 1980). Individual jurisdictions do not internalize the full costs of raising revenue and hence run larger budgets than would a single general-purpose government that considered the effects of its policies on all groups. A key prediction from such models is that the size of government increases with the number of spending authorities.

In this article, I argue that the vertical layering of local government jurisdictions in the United States leads to the familiar common-pool problem, resulting in overfishing from the shared tax base relative to a general-purpose government. A handful of prior studies (e.g., Besley and Rosen 1998) has examined externalities arising from concurrent taxation by federal and state governments. By comparison, the many layers of government in the local public sector provide an ideal testing ground for the prediction that tax rates increase with the number of tax authorities. I find that aggregate taxes and spending are higher in U.S. counties where there are more overlapping jurisdictions, controlling for the

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[1]As of the 2002 Census of Governments, the most recent available, there were 35,052 special districts, 13,506 school districts, 19,429 municipalities, 16,504 townships, and 3,034 counties in the United States.

[2]Weingast, Shepsle, and Johnsen (1981) is the seminal contribution. I discuss this literature in more detail below.

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bundle of services provided, demand-side variables, and state fixed effects. The estimated "overlap effects" are in the range of 5%–25% of local revenue. Endogeneity of jurisdictional overlap is an obvious concern, and I pursue this issue both substantively and econometrically, finding no evidence that reverse causality accounts for the results.

Related Literature

In the literature on local politics, there are two prominent schools of thought on special-function governments.[3] The reform tradition in public administration (e.g., ACIR 1964; Bollens 1957) contends that special districts are a source of wasteful duplication in the administration of public services, that special districts suffer from diseconomies of scale, and that their low visibility makes these jurisdictions politically unaccountable. Proponents of this view argue for metropolitan-wide government and promote consolidation of existing jurisdictions (Downs 1994; Rusk 1995). On the other hand, scholars of the public choice school (e.g., Schneider 1989) and proponents of "polycentricity" (Ostrom, Bish, and Ostrom 1988) argue that special district governments enhance desirable interjurisdictional competition, increase the number of public service bundles available for local citizens to choose from, and allow jurisdictional boundaries to be tailored to the geographic scope of specific public problems.[4] Recently, similar debates have received increasing attention in comparative politics, under the rubric of *multilevel governance* (Hooghe and Marks 2003). These literatures, however, do not generally recognize the tax base as a common-pool resource and the associated problems of concurrent taxation by overlapping governments.

The most directly relevant literatures for the current analysis arise from the areas of distributive politics and comparative fiscal institutions. An early discussion of the tax base as a fiscal common-pool resource is found in the congressional "gains from trade" literature associated with Weingast, Shepsle, and Johnsen (1981). Because individual representatives fully value projects for their district but internalize only a fraction of the costs, there is excessive demand for public goods with geographically concentrated benefits financed by nationwide taxes. Combined with a legislative norm of "universalism," such fiscal externalities lead to overspending in the aggregate budget.[5]

More recently, a comparative political economy literature has relied on fiscal common-pool models to explain persistent deficits in many countries (e.g., Alesina and Perotti 1999; Ricciuti 2004; Rodden 2005). In their summary of this literature, Poterba and von Hagen explain that "Deficits arise because the government's general tax fund is a 'common property resource' from which projects of public policy are being financed. . . . This induces a 'common-pool problem' in which competing political groups vie for government expenditures that are financed using broad-based tax instruments" (1999, 3). A common theme in this literature is that more "fragmented" budgetary institutions generate a bias toward higher spending and deficits. In different contexts, fragmentation has been measured in terms of the number of representatives in a legislature, the number of legislative committees, the number of spending ministers, and the number of lower-tier governments. The fiscal common-pool framework has been applied in a variety of institutional settings ranging from American states to OECD countries and Argentine provinces.[6]

Common-pool fiscal problems have received relatively little attention in the literature on U.S. local government. Notable exceptions are Langbein, Crewson, and Brasher (1996) and Baqir (2002), both of which find a positive relationship between the size of a city council and local tax rates, which they relate to Weingast, Shepsle, and Johnsen's (1981) "law of $1/n$." Baqir (2002) also finds that a strong city executive can discipline the council's spending excesses.

A handful of recent studies has examined the fiscal common-pool problems associated with concurrent taxation by national and state governments in a federation. With only two levels of government under consideration, the focus of these studies is on the response of one level of government to changes in the tax rate of the other. Wrede (1997) and Keen (1998) provide theoretical analyses of concurrent taxation by two layers of government that emphasize potential common-pool problems. The first empirical study to address the issue was Besley and Rosen (1998). Looking at gasoline and cigarette taxes in the United States, they found that when the federal government increases taxes, there is a significant positive response in state taxes. Esteller-More and Sole-Olle found a

[3] Foster (1997, chaps. 2–3) provides an insightful review of the literature on special purpose governments.

[4] The contributions to McGinnis (1999) provide a useful sampling of the polycentricity literature.

[5] For a review of the literature on common-pool tax problems in legislatures, see Knight (2006).

[6] The contributions to Poterba and von Hagen (1999) provide a good representation of research in this area. In the same volume, Alesina and Perotti (1999) provide a useful literature review.

similar positive reaction of state tax rates to changes in the federal tax rate for personal income taxes in the United States (2001) and Canada (2002). In contrast, Hayashi and Boadway (2001), examining corporate taxation in Canada, found that provincial tax rates respond negatively to the federal tax rate.

Most of the existing empirical literature testing fiscal common-pool models is based on data from national legislatures, U.S. states, or cross-country comparisons. In this article, I use data on overlapping jurisdictions in U.S. counties, which offers a number of advantages. With approximately 3,000 counties, the degrees of freedom are greatly increased relative to studies based on states or countries. In addition, counties have a common national institutional and cultural setting, so there are likely to be fewer unobservable differences across counties than across countries. Finally, studies that estimate the reaction functions between federal and state taxes deal with just two layers of government. With multiple levels of government within counties, I am able to examine the relationship between the number of overlapping taxing jurisdictions and the aggregate tax rate, a question which heretofore has received little empirical attention. Before proceeding with the empirical analysis, however, I describe the institutional framework of local special-function government.

Institutional Background: Autonomy and Overlap

Special-function jurisdictions (SFJs) are quintessential American governments that play a central role in the contemporary public sector. They include school districts, special districts, and, in some states, townships. Although SFJs are mysterious to many citizens, and even some political scientists, the facts speak for themselves. SFJs are the most numerous and fastest-growing type of American government; they outnumber cities by nearly two-to-one. Beyond their sheer numbers, SFJs are also fiscal and political cornerstones of American government. They collectively have more (civilian) employees than the federal government. The combined expenditures of SFJs exceed the combined expenditures of all municipalities. Politically, 96% of all elected officials serve in local governments, and 173,000 are found in SFJs. By almost any measure, then, SFJs represent the average government in this country. Yet, they have received remarkably little scholarly attention compared to other political institutions.

According to the *Census of Governments*, "Special district governments are independent, special-purpose governmental units . . . that exist as separate entities with substantial administrative and fiscal independence from general-purpose local governments" (1997, vii). Most SFJs perform a single function, although some provide a few related services. Almost any service provided by a municipality can be provided by an SFJ. School districts are the most common type of SFJ. Among the 35,000 non-school SFJs, some of the most common functions include fire protection, water, sanitation, parks, and libraries, although this list hardly begins to convey the variety of special district functions (see Foster 1997). Two features of SFJs are especially important for my analysis: they are autonomous and territorially overlapping.

The autonomy of SFJs, which encompasses both fiscal and administrative independence, is crucial for my analysis. According to Census Bureau criteria for defining special districts, "Fiscal independence generally derives from the power of an entity to determine its budget without review and detailed modification by other local officials or governments, to determine taxes to be levied for its support, to fix and collect charges for its services, or to issue debt without review by another local government" (1992, x). Administrative independence requires that a government has a popularly elected governing body, or, if appointed, not appointed by a single government (Census Bureau, 1992, x).[7] In practice, most nontaxing districts have appointed boards, whereas taxing districts are typically governed by an elected board.[8] Entities not meeting the criteria for fiscal and administrative autonomy are classified as dependent agencies rather than governments and therefore excluded from my analysis.

In addition to fiscal and administrative independence, SFJs are distinguished by their territorial flexibility. In his early study of special districts, John Bollens was among the first to discuss the territorial overlap of local governments:

> Territorially, most kinds of special districts do not have to be mutually exclusive of one another or of other governments. The result is that many types of special districts pile upon one another and other governments in the same area. In contrast, no city may be situated on any portion of

[7] Furthermore, the Bureau (1992, x) specifies seven additional criteria (not detailed here) to ensure that an entity is not *indirectly* controlled by another government—e.g., through control of the governing board.

[8] My analysis will focus exclusively on taxing districts, as explained below.

> the territory of another city.... *The more general area flexibility of special districts in relation to other types of districts and other classes of governments largely accounts for the overlapping of governments in the United States.* (1957, 25, emphasis added)

The concept of jurisdictional overlap can be illustrated by considering a home buyer's decision. Imagine a home in a location where schooling is provided by one jurisdiction and municipal services are provided by another government. Note that while the *provision* of services is unbundled, the *choice* of the services is not. Choosing the home carries with it the imposed choice of both jurisdictions. That is, the citizen must choose a single location rather than an à la carte assortment of jurisdictions. More generally, jurisdictional boundaries may overlap in an almost infinite variety of complex patterns, but from the citizens' perspective, the locational choice is a choice among composite bundles of services.[9]

Overlapping jurisdictions, therefore, cannot be seen as competing with one another for mobile resources. One composite set of overlapping jurisdictions may compete with another composite—for instance, multiple city-school district pairs compete with one another in most metropolitan areas—but governments that cover the same territory cannot attract residents away from each other. Instead of competing with each other, overlapping governments share the authority to tax and provide services to the same residents. This vertical layering of functionally specialized governments with concurrent tax authority sets the conditions for a fiscal common-pool problem.

The Fiscal Common-Pool

In the classic models of distributive politics in a geographically districted legislature, each representative seeks to maximize benefits for her own district while ignoring costs that fall onto other districts.[10] Whereas representatives in a geographically districted legislature each serve different constituencies, however, overlapping local governments ostensibly serve the same constituents. Thus, if local governments were run by benevolent social planners who sought to maximize the welfare of their constituents, each one would consider any costs that its actions imposed on the other overlapping jurisdictions. The planners would set each service at its Samuelsonian optimum—the point at which the sum of marginal benefits equals marginal cost—which would be the same level whether provided by one general-purpose government or several SFJs. In this idealized setting, jurisdictional overlap would have no effect on the provision of services, ceteris paribus.

Local governments are seldom run by benevolent dictators, however.[11] In fact, SFJs are particularly vulnerable to "capture" by interest groups operating in their policy domain (Dal Bo 2006; Peltzman 1976; Stigler 1971). Just as national PACs devote more of their efforts to influencing Congressional committees in their special policy domain (Loucks 1996; Munger 1989; Stratmann 1992), so too local interest groups will devote their efforts to influencing the relevant special-function jurisdictions. Therefore, while two overlapping governments may serve the same *de jure* constituency, their *de facto* constituencies may be quite different. Indeed, because SFJ elections are generally held off-year and off-cycle from more prominent national and state races, the costs to average voters of participating in all of these elections are relatively high—in both time and information gathering. Thus, it is unsurprising that turnout in SFJ elections is notoriously low[12] and that those with the largest stake in the policies of a given jurisdiction will be the most likely to participate in its politics. For instance, Terry Moe (2006) has shown that teachers union members are two to seven times more likely to vote in California school district elections than are other registered voters.

The combination of selective political participation by policy-specific interest groups and the institutional capacity of SFJs to deliver concentrated benefits with diffuse costs is a recipe for a fiscal common-pool problem. Importantly, note that one need not assume any nefarious motives on the part of politicians or interest groups in order to reach this conclusion. Rather, assume that politicians wish to be reelected and therefore seek to please *voters*. The people who participate in single-function elections are likely to differ from those who participate in general-purpose elections; specifically, high demanders of single-function services—i.e., interest groups—are more likely to participate. As a result, policies that please single-function voters will involve higher spending than policies

[9] An exception might be a system like school vouchers, although in practice these systems usually allow choice of schools within, rather than across, districts.

[10] A formalization and expanded discussion of the theory presented in this section can be found in Berry (forthcoming, chap. 3).

[11] Excepting Chicago.

[12] Burns (1994, 12) suggests that turnout of 2% to 5% is not uncommonly low for a special district election.

that please general-purpose voters. Of course, the greater any given SFJ's spending, the greater the incentive for ordinary voters to participate in its affairs, which means that there is a limit to the possible extent of overfishing from the shared tax base.

Seen from this perspective, SFJs resemble spending ministries in parliamentary cabinets as portrayed by Hallerberg (2000), Hallerberg and von Hagen (1999), and von Hagen and Harden (1995). In these models, although each minister nominally serves the nation as a whole, each is in fact beholden to special interests in the domain governed by the ministry. In setting the budget for her department, each minister fully values spending on programs she considers important for her policy goals, but considers only the tax burden that her constituency must bear. Because she does not internalize the full tax burden of additional spending, each minister proposes a budget that is larger than what is socially optimal. Unless subsequent negotiations within the government lead to spending reductions, the aggregate budget will be larger than a single spending minister who represented all groups would propose. The mechanisms at work are quite similar to those in Weingast, Shepsle, and Johnsen's (1981) model of a geographically districted legislature, but here the "districting" is determined by policy domain rather than geography. SFJs in local government represent a similar form of districting by policy area. Indeed, the common-pool problem of SFJs may be even more severe, as district officials have more fiscal independence than either legislators or ministers and need not negotiate with one another to produce a collectively approved budget.

A related possibility is that special-function politics involves self-selection by politicians rather than (or in addition to) voters. In other words, SFJs, like congressional committees, may attract "preference outliers" with respect to the relevant service.[13] For instance, it is not hard to imagine that individuals who place an especially high value on parks will be more likely to want to serve on the park district, either as elected officials or employees. If district officials set budgets independently and overvalue the services they provide, relative to the social valuation of the services, an upward spending bias will emerge. In a general-purpose government, on the other hand, high demanders of different services must compete with one another for a share of the general fund.

Common-pool problems will be exacerbated in the presence of *fiscal illusion* on the part of voters (Buchanan 1967, chap. 10). That is, voters may not perceive the full costs of taxation when taxes are levied in smaller amounts by a larger number of less prominent governments. Thus, voter resistance to a series of small tax increases imposed by separate governments could be less severe than the reaction to an increase of an equivalent sum by a single government. If these arguments about fiscal illusion hold, the ability of overlapping SFJs to boost spending will be enhanced.

From the outset, however, I note that the common-pool model is not the only possible explanation for a positive correlation between the number of SFJs and aggregate taxes and spending. A positive correlation could arise, for example, if SFJs finance costly capital improvements, if they provide a greater variety of services, or if they are used to circumvent tax and expenditures limitations. In other words, the common-pool model is not necessarily the sole, all-inclusive explanation for the fiscal policies of SFJs. Below, I present analyses designed to parse out the effects attributable to common-pool taxation from other plausible explanations for the connection between the presence of SFJs and larger public sector budgets.

Finally, of course, to the extent that politicians do in fact behave like social welfare maximizers, and to the extent that voters in special-function elections do in fact look like those in general-purpose elections, *there should be no common-pool problem.* I turn to an empirical analysis of this question in the remainder of the article.

Data and Empirical Strategy

Data

With the advent of geographic information systems (GIS), digital maps for counties, cities, and even school districts have become easily available. Unfortunately, there is no comparable national data source for the boundaries of nonschool SFJs. Although maps of individual districts can often be obtained on a case-by-case basis, even this is not always possible.[14] Even the *Census of Governments*, the most bountiful source of data on special districts, does not provide such basic facts as the total population or land area served by individual districts. Without knowing the boundaries of SFJs, it is not possible to measure jurisdictional overlap directly as the number of layers of government that concurrently tax a given parcel of land.

The *Census of Governments* does, however, provide comprehensive data on the number of SFJs and municipalities operating in each U.S. county. As explained by

[13] There is a long-running debate among scholars of Congress as to whether committees are populated by preference outliers (e.g., Krehbiel 1990; Shepsle and Weingast 1987).

[14] Burns (1994, 12–13) provides an entertaining account of her ultimately unsuccessful attempt to obtain information on the boundaries of all the special districts in just one county.

Bollens (1957) in the passage above, the potential for jurisdictional overlap is a function of the number of SFJs relative to municipalities, all else equal. I thus take the number of SFJs per municipality as my indicator of the degree of jurisdictional overlap in a county.[15] In this ratio, the numerator represents vertical fragmentation or layering, while the denominator encapsulates horizontal fragmentation or competition. While this ratio is an imperfect measure of concurrent taxation, I note that I obtain similar results using other plausible measures, including counting the distinct number of jurisdictional specializations in the county; using the number of SFJs and municipalities as two separate variables; and calculating the average jurisdiction's share of total revenue.[16] I chose to use the ratio of overlapping jurisdictions per municipality because it captures most closely the theoretical construct of interest, that is, the number of taxing governments faced by the average person in the county. Because the variable has a long right tail, I use the natural logarithm of this ratio in the analyses that follow.[17]

In computing the number of overlapping jurisdictions per municipality, I exclude any special district that does not have tax authority. About 47% of special districts raise revenue from taxes, and about 42% raise revenue from user charges.[18] However, districts that rely on user charges account for the lion's share of total special district revenue—the average district with user charges has a budget that is twice as large as the average district with taxes. Hospital districts account for the preponderance of user charges: the 711 hospital districts that existed in 2002 represented just 2% of all special districts, but accounted for nearly half (46%) of all special district revenue from user charges and 28% of all special district revenue from own sources. Although the common-pool model may well contribute to explaining user charges,[19] it applies most naturally to the problem of concurrent taxation. Therefore, I count only taxing districts when computing my measure of jurisdictional overlap.[20]

My dependent variable is general own-source revenue per capita.[21] In other words, the numerator is the sum of own-source revenue across all governments in a county and the denominator is county population.[22] Own-source revenue refers to all locally raised revenue and excludes intergovernmental transfers. Own-source revenue accounts for 58% of all local government general revenue. I obtain similar results using own-source revenue as a percentage of aggregate personal income or own-source revenue as a percentage of the aggregate value of owner-occupied housing (not shown).

Of course, jurisdictional overlap is not the sole determinant of local fiscal policy. Therefore, I use a set of control variables with a strong foundation in the literature. The first is income per capita. Following Wagner's "Law," the expectation is that demand for government services increases with income (Musgrave and Peacock 1958). Next, I control for several population characteristics that may reflect tastes for public goods (e.g., Cutler, Elmendorf, and Zeckhauser 1993). I include the proportion of families with children to control for demand for education, a large component of local spending. I also include the fraction of the population over 65, as it is often argued that the older population prefers lower spending on education (Poterba 1997). On the other hand, there may be additional costs associated with serving an elderly population. In an effort to control for the ideological orientation of the county, I use the Republican vote share in the 2000 presidential election. I also control for educational attainment, as measured by the percentage of adults with a college degree.

[15]Town (also called *township*) governments present a special case. First, town governments exist in only 20 states. Second, in some of these states towns have the character of municipalities, while in others they operate more like special districts. Specifically, towns may overlap the territory of municipalities in 11 states (Connecticut, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, New York, Ohio, and Vermont). In the nine remaining states, towns are territorially exclusive from municipalities, with no overlapping between the two kinds of units (Maine, Massachusetts, New Hampshire, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, and Wisconsin). For details, see Bureau of the Census (1992). Thus, in the 11 overlap states I count towns as overlapping districts. In the nine territorially exclusive states, I count towns as municipalities. I compute the number of overlapping jurisdictions in a county as the sum of special districts, school districts, and, where appropriate, townships. In all cases, I count only those governments with tax authority.

[16]Complete results are available on request.

[17]There are 22 counties in which the ratio is 0 (i.e., there are no SFJs). Because the logarithm of 0 is undefined, I add 1 to the ratio before making the log transformation. The results are not importantly altered if I simply drop these 22 cases and make the log transformation without adding 1.

[18]The sum is less than 100% because some districts do not raise revenue from their own sources.

[19]The central question is whether special districts funded by user charges provide services with concentrated benefits and diffuse costs or whether users pay the full costs of the services they receive.

[20]My results do not change in any important way if I include *all* special districts.

[21]In principle, the aggregate tax rate is an ideal dependent variable. However, due to variation in assessment practices across jurisdictions and complexity of tax codes, calculating the effective tax rate in a county is prohibitively difficult.

[22]For districts that span multiple counties, revenues are assigned to the county where the district headquarters is located. As explained below, only about 10% of districts span multiple counties.

It is also important to control for the racial and income heterogeneity of the population. Alesina, Baqir, and Easterly (1999) argue that population heterogeneity leads to increased pressure for group-specific spending programs but fewer nonexcludable public goods. While their theoretical model is ambiguous as to the net effects, their empirical results show a positive association between ethnic heterogeneity and total expenditures, but weaker effects on taxes.[23] Following Alesina, Baqir, and Easterly (1999), I measure ethnic fragmentation as the probability that two randomly drawn people from a county belong to different ethnic groups.[24] Income heterogeneity is measured as the ratio of the mean household income to the median household income in a county. Meltzer and Richard (1981) argue that increasing inequality causes greater demand for redistribution, hence higher taxes.

To address economy of scale considerations, I control for county population and land area, both modeled with quadratic terms. In addition, I include a dummy variable indicating whether a county is the central county of a metropolitan statistical area (MSA), and another dummy for suburban counties within MSAs.[25] The omitted category is nonmetropolitan counties. These central and suburban county indicators capture possible sorting by taste, as well as potential economies of scale in MSAs.

My main data sources are the 2002 Census of Governments (COG), the 2000 Census of Population and Housing (CPH), both published by the U.S. Census Bureau, and the Regional Economic Information System (REIS) of the Bureau of Economic Analysis. I exclude Virginia (134 observations), Hawaii (four observations), and Alaska (27 observations) from the analysis. Virginia is the only state whose municipalities are incorporated as *independent cities*, which are not part of any county. Hawaii has the only entirely state-run public school system. Alaska uniquely relies on boroughs rather than counties, and boroughs do not cover the entire land area of the state. Among the remaining 47 states, I exclude 29 counties that had no incorporated municipalities as of 2002 and another 29 counties with population under 1,000. Anomalously, the COG reports one record for New York City, but no records for its five component counties. Not being able to produce a county aggregate record, I drop the New York City observation.[26] Finally, Broomfield, Colorado, is reported in the 2002 COG but not the 2000 CPH and is therefore excluded.[27] Beginning with a total of 3,135 counties in the 2002 COG, these case selection criteria produce an analysis sample of 2,910 counties.[28] Data sources and summary statistics for all of the variables are reported in Table 1.

Empirical Strategy

When attempting to estimate the effects of institutions on fiscal outcomes, simultaneous causation is an obvious concern (Persson and Tabellini 2003). In other words, it is possible that special districts are created from a desire to spend more, rather than, or in addition to, being a cause of increased spending via the common-pool mechanism described above. If that is the case, then measures of jurisdictional overlap may be correlated with the errors in an OLS regression, leading to biased estimates. To some degree, concerns about reverse causation should be allayed by the fact that jurisdictional overlap is persistent and determined largely by differences in longstanding state laws that make it easier or harder to create SFJs. For example, a set of state dummy variables explains nearly three-quarters of the variation in jurisdictional overlap across counties.[29] Moreover, the correlation between jurisdictional overlap in 1972 and 2002 is 0.91 at the county

[23] The findings of Alesina, Baqir, and Easterly (1999) are subtle and easily misunderstood. They (1999, Table V) find a positive effect of ethnic fractionalization on taxes and spending at the city level, and a positive effect on spending, but insignificant for taxes, at the county level. Alesina and his coauthors conclude that "These results suggest the following summary pattern. Total spending tends to go up with higher ETHNIC [fractionalization]. Yet local taxes go up much less with ETHNIC [fractionalization], or may even go down" (1999, 1266–67). While a thorough comparison is precluded by space constraints, my findings are basically consistent with their summary.

[24] Specifically, ethnic fragmentation is computed as follows: $Ethnic = 1 - \sum_i (Race_i)^2$, where $Race_i$ denotes the share of population identified as of race i and $i = \{$white, black, Hispanic, Asian and Pacific Islander, American Indian$\}$. Note that Hispanic is identified as an "origin" rather than a race in the Census, so I count only non-Hispanic whites, blacks, Asians and Pacific Islanders, and American Indians for those categories. This same measure has been used in numerous prior studies; see the references in Alesina, Baqir, and Easterly (1999). For a theoretical interpretation of this index, see Vigdor (2001).

[25] In New England, the Census Bureau specifies central cities and towns rather than central counties of MSAs. In these states, I define any county containing a central city or town as a central county.

[26] Alesina, Baqir, and Easterly (1999) also discuss this issue and make the same decision.

[27] Broomfield, a consolidated city-county, was not added to the Census as a county until 2001. In the 2000 Census, it was reported as a city.

[28] There are some minor discrepancies in how counties are counted in the COG versus the CPH, primarily in Virginia and Alaska, which explain why the former tallies 3,135 counties and the latter 3,034.

[29] A regression of county-level jurisdictional overlap on a set of state dummy variables yields an adjusted R-squared of 0.73, with 2,910 observations.

TABLE 1 Summary Statistics

Variable	Source	Units	Mean	p25	p50	p75	Std Dev
General own-source revenue	COG	$ per capita	1,661	1,037	1,486	2,050	936
General current expenditures	COG	$ per capita	2,442	1,834	2,281	2,865	870
Current common-function expenditures	COG	$ per capita	2,152	1,724	2,052	2,447	647
Overlapping taxing jurisdictions per municipality	COG	Ratio	3.25	1.00	2.14	4.00	3.99
Ethnic fractionalization index	CPH	Fraction	0.24	0.08	0.19	0.41	0.18
Families with kids aged 0–17	CPH	Fraction	0.35	0.32	0.35	0.38	0.05
Population aged 65 & over	CPH	Fraction	0.15	0.12	0.14	0.17	0.04
Income per capita	REIS	$1000 per capita	23.86	20.47	23.01	26.07	5.52
Mean to median income ratio	CPH	Ratio	1.28	1.22	1.27	1.33	0.09
Bush vote share in 2000 presidential election	Leip	Fraction	0.57	0.50	0.57	0.65	0.12
Land area	CPH	Square miles	981	442	628	928	1,329
Population	REIS	Number of people	92,270	11,606	25,675	64,060	301,104
Central county of MSA	CPH	Indicator, 0 or 1	0.16	0.00	0.00	0.00	0.37
Suburban county of MSA	CPH	Indicator, 0 or 1	0.10	0.00	0.00	0.00	0.30
Adults with BA degree or higher	CPH	Fraction	0.16	0.11	0.14	0.19	0.07
Federal intergovernmental revenue	COG	$1000 per capita	0.09	0.02	0.06	0.11	0.12
State intergovernmental revenue	COG	$1000 per capita	1.18	0.89	1.09	1.38	0.47

COG = 2002 Census of Governments; CPH = 2000 Census of Population and Housing; REIS = 2002 Regional Economic Information System; Leip = David Leip's Atlas of U.S. Presidential Elections. Data are for 2,910 counties in the 47 mainland states excluding Virginia.

level. Thus, it appears unlikely that jurisdictional overlap responds quickly to local spending preferences.

Nevertheless, concerns about possible endogeneity can be addressed directly, and I do so in two ways. First, below, I present several empirical tests that distinguish the common-pool explanation from other arguments based on reverse causation. Second, I supplement OLS results with estimates from instrumental variables models. Instrumental variables (IV) analysis relies on isolating genuinely exogenous sources of variation in jurisdictional overlap, which then become the instruments in a two-stage model.[30] In the first stage, jurisdictional overlap is regressed against the instruments and other controls. In the second stage, the predicted values of jurisdictional overlap are used to identify the effect of (exogenously determined) overlap on the dependent variable.

For the IV analyses, I use one county-level and four state-level instrumental variables. At the county level, I use deeply lagged values of jurisdictional overlap. Specifically, I use the 1972 value of the overlap variable to instrument for the 2002 value.[31] With a lag of 30 years, this variable is likely exogenous to fiscal decisions in 2002. In addition, I use four state-level instruments based on laws of local government formation. Two of these instruments measure the legal potential for the creation of SFJs.[32] Specifically, I tally the number of functional types of special districts authorized by general enabling legislation in each state, a measure of *functional breadth*.[33] The values range from one district type in Louisiana to 29 in Illinois, with a mean of 14. The second instrument is a dummy variable for the 10 states that allow two or more general-purpose governments to form special districts to serve any function common between them. For both variables, I expect that more legal options for the creation of districts will be positively associated with the jurisdictional overlap. The next instrumental variable measures municipal incorporation requirements by degree of difficulty.

[30] Wooldridge (2002, chap. 5) provides an explanation of instrumental variables estimation.

[31] I chose 1972 because this is the earliest year for which the necessary Census of Government variables are available electronically at the county level.

[32] I derived both of these variables from information provided in the *1992 Census of Governments* 1(1): *Government Organization, Appendix A: Individual State Descriptions.*

[33] This is a simplified version of a variable originally introduced by Kathryn Foster (1997, 128).

My expectation is that where it is easier to form new municipalities, there should be less jurisdictional overlap. I take this variable directly from Krane, Platon, and Hill (2001), who rate state incorporation rules on a degree of difficulty from 1 (easiest) to 5 (hardest).[34] Finally, I use a dummy variable indicating whether state law permits township governments to overlap with municipalities.

States also vary in their assignment of fiscal responsibilities to local governments, as well as in unobservable historical, cultural, and institutional characteristics that may influence fiscal outcomes. For this reason, I present estimates both with and without state fixed effects.[35] Finding comparable results using both within- and between-state variation to identify the effects of jurisdictional overlap should bolster confidence that the relationship is causal. In all of the models, I use robust standard errors to account for heteroskedasticity. In models without state fixed effects, I cluster the standard errors by state to account for possible correlation among the residuals.

Results

Table 2 shows the results of five regressions in which the dependent variable is total own-source revenue, aggregated over all governments in a county, per capita. The first specification includes jurisdictional overlap on the right-hand side with no control variables. As predicted, the effect of jurisdictional overlap is positive and highly significant. The next specification introduces the full set of control variables described above. With the introduction of the controls, the coefficient on jurisdictional overlap drops by about one-third, but remains highly significant. In the third specification, I add state fixed effects. The point estimate on jurisdictional overlap becomes somewhat smaller, suggesting that unobservable state-level variables explain a portion of the jurisdictional overlap effect. Nevertheless, the effect is significant and robust whether identified through within- or between-state variation.

Models (4) and (5) of Table 2 are the instrumental variables regressions. Model (4) includes all of the control variables, but no state fixed effects, and uses the four state laws discussed above as instruments. The instruments perform well according to conventional measures of validity. An F-test indicates that the instruments are jointly significant in the first-stage model, with an F-statistic of 27.41 ($p < .0001$). In addition, each instrument is individually significant and carries the expected positive sign in the first-stage model (not shown). According to Shea's partial R^2 (Baum, Schaffer, and Stillman 2002; Shea 1997), the state laws explain 39% of the variation jurisdictional overlap in the first stage after controlling for the other covariates. The omnibus overidentification test fails to reject the null hypothesis that the instruments are valid, with a J statistic of 3.07 ($p = 0.38$).[36] Most important, jurisdictional overlap is statistically significant in the second-stage model. Finally, model (5) includes state fixed effects in a IV model that uses lagged jurisdictional overlap as the instrument. This instrument is also highly significant in the first stage ($p < .0001$), with a Shea partial R^2 of 0.55.[37] Jurisdictional overlap remains strongly significant in the second-stage model. The smaller coefficient in equation (5) relative to (4) is likely due to the inclusion of state fixed effects and to the fact that lagged jurisdictional overlap absorbs more of the variation in contemporary overlap, yielding a result closer to the OLS estimates. That jurisdictional overlap remains highly significant in both IV models casts doubt on the idea that the OLS results are attributable to reverse causation. In fact, I cannot reject the hypothesis that jurisdictional overlap may be treated as exogenous.[38]

[34] I take the ratings as provided in Krane, Platon, and Hill (2001) with two exceptions. First, there are several states that have no laws for incorporation because they have no unincorporated land. These states are not rated by Krane, Platon, and Hill, so I assign them a rating of 0 on the incorporation variable. These states are Connecticut, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Vermont. Second, there were a handful of states for which no data were provided by Krane, Platon, and Hill. I rated these states myself according to the criteria stipulated in Krane, Platon, and Hill (2001, 480–81), based on my reading of the relevant state statutes. These states are Arizona, Colorado, Idaho, Kansas, Mississippi, New York, Oklahoma, Tennessee, and Texas. Where states provide more than one method of incorporation, I rate the state according to the easiest method. I was not able to obtain sufficient information to code Delaware, Iowa, or Maine. These three states are omitted from equations where the incorporation variable is used as an instrument. These three states account for only 118 counties in the sample, about 4% of all observations.

[35] In the IV models using state laws as instruments, I cannot run a fixed-effects specification because state dummies perfectly predict the state laws.

[36] Conceptually, this is a test of whether, after partialling out its correlation with jurisdictional overlap and the other variables in the model, the dependent variable is still correlated with the instruments. See Baum, Schaffer, and Stillman (2002).

[37] The overidentification test cannot be run in model (5), as the equation is exactly identified with one instrument.

[38] The estimated p-value for the C (or GMM distance) test is 0.11 for model (4) and 0.18 for model (5). This is a Hausman-like test that is robust to violations of conditional homoskedasticity (see Hayashi 2000, 233–34; Baum, Schaffer, and Stillman 2002, 19–22). Moreover, that the IV estimates are somewhat larger than the corresponding OLS estimates suggests that if there is simultaneous

TABLE 2 Jurisdictional Overlap and General Own-Source Revenue per Capita

	OLS			IV	
	(1)	(2)	(3)	(4)	(5)
ln(Tax Overlap)	310.63	196.61	127.54	375.64	197.03
	(78.69)***	(60.18)***	(39.70)***	(103.22)***	(72.79)***
Ethnic Fractionalization		765.55	555.86	902.76	572.82
		(235.29)***	(137.48)***	(251.53)***	(242.64)**
Pct Families w/kids		434.57	-33.80	166.71	76.31
		(1230.75)	(504.74)	(1228.64)	(955.43)
Pct population 65+		111.16	−661.99	−245.95	−471.56
		(1551.43)	(645.75)	(1564.08)	(1270.60)
Income per Capita ($1000s)		77.06	69.93	76.88	69.16
		(10.76)***	(4.84)***	(10.64)***	(10.48)***
Mean to Median Income Ratio		−753.35	−407.10	−591.99	−406.56
		(410.15)*	(203.49)**	(429.25)	(274.46)
Bush Vote Share in 2000		460.01	181.32	609.25	175.04
		(311.78)	(173.48)	(343.84)*	(285.68)
ln(Land area)		−167.18	−707.02	−78.84	−776.73
		(332.81)	(229.16)***	(324.17)	(354.30)**
ln(Land area)^2		16.84	62.37	6.83	66.92
		(25.21)	(16.94)***	(24.97)	(25.78)***
ln(Population)		−1072.70	−1072.25	−1125.21	−1110.55
		(240.17)***	(132.76)***	(230.77)***	(223.36)***
ln(Population)^2		41.45	41.07	44.15	43.11
		(10.30)***	(6.44)***	(10.06)***	(8.91)***
Central county		−50.33	−27.31	−39.36	−33.13
		(63.78)	(63.88)	(66.35)	(61.93)
Suburban county		−259.11	−242.69	−222.44	−238.81
		(62.23)***	(52.84)***	(59.67)***	(53.43)***
Pct Adults w/BA		1029.49	930.53	712.50	937.54
		(665.35)	(346.32)***	(680.96)	(455.71)**
Constant	1366.20	6786.10	8670.28	6575.65	
	(76.39)***	(1676.81)***	(1110.56)***	(1532.26)***	
Adj R-squared	0.05	0.30	0.17	0.29	0.17
N	2910	2910	2910	2792$^+$	2902^{++}
State fixed effects?	No	No	Yes	No	Yes
Instruments	–	–	–	State Laws	1972 Overlap

The dependent variable is general own-source revenue per capita aggregated over all governments in a county. Tax overlap is defined as the number of overlapping taxing jurisdictions per municipality. Alaska, Hawaii, and Virginia are excluded. Robust standard errors in parentheses. Models excluding state fixed effects account for within-state clustering of standard errors. Models including state fixed effects report the within R^2. + excludes Delaware, Iowa, and Maine; ++ excludes eight counties with no incorporated municipalities as of 1972; *p < .10, **p < .05, ***p < .01.

There are no major surprises among the remaining variables. Income per capita is positive and highly significant in every specification. Each $1000 of additional income is associated with an increase of about $70–$75 in own-source revenue.

Of the two variables measuring heterogeneity of the population, ethnic fractionalization has a positive and significant effect in all of the equations. Since this is the primary topic of Alesina, Baqir, and Easterly (1999) and my results are generally consistent with theirs, I do not devote further attention to it here.[39] The ratio of mean

causation, it works against finding my result; that is, counties with a propensity to spend more are *less* likely to form SFJs.

[39] See footnote 26 above.

to median income is negatively associated with local revenue, although the relationship is not significant in every model.

Neither of the age-based variables is significant in any of the equations. The 2000 Republican presidential vote share has a positive association with local own-source revenue, which is somewhat surprising in light of the common view that Republicans are the party of smaller government. However, this relationship fails to attain statistical significance in most of the models. The share of adults with a college degree is also positively related to local own-source revenue, suggesting that more highly educated voters demand more government services, all else equal.

Of the variables relating to scale economies, population and its quadratic are highly significant in each of the equations, suggesting that own-source revenue declines with population, at a diminishing rate. Land area and its quadratic are also significant in those models that include state fixed effects. Additionally, the central and suburban county dummy variables are negative in all of the models, although only the suburban indicator is significant. This relationship may be a sign of more intense competition among jurisdictions in suburban areas (Schneider 1989). It might also reflect differences in preferences or in the costs of providing public services.

To put the size of the jurisdictional overlap effect in context, note that the point estimates in Table 2 range from $128 to $376. These estimates imply that increasing the number of overlapping jurisdictions in a county from the 25th to the 75th percentile of the distribution—i.e., from one to four jurisdictions per municipality—is associated with an increase of $137 to $402 in own-source revenue per capita.[40] This effect is equivalent to approximately 10%–25% of median own-source revenue per capita in the sample ($1,486). Another way to put the effect in context is to compute standardized (beta) coefficients. Taking equation (5), for instance, the beta coefficient for jurisdictional overlap is 0.14, which means that a one standard deviation increase in jurisdictional overlap is associated with a 0.14 standard deviation increase in own-source revenue. The jurisdictional overlap effect is larger than any other variable except income per capita, whose beta coefficient is 0.41. Other variables with relatively large beta coefficients include ethnic fractionalization (0.11) and adults with college degrees (0.07). In short, the estimated effect of jurisdictional overlap is both statistically significant and substantively consequential.

[40]The information necessary to make these computations is given in the table of summary statistics.

Alternative Explanations

The results presented in the previous section provide support for the common-pool model's prediction that an increase in jurisdictional overlap is associated with a significant increase in local taxation. However, could there be competing theories of the local public sector that might explain these results? Four alternative explanations seem worthy of consideration. First, it may be that SFJs are created specifically to finance costly infrastructure construction, so that higher spending reflects greater capital investment rather than common-pool exploitation. A second possibility is that counties with more SFJs provide a greater range of public services, which accounts for higher spending. Third, overlapping jurisdictions may be created as channels for spending increases when general-purpose governments face tax and expenditure limitations. Finally, the territorial flexibility of SFJs may allow them to better tailor public services to local tastes, thereby encouraging additional spending.

In this section, I examine each of these alternative hypotheses in turn. My objective is not to refute them, but to demonstrate the robustness of the common-pool theory in accounting for the effects of jurisdictional overlap. To conserve space, I report the key coefficients for models from this section in Table 3, but I do not report the full set of control variables, which are always the same as those used in Table 2.

Current versus Capital Spending

Some suggest that real estate developers promote the creation of SFJs to raise capital for costly infrastructure improvements (Porter et al., 1992). If SFJs are created to provide infrastructure, then their positive relationship to local taxation may reflect temporary capital needs for new developments, not overexploitation of the fiscal common-pool. In order to test this hypothesis, I utilize data on current versus capital expenditures.[41] If higher spending in counties where there are more overlapping jurisdictions is merely a reflection of capital expenditures, then we should not see a significant relationship between jurisdictional overlap and spending on current operations.

[41]Own-source revenue is preferable to expenditures for testing the common-pool hypothesis. The former reflects only the activities of the local governments, whereas the latter is also a product of intergovernmental aid, which makes up 42% of local revenue and is unrelated to the common-pool problem. However, I must use expenditure data to identify how the revenue is used. Some conceptual slippage must be acknowledged, since I cannot know for sure which stream of revenue is used to fund any given expenditure.

TABLE 3 Model Extensions

	OLS		IV	
	(1)	(2)	(3)	(4)
(A) Alternative dependent variables				
Current expenditures per capita	300.66	148.99	440.35	216.68
	(80.53)***	(65.68)**	(139.30)***	(80.90)***
Number of public services provided	0.13	−0.14	0.22	−0.11
	(0.25)	(.08)*	(0.44)	(0.11)
Common-function expenditures per capita	211.52	61.47	242.63	92.96
	(75.62)***	(22.37)***	(126.39)*	(29.97)***
(B) Interaction with fiscal constraints				
ln(Tax Overlap)	308.91	266.37	302.50	293.13
	(126.23)**	(97.63)***	(135.89)**	(135.20)**
Dummy = 1 if strong tax limits state	186.54		119.58	
	(108.57)*		(124.32)	
Strong tax limits* ln(Tax Overlap)	−204.95	−208.62	−139.29	−173.20
	(140.23)	(139.14)	(152.41)	(154.84)
(C) Territorial flexibility				
Coterminous districts	249.18	282.83	NA	NA
	(148.75)*	(116.25)**		
Noncoterminous districts	212.52	174.84		
	(64.97)***	(48.14)***		
Chi-square test statistic	0.07	1.08		
p-value	(0.79)	(0.30)		
N	2910	2910	2792+	2902++
State fixed effects?	No	Yes	No	Yes
Instruments	–	–	State Laws	1972 Overlap

Panel (A) reports the coefficients for ln(Tax Overlap) in models of current expenditures, the number of different public service functions, and common-function expenditures. Panel (B) reports coefficients for ln(Tax Overlap) and its interaction with state tax limits. Panel (C) presents coefficients for ln(coterminous districts per municipality) and ln(noncoterminous districts per municipality), and tests of the hypothesis that the coefficients are equal, estimated by seemingly unrelated regression. The dependent variable in panels (B) and (C) is own-source revenue per capita. All models include the full set of control variables used in Table 2 (coefficients not reported). Alaska, Hawaii, and Virginia are excluded. Robust standard errors in parentheses. Models excluding state fixed effects account for within-state clustering of standard errors. + excludes Delaware, Iowa, and Maine; ++ excludes eight counties with no incorporated municipalities as of 1972; *p < .10, **p < .05, ***p < .01.

The results in panel (A) of Table 3 show that jurisdictional overlap is indeed positively associated with spending on current operations in every equation. The coefficients remain highly significant and of roughly the same magnitude as the effects on own-source revenue shown in Table 2.[42] Moreover, comparable analyses of capital spending (not shown) demonstrate no significant relationship with jurisdictional overlap. Thus, the increase in spending associated with jurisdictional overlap cannot be attributed merely to capital-intensive infrastructure finance by special districts.

[42]The coefficients in the expenditure models are larger than those in the own-source revenue models. This is likely because own-source revenue accounts for about 60% of local revenue, whereas expenditures are funded by 100% of revenue. However, given the confidence bounds around the respective estimates, I cannot reject the hypothesis that jurisdictional overlap has an equal effect on revenue and expenditures (e.g., comparing model (2) of Tables 2 and 3). In other words, the results are consistent with the idea that revenue increases from jurisdictional overlap are translated directly into spending increases.

Variety of Services

Another explanation for higher spending where there are more overlapping jurisdictions is that counties with more jurisdictions simply provide a broader array of government services. It is unclear whether greater service variety is a challenge or a complement to the common-pool story. Given the opportunity to deliver concentrated benefits

with diffuse costs, an interest group desiring a new public service would have a strong incentive to seek the creation of an SFJ to provide it. In this case, an increasing array of services associated with jurisdictional overlap would comport with the common-pool model. Nevertheless, it will be useful to understand the extent to which jurisdictional overlap is associated with an increasing variety of services versus increasing spending for a constant set of services.

To begin, I simply regress the number of public services provided in the county against jurisdictional overlap and the usual set of controls. The data on functional performance come from the COG, which tracks spending on 37 expenditure categories. In the average county 21 services are provided.[43] As shown in panel (A) of Table 3, jurisdictional overlap is not positively related to the number of services. The coefficient is substantively small and statistically insignificant in three of the four models. In the one model where the relationship is significant, albeit at the 10% level, the coefficient is actually negative, meaning that counties with more overlapping jurisdictions provide *fewer* different services, although again the effect is quite small in magnitude. Based on these results, the positive effect of overlapping jurisdictions on local budgets cannot be attributed to increases in the variety of services being provided.

To gain additional insight into the relationship between jurisdictional overlap and the variety of local services, I use a "common function" approach familiar in the study of local public finance.[44] The idea is to restrict the analysis to a core set of functions provided in nearly every county and ask whether more is spent on those functions when they are provided by a larger number of overlapping governments. If jurisdictional overlap simply expands the bundle of public goods without affecting core local services, we should expect to find little or no effect of overlap on common-function spending. I define common functions as those services provided in at least 90% of counties, which include 19 of the 27 major categories tracked by the COG and three of the 10 subcategories of services.[45] Together, common functions account for 87% of total spending by local governments. I next test whether there is any relationship between jurisdictional overlap and spending devoted to common functions.

Panel (A) of Table 3 shows coefficients from models of current common-function expenditures per capita. Jurisdictional overlap is positive and significant in all of the equations and ranges in value from $61 to $243 in Table 3. Comparison of the estimates for total and common-function spending in panel (A) implies that about 40%–70% of the effect of jurisdictional overlap on current spending operates through common-function spending. In other words, if special districts are used to expand the variety of local public services, this alone cannot explain the increase in spending associated with jurisdictional overlap.[46] Under the conservative assumption that only common-function spending reflects the underlying common-pool mechanism, the overlap effect is roughly equivalent to 5%–15% of own-source revenue, still a substantively consequential impact.

Fiscal Constraints

In states where municipalities are subject to debt, tax, or expenditure limitations, it may be the case that special districts, which are not commonly subject to such restrictions, are formed to evade the ceilings on municipal budgets. The few existing studies on this topic have yielded mixed results. Nelson (1990) finds a positive relationship between fiscal limits on municipalities and the number of special districts, while MacManus (1981), Foster (1997), Burns (1994), Carr (2006), and Bowler and Donovan (2004) find weak, inconsistent, or contingent effects of fiscal ceilings on the creation of special districts. Heikkila and Ely (2003) argue that there is no connection between tax limits and the formation of special districts. Nevertheless, it is important to control for the possibility that fiscal restrictions on municipalities are behind the relationship between jurisdictional overlap and local government taxation.

If the correlation between jurisdictional overlap and taxation is merely a by-product of fiscal constraints on general-purpose governments, then controlling for these constraints should cause the overlap variable to become insignificant. To address this issue, I introduce a variable, created by Susan MacManus (1983), rating the severity of state restrictions on municipal property-taxing powers on a scale from 1 through 4.[47] I add this variable and its

[43] As before, I use the sum of spending by all governments within the county, not just the county government itself. Therefore, these numbers show the proportion of counties in which the service is provided—that is, has positive spending—by at least one local government.

[44] The common-function approach is widely used in local public finance to facilitate comparisons among cities and has a long history dating back at least to Brazer (1959).

[45] A detailed breakdown of common and noncommon functions is available on request.

[46] For further evidence supporting this conclusion, see Foster (1997, esp. chaps. 6 and 7).

[47] Specifically, MacManus rated each state's restrictions as None, Minimal, Moderate, or Heavy based on several criteria (see MacManus 1983, 158). I translated this rating into a 4-point scale, with 4 representing Heavy restrictions.

interaction with jurisdictional overlap to the models of general own-source revenue estimated previously. In the models including state fixed effects, the main effect of state-level fiscal constraints cannot be identified; however, the interaction between fiscal constraints and jurisdictional overlap can still be identified through county-level variation. In the IV models, both jurisdictional overlap and its interaction with fiscal constraints are treated as endogenous. In these models, I use the interaction between lagged overlap and fiscal constraints as an additional instrument.

Panel (B) of Table 3 shows the results of models that include an interaction between tax restrictions and jurisdictional overlap. Specifically, I create an indicator variable equal to one for counties in states rated as having strong tax restrictions (i.e., 3 or 4 on the MacManus scale) and interact this variable with jurisdictional overlap. The main effect of jurisdictional overlap remains positive and significant in every equation, while the interaction term is negative and insignificant in every equation. The negative interaction between fiscal constraints and jurisdictional overlap indicates that overlap has a smaller effect in states with strong fiscal constraints. Note that this is exactly the opposite of what one would expect if overlapping jurisdictions were created primarily to circumvent fiscal constraints on municipalities. The main effect of fiscal constraints is positive, but significant only in equation (1). The positive relationship may suggest reverse causality: states with unusually high taxes may be more likely to pass property tax restrictions. In any case, the IV estimates comport with the OLS results, all suggesting that jurisdictional overlap has a smaller, not larger, effect in states with strong tax limits. Thus, there is no evidence that the positive relationship between jurisdictional overlap and government size can be attributed to the effects of fiscal constraints placed on municipalities.

Area Flexibility

As mentioned above, SFJs have unusual territorial flexibility, and their boundaries do not necessarily correspond to those of underlying general-purpose governments. If districts' geographic flexibility allows for public service provision to match more closely with communities of interest, then residents may be willing to spend more on those services.[48] For example, when beneficiaries of a public good span multiple existing jurisdictions, a larger special district can be formed to encompass them. Conversely, if only a small area within an existing jurisdiction demands a particular service, a district can be formed to match local tastes. In either case, residents might be willing to support additional spending that they would have opposed if services had to match boundaries of existing general-purpose governments. These issues are difficult to analyze directly without additional information on local and regional variation in tastes for public goods. Nevertheless, a relatively simple test is possible.

The COG provides basic information about the geographic area of special districts. Although the precise boundaries or size of these jurisdictions is not available, the COG does identify those districts that are coterminous with a city or county, which constitute about 40% of all districts. Based on this categorization, I created two new jurisdictional overlap measures, one each for coterminous and noncoterminous jurisdictions. I then ran models relating jurisdictional overlap to own-source revenue separately for each geographic type. Higher spending by coterminous districts cannot be attributed to a greater capacity to match services to local tastes.

Before turning to the results of these analyses, an important caution must be noted. The geographic area variable is missing for 36% of special districts and 14% of school districts and is not available for township governments. I have no evidence that these values are missing at random; therefore the geographic data are not ideal. However, finding that the results are similar for coterminous and noncoterminous districts should provide some reassurance that the association between jurisdictional overlap and taxation is not simply an artifact of geographic flexibility.

The results are shown in panel (C) of Table 3. First, note that the effect for coterminous districts is somewhat larger than that for noncoterminous districts, which is contrary to the idea that greater territorial flexibility is the root cause of the overlap effect. In any case, I cannot reject the hypothesis that the estimated effects for coterminous and noncoterminous overlapping jurisdictions are equal, as evidenced by the reported Chi-square tests.[49] As a result, I find no evidence to support the argument that the relationship between jurisdictional overlap and taxation arises from the greater territorial flexibility of special districts relative to general-purpose governments.

[48] This hypothesis is associated with economic historian John Wallis, although he apparently has never published a statement of it directly (see Oates 1985).

[49] I am able to test the equality of the coefficients for coterminous and noncoterminous districts by running the two equations by seemingly unrelated regression and then testing the cross-equation restriction. I am not able to run the IV estimates of these models because the 1972 Census of Governments does not contain information on the geographic boundaries of districts.

Sensitivity Analysis

In additional analyses available in an online appendix, I examine the sensitivity of my results to parametric modeling assumptions. I use propensity score analysis (Rosenbaum and Rubin 1983) to relax the assumption of linearity by basing inferences on *local* comparisons of similar counties through subclassification. Because my "treatment" variable, jurisdictional overlap, is continuous rather than dichotomous, I rely on the generalized propensity score of Imai and van Dyk (2004), who extend the method so that it can be applied to arbitrary treatment regimes. In all cases, the propensity score estimates are statistically significant and similar in magnitude to their counterparts reported above. Importantly, the results indicate that covariate balance is satisfied for the propensity score analyses. Complete results and further discussion can be found in the online appendix.

In addition, I ran all of the models using two alternative transformations of the dependent variable. First, I took the natural log of the dependent variable. Second, I deleted a total of 35 counties whose level of own-source revenue per capita was greater than 1.5 times the 95th percentile value or less than 0.5 times the 5th percentile value. In neither case did the results differ importantly in either the relative magnitude or statistical significance of jurisdictional overlap as compared to the models reported above.

Finally, I note that the models reported above do not include state aid as a control variable, because of the concern that state aid is jointly determined with local taxes and spending. However, I note that when I run models including state aid (not shown), either directly or instrumented with its own lagged value, the results for jurisdictional overlap do not change notably.

Implications

The main argument of this article is that the vertical layering of special-function jurisdictions gives rise to higher taxes and spending than occur under general-purpose government. I have explained the common-pool logic whereby each jurisdiction seeks to provide benefits to its interest group constituency financed from a common-pool tax base; provided evidence that taxation is indeed higher in counties where more jurisdictions overlap; and argued that the common-pool model is the most persuasive explanation.

Understanding the welfare implications of jurisdictional overlap—that is, whether citizens are better or worse off as a result—requires assessing whether, in the *absence* of overlapping jurisdictions, general-purpose governments provide a desirable level of public services. The literature provides two competing answers to this question.

One school of thought, originating with Tiebout (1956) and introduced to political science by Peterson (1981), argues that competition forces local governments to adopt efficient policies. Although the institutional foundations of Tiebout's original model are unspecified, most scholars working in this tradition assume (often implicitly) that governments are general purpose and nonoverlapping. In this view, competition among governments for mobile residents is analogous to the struggle among firms in a private market. With a large number of governments, interjurisdictional competition leads to market-like efficiency in the provision of public goods. If it is correct that general-purpose governments can be expected to provide socially optimal tax-service bundles, then the proliferation of overlapping SFJs likely makes citizens worse off due to overtaxation.

Of course, even if specialized government leads to overtaxation, some of the negative welfare effects may be offset by higher service quality. In other words, it is important to remember that it is possible for a government to *overprovide* quality, which is to say provide more than the majority would like, given that quality is costly. Return to the example of highly disproportionate turnout by teachers union members in school district elections (Moe 2006). Union members may prefer higher budgets that result in higher quality education (e.g., smaller class sizes), or they may prefer spending increases that do not necessarily translate into improvements in student learning (e.g., an earlier retirement age or easier tenure standards). In the former case, the disutility of higher taxes will be partially offset by increased service quality; in the latter case, overtaxation is a strict welfare loss to taxpayers.

A second school of thought, inspired by Oates's (1972) work on fiscal federalism, contends that competition for taxable resources leads to inefficiently *low* tax rates. A major departure between the Tiebout model and the tax competition literature is the latter's focus on fiscal externalities through which one region's policies affect the tax bases of other regions.[50] In other words, a reduction in one region's tax rate to attract new businesses or residents generates a negative externality for other regions, who in turn lose those businesses or residents. According to Oates, "The result of tax competition may well be a

[50]Wilson (1999) provides an excellent review of the tax competition literature and its conflicts with the Tiebout model. For a more extensive treatment, see Wellisch (2000).

tendency toward less than efficient levels of output of local services. In an attempt to keep taxes low to attract business investment, local officials may hold spending below those levels for which marginal benefits equal marginal costs" (1972, 143). If this view is correct—that is, if tax competition induces general-purpose governments to provide undesirably low levels of public services—then concurrent taxation by overlapping jurisdictions may be socially beneficial, leading to increases in tax rates that would otherwise be too low.

The literature thus suggests two conflicting answers to the question of whether jurisdictional overlap is socially harmful or beneficial. If the Tiebout crowd is right that general-purpose governments with exclusive tax authority provide efficient public services, then jurisdictional layering with concurrent taxation likely leads to taxes that are too high. On the other hand, if the tax competition literature is closer to the truth in predicting that general-purpose governments underprovide services, then the higher taxes associated with jurisdictional overlap may actually improve the welfare of local citizens. In Harberger's words, "An action which would take us away from a Pareto optimum if we were starting from that position can actually bring us toward such an optimum if we start from an initially distorted situation" (1964, 59).

Unfortunately, measurement of public sector efficiency or quality is a tough challenge, and the empirical literature offers little evidence to settle the matter. Empirical studies of Tiebout-style competition are many but inconclusive (see, e.g., Helsley 2004), and there is even some question as to what the testable implications of the Tiebout model actually are (Epple, Zelenitz, and Visscher 1978). At the same time, the evidence of wasteful tax competition is largely anecdotal; the field has produced no systematic evidence of a fiscal race to the bottom (Oates 2001). Resolving these issues is well beyond the scope of the present article. Rather, I conclude by briefly discussing the implications of my findings for these cornerstone models of local political economy.

Tax Competition and Fiscal Federalism

Unlike Tiebout, the tax competition and fiscal federalism literatures explicitly recognize multilevel government and fiscal externalities among jurisdictions. However, while concurrent taxation by federal and state governments is a concern that dates back at least to Alexander Hamilton (Rodden 2005), the contemporary literature on tax competition deals almost exclusively with horizontal fiscal externalities. Literature addressing the vertical dimension of intergovernmental affairs generally focuses on federal-state, or occasionally federal-state-local, relations. Yet, the local public sector has a vertical architecture all its own. The vertical stacking of local jurisdictions, well beyond the conventional two- or three-tiered vision of federalism, may have powerful implications for the central problems of this literature: the assignment of tax instruments and functional responsibilities, decentralization, intergovernmental grants, revenue sharing, and, of course, horizontal tax competition. As of yet, neither the theoretical nor the empirical literature on fiscal federalism has investigated these problems in the context of manifold jurisdictional overlap.

One issue of vertical fiscal relations that has received attention recently is the problem of the "soft budget constraint" (Rodden, Eskeland, and Litvack 2003). When subnational governments receive their funding from the center but have the capacity to issue debt independently, they have an incentive to borrow excessively with the expectation of a federal bailout. This is another instance of a fiscal common-pool problem, wherein subnational governments expect to have their local debts paid from a national pool of tax revenue, leading to systemic overborrowing. One commonly proposed solution to the soft budget constraint is to empower subnational governments to tax their own citizens and to reduce or eliminate reliance on transfers from the center (e.g., Frey 2001). However, if subnational jurisdictions are themselves vertically overlapping and concurrently taxing, my results suggest that increasing their tax authority may simply generate a second-order fiscal common-pool problem: instead of overborrowing from the federal revenue pool, they may overtax the shared local tax base. The optimal design of vertical fiscal relations in a federation remains an open question.[51]

Tiebout

The primary incentive for government efficiency in the Tiebout model is the elasticity of the tax base. That is, inefficient policies result in decrements to the tax base, due to either mobile assets exiting the jurisdiction or to a decline in the value of local property.[52] Governments seeking to preserve or expand their tax base, therefore, have an incentive to adopt policies that maximize voter

[51] Hooghe and Marks (2003) provide a remarkably insightful discussion of the issues involved in the design of multilevel government.

[52] The debate over capitalization in the Tiebout model is beyond the scope of this article. See Fischel (2001, chap. 3) for a survey.

welfare. However, the common-pool problems associated with concurrent taxation weaken these incentives because any negative consequences arising from undesirable policies are also spread among the various governments sharing the tax base. That is, when the tax base declines as a result of the actions of one government, all the overlapping jurisdictions feel the adverse effect. The culprit government suffers only a fraction of the costs associated with its actions. By contrast, a unitary government must internalize all the costs of its actions. In sum, the same sorts of common-pool problems that provide the incentives for individual jurisdictions to overspend also dilute the effects of the competitive counterpressures that are thought to punish deviations from efficiency. The incentives for efficiency become weaker as more governments share the same tax base.

More broadly, some have seen Tiebout's model as an effort to eliminate politics from the theory of the local public sector (Epple and Zelenitz 1981; Helsley 2004; Rose-Ackerman 1983). As long as the option to "vote with your feet" keeps local governments accountable, voting at the ballot box is unnecessary. While many critiques of the Tiebout model have focused on its heroic assumptions about the attributes and behavior of individuals—homogeneity, costless mobility, perfect information, and exogenously endowed income—I contend that Tiebout's assumptions about government are most problematic. The complex vertical layering of fiscally and politically interacting governments defies Tiebout's institution-free model of local nonpolitics. With each special-function government being able to provide concentrated benefits with diffuse costs, opportunities and incentives abound for interest group mischief. In this setting, the ideal of a unitary government operating as an apolitical efficiency-seeker is particularly hard to swallow. While mobility is undoubtedly an important complement to politics at the local level, it is no substitute.

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