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Interjurisdictional Competition and Local Government Spending in U.S. Metropolitan Areas

Dean Stansel
Florida Gulf Coast University, Fort Myers

Using a new comprehensive data set of 314 U.S. metropolitan areas (or all metro areas for which comparable historical data were available), this article provides a new test of the Leviathan hypothesis that there is an inverse relationship between fiscal exploitation and the amount of interjurisdictional competition. Unlike much previous work, this article focuses on the local level, where the residential mobility that drives that interjurisdictional competition is at its highest. Consistent with the Leviathan hypothesis, the results indicate that there is a negative relationship between interjurisdictional competition and spending growth, and this result holds for two different measures of spending and three different time periods. However, the results for spending levels are less supportive.

Keywords: *interjurisdictional competition; Leviathan; local government; decentralization*

1. Introduction

Brennan and Buchanan's (1980) Leviathan hypothesis states that "total government intrusion into the economy should be smaller, *ceteris paribus*, the greater the extent to which taxes and expenditures are decentralized" (p. 185). The idea is that citizen mobility is greater at the local level than at the national level; thus the Tiebout (1956) mechanism allows them to "vote with their feet" by choosing a residential jurisdiction that closely matches their preferences for local public goods and services. A multiplicity of local communities provides for interjurisdictional competition that can constrain the monopoly power of government. As Brennan and Buchanan described it,

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"The potential for fiscal exploitation varies inversely with the number of competing governmental units in the inclusive territory"(p. 180).[1]

An empirical test of this theory requires a definition of the market in which the competition is alleged to take place. The metropolitan area concept is intended to define the local labor market. Residential mobility should be highest when moving does not require finding a new job. Thus, mobility should be higher within local labor markets than within individual states or nations. Because mobility is greatest at the local level, the effects of interjurisdictional competition should be most evident at the level of the metropolitan area. This article provides a test of the Leviathan hypothesis using data from U.S. metropolitan areas.

Although a substantial amount of empirical work has been done to test the Leviathan hypothesis, there is still no consensus on this issue. However, some work has focused strictly on a national-level analysis.[2] Among the subnational-level empirical tests, the findings have been generally supportive of the theory of a negative relationship between the amount of interjurisdictional competition and fiscal exploitation (Wagner and Weber 1975; Sjoquist 1982; Schneider 1986, 1989; Nelson 1987; Zax 1989; Eberts and Gronberg 1990). Oates (1985) and Forbes and Zampelli (1989) are notable exceptions.

Oates's (1985) measure of the number of competing jurisdictions was the total number of local governmental units in each state, a variable that included a large number of single-function special districts, many of which do not have taxing authority and have no full-time employees. Residents' ability to vote with their feet is greater in regards to general-purpose governments (e.g., counties, municipalities, and townships) than it is in regards to such small single-function governments with overlapping jurisdictions. Furthermore, to account for widely varying sizes of different areas, the number of governments is typically divided by population, but Oates did not do this. Forbes and Zampelli's (1989) measure of the number of competing jurisdictions was the absolute number of county governments within a metropolitan area, and they too did not adjust for population size. Furthermore, by excluding municipal and township governments, Forbes and Zampelli did not include all general-purpose local governments. In addition, their data set is considerably smaller than others, representing only 345 counties located in 157 SMSAs, so that their approach may produce results that are not broadly applicable to all metro areas.

This article utilizes a new, expanded data set that consists of all 314 U.S. metro areas for which comparable historical data are available. The next section describes the data set and provides an empirical model that will be used to test the Brennan and Buchanan (1980) hypothesis of an inverse relation-

ship between the number of competing governments and the level of fiscal exploitation. The econometric results from those tests are provided in section 3. Section 4 provides concluding remarks.

2. Data and Model Specification Issues

This empirical analysis examines all 314 U.S. metropolitan areas for which comparable historical data are available; only 13 metro areas were excluded. (The appendix provides a detailed discussion of the data sample.) To measure the amount of fiscal exploitation, I examine both the level and the growth of local government expenditures in metro areas.[3] The idea is that budget-maximizing bureaucrats (Niskanen 1971, 1975) in areas with fewer competitors will have a greater ability to exploit their citizens through excessive spending levels or excessive increases in spending. To allow for substantial variation in spending growth, I examine data for the period 1962 to 1992. To examine the robustness of those findings and explore shorter-term effects, results are also provided for 1962 to 1982 and 1982 to 1992. The spending levels utilized are for 1962, 1982, and 1992.[4]

Controlling for the substantial differences in the size of the metro areas' populations and economies is essential to make meaningful comparisons of the levels of spending in metro areas. To do that, government spending figures are typically expressed as a ratio of one of two economic variables: population or personal income. Per capita government spending accurately reflects the amount of spending per person. However, a per capita spending level of, for example, $2,000 will mean something much different to residents in a poor area like El Paso, Texas (with a real per capita money income in 1989 of $11,000) or Hattiesburg, Mississippi ($12,000) than in a wealthy area like San Francisco ($26,500) or West Palm Beach, Florida ($24,000). In the poorer areas, a per capita spending level of $2,000 will represent about 17 percent of income, whereas in the wealthier areas that will be less than half as much, only about 8 percent of income. Thus, by adjusting for the wide variation of income levels across metro areas, the second ratio (or government expenditure share of income) better reflects the level of government spending. Nevertheless, to measure the level of fiscal exploitation in metro areas, I use both the local general expenditure share of money income and real per capita general expenditure (as well as the growth in the log of each of these) as my dependent variables.[5]

The main independent variables of interest are the proxies for interjurisdictional competition within metro areas. The most often used measure of interjurisdictional competition is the number of general-purpose govern-

ments (county, municipal, and township governments). The data on the number of governments are available from the U.S. Census Bureau in its *Census of Governments*, collected every five years.[6] To account for widely varying sizes of different metro areas, the number of governments is typically divided by the population. Since the number of general-purpose governments provides a measure of the number of suppliers of general local government services available in a given metro area, a greater number of them imply more interjurisdictional competition. The central city share of the metro area population is another proxy that has been used in previous work, and it provides a measure of the extent to which the central city (or cities) dominates the market for local government services.[7] A larger central city share implies less competition. I follow the convention in prior studies by using the following two independent variables: the number of general-purpose local governments per 100,000 residents and the central city share of metro area population.

While it is not a direct proxy for interjurisdictional competition, one other variable that is sometimes included (and is included here) is the number of special-district governments. Since special-district governments are often overlapping and each tends to provide a single function, a greater number of these does not produce more interjurisdictional competition. Thus, this variable does not provide a direct test of the Leviathan hypothesis. In contrast to general-purpose governments, the number of special-district governments per 100,000 residents is expected to be positively related to spending levels and spending growth. One reason is that special-district governments tend to provide functions for which there are substantial economies of scale (e.g., water supply and sewerage). To reap the benefits of those economies of scale, these governments need to be large. Having a larger number of special-district governments per 100,000 residents would tend to reduce efficiency and thus would lead to higher spending. Furthermore, there has been a rapid increase in the number of special-district governments in recent decades. This can in part be explained by the desire of state and local politicians to circumvent the increasing number of spending, revenue, and debt limitations on general-purpose governments. Establishing a special-district government can often allow local governments to increase spending without exceeding those limits.

Government spending decisions can be influenced by differing taxpayer preferences or differing costs of providing government services. Various control variables are used to account for those differences. Following the practice of the literature, the control variables are the initial level of government spending[8] (1962 or 1982), the intergovernmental revenue share of total local revenue (1962 or 1982), the log of population (1960 or 1980), population density (1960 or 1980), the previous decade's growth in the log of popu-

lation (1950-1960 or 1970-1980), real per capita money income (1959 or 1979), the percentage of families earning less than $3,000 (1959), the percentage of families below poverty level[9] (1979), the percentage of population (aged twenty-five and older) with sixteen or more years of school (1960 or 1980), the unemployment rate (1960 or 1980), the manufacturing sector share of total employment (1960 or 1980), and fifty state dummy variables (the omitted "state" is the District of Columbia). Table A1 in the appendix provides summary statistics for all variables.

3. Regression Results

3.1. Regression Results: The Impact of Core Variables on Spending Levels and Growth

As a benchmark for comparison, Tables 1 and 2 show the ordinary least squares (OLS) regression results from a specification that includes only the conventional set of control variables. To account for heteroskedasticity, all the models in this article are estimated using White robust standard errors.

It is surprising that the intergovernmental revenue share was found to have a negative impact on spending levels and growth. However, this is consistent with some of the previous literature (e.g., Schneider 1986; Forbes and Zampelli 1989; Zax 1989). One possible explanation is that the intergovernmental revenues are in part being used as a substitute for local resources (Forbes and Zampelli 1989). The population density results are also a bit puzzling—it is found to be statistically significant in opposite directions for different time periods and for different measures of spending levels.

3.2. Regression Results: Interjurisdictional Competition and Local Government Spending Growth

A negative coefficient on the variables measuring the number of general-purpose local governments would be consistent with Brennan and Buchanan's (1980) theory of an inverse relationship between interjurisdictional competition and fiscal exploitation. However, for the central city concentration variable, a positive coefficient would be consistent with that theory.

Table 3 shows the results for spending growth when the variables measuring interjurisdictional competition are added to the core model of section 3.1.[10] Here the dependent variables are the growth in the log of the general expenditure share of money income and the growth in the log of real per capita general expenditure over the periods 1962 to 1992, 1962 to 1982, and

(text continues on p. 184)

Table 1
Local Government Spending Growth: Core Model

	Growth in Log of General Expenditure Share of Money Income			Growth in Log of Real Per Capita General Expenditure		
	(1) 1962-1992	(2) 1962-1982	(3) 1982-1992	(4) 1962-1992	(5) 1962-1982	(6) 1982-1992
Spending level, initial year (1962, 1982)	–4.655***	–3.989***	–1.277***	–0.00067***	–0.00053***	–0.00018***
	(7.31)	(7.93)	(3.03)	(10.52)	(9.18)	(4.68)
Intergovernmental revenue share (1962, 1982)	–0.432**	–0.052	–0.359**	–0.471**	–0.274*	–0.362**
	(1.97)	(0.28)	(2.06)	(2.42)	(1.72)	(1.97)
Log (population) (1960, 1980)	0.030*	0.042***	–0.0075	0.034***	0.035***	0.012
	(1.95)	(3.47)	(0.61)	(2.68)	(3.26)	(1.03)
Population density (1,000s of residents per square mile) (1960, 1980)	0.0012	0.015*	–0.020**	–0.0045	0.0062	–0.011
	(0.08)	(1.74)	(2.57)	(0.31)	(0.69)	(1.02)
Growth in log of population, previous decade (1950-1960, 1970-1980)	0.0055	–0.098	0.065	0.080	–0.053	0.144
	(0.07)	(1.21)	(0.67)	(1.19)	(0.82)	(1.59)
Real per capita money income (1,000s of 1996 $) (1959, 1979)	–0.076***	–0.071***	–0.0025	0.0085	–0.025	0.012
	(3.02)	(3.86)	(0.21)	(0.38)	(1.44)	(1.14)
Percentage of families earning less than $3,000 (1959)	–0.068	–0.548*		0.885**	–0.043	
	(0.15)	(1.67)		(2.03)	(0.14)	
Percentage of families below poverty level (1979)			1.699***			1.470**
			(2.65)			(2.51)
Percentage of population with 16+ years of school (1960, 1980)	–0.357	–0.036	–0.396*	0.014	0.039	0.078
	(0.73)	(0.09)	(1.78)	(0.03)	(0.09)	(0.36)
Unemployment rate (1960, 1980)	2.923***	1.801*	–0.330	0.265	0.790	–0.251
	(2.68)	(1.78)	(0.62)	(0.28)	(0.89)	(0.49)

Manufacturing share (1960, 1980)	–0.099	–0.180	0.094	–0.105	–0.129	0.108
	(0.60)	(1.36)	(0.69)	(0.71)	(1.05)	(0.81)
Constant	1.213***	0.981***	0.411*	1.206***	1.145***	0.348
	(3.49)	(3.83)	(1.73)	(4.00)	(5.25)	(1.58)
N	314	314	314	314	314	314
R^2	.500	.586	.356	.649	.682	.435

Note: To account for heteroskedasticity, the models are estimated using White robust standard errors. For the sake of brevity, the state dummy results are not reported. Numbers in parentheses are absolute values of *t*-statistics.
*Two-tailed statistical significance at 90 percent confidence. **Two-tailed statistical significance at 95 percent confidence. ***Two-tailed statistical significance at 99 percent confidence.

Table 2
Local Government Spending Level: Core Model

	General Expenditure Share of Money Income			Real Per Capita General Expenditure		
	(1) 1962	(2) 1982	(3) 1992	(4) 1962	(5) 1982	(6) 1992
Intergovernmental revenue share (1962, 1982, 1992)	–0.127***	–0.166***	–0.285***	–797.38***	–1,528.27***	–3,837.37***
	(4.54)	(7.13)	(7.16)	(4.46)	(6.80)	(7.26)
Log (population) (1960, 1980, 1990)	–0.0013	0.0033**	0.0038**	–17.09	37.18**	74.088***
	(0.69)	(2.02)	(2.07)	(1.21)	(2.23)	(2.74)
Population density (1,000s of residents per square mile) (1960, 1980, 1990)	0.00048	–0.00042	–0.0047***	9.41**	9.494	–24.942
	(0.76)	(0.33)	(2.94)	(2.21)	(0.63)	(0.55)
Growth in log of population, previous decade (1950-1960, 1970-1980, 1980-1990)	0.016	–0.027*	0.014	144.93**	–372.91**	–255.16
	(1.64)	(1.74)	(0.66)	(2.10)	(2.34)	(0.88)
Real per capita money income (1,000s of 1996 $) (1959, 1979, 1989)	–0.0053*	–0.0049***	–0.0057***	78.92***	65.84***	29.416
	(1.74)	(2.98)	(4.82)	(3.29)	(3.91)	(1.54)
Percentage of families earning less than $3,000 (1959)	0.106**			578.88**		
	(2.37)			(2.07)		
Percentage of families below poverty level (1979, 1989)		0.526***	0.893***		3,814.78***	8,134.60***
		(5.77)	(9.20)		(5.58)	(6.11)
Percentage of population with 16+ years of school (1960, 1980, 1990)	–0.156***	–0.081**	–0.092**	–1,129.25***	–768.30**	–1,272.93**
	(3.16)	(2.16)	(2.53)	(3.05)	(2.06)	(2.50)
Unemployment rate (1960, 1980, 1990)	–0.035	0.164*	–0.075	–240.19	2,119.21**	–213.37
	(0.37)	(1.65)	(0.42)	(0.36)	(2.26)	(0.09)

Manufacturing share (1960, 1980, 1990)	–0.040**	–0.027	0.025	–321.66**	–382.57*	8.328
	(2.12)	(1.25)	(0.95)	(2.41)	(1.74)	(0.02)
Constant	0.246***	0.253***	0.294***	974.13***	1,094.36***	2,493.96***
	(6.25)	(7.52)	(7.30)	(3.34)	(3.26)	(4.43)
N	314	314	314	314	314	314
R^2	.736	.769	.778	.859	.813	.786

Note: To account for heteroskedasticity, the models are estimated using White robust standard errors. For the sake of brevity, the state dummy results are not reported. Numbers in parentheses are absolute values of *t*-statistics.
*Two-tailed statistical significance at 90 percent confidence. **Two-tailed statistical significance at 95 percent confidence. ***Two-tailed statistical significance at 99 percent confidence.

Table 3
Local Government Spending Growth and Interjurisdictional Competition

	Growth in Log of General Expenditure Share of Money Income			Growth in Log of Real Per Capita General Expenditure		
	(1) 1962-1992	(2) 1962-1982	(3) 1982-1992	(4) 1962-1992	(5) 1962-1982	(6) 1982-1992
General-purpose local governments per 100,000 residents (1962, 1982, 1992)	–0.0027**	–0.0018*	–0.0012	–0.0018*	–0.0016*	–0.0011
	(2.43)	(1.65)	(1.13)	(1.84)	(1.70)	(1.12)
Central city share of metro area population (1960, 1980)	0.249***	0.135**	0.126**	0.155**	0.047	0.099*
	(2.88)	(1.99)	(2.37)	(2.11)	(0.75)	(1.85)
Special district governments per 100,000 residents (1962, 1982)	0.0017	0.0018*	0.00054	0.0011	0.0013	–0.00021
	(1.42)	(1.80)	(0.48)	(1.05)	(1.47)	(0.18)
Spending level, initial year (1962, 1982)	–4.574***	–4.031***	–1.345***	–0.00067***	–0.00055***	–0.00019***
	(7.15)	(8.16)	(3.20)	(10.31)	(9.16)	(4.71)
Intergovernmental revenue share (1962, 1982)	–0.339	–0.0044	–0.371**	–0.416**	–0.255	–0.379**
	(1.59)	(0.02)	(2.08)	(2.20)	(1.62)	(2.00)
Log (population) (1960, 1980)	0.033**	0.045***	–0.0041	0.036**	0.037***	0.013
	(2.06)	(3.71)	(0.34)	(2.55)	(3.18)	(1.11)
Population density (1,000s of residents per square mile) (1960, 1980)	–0.0091	0.010	–0.024***	–0.011	0.0037	–0.015
	(0.81)	(1.35)	(3.52)	(0.87)	(0.44)	(1.47)
Growth in log of population, previous decade (1950-1960, 1970-1980)	0.031	–0.082	0.100	0.096	–0.048	0.177*
	(0.39)	(1.05)	(1.03)	(1.42)	(0.75)	(1.92)
Real per capita money income (1,000s of 1996 $) (1959, 1979)	–0.089***	–0.079***	–0.0062	0.000027	–0.029	0.0090
	(3.60)	(4.18)	(0.50)	(0.00)	(1.58)	(0.81)
Percentage of families earning less than $3,000 (1959)	–0.041	–0.522*		0.906**	–0.031	
	(0.09)	(1.67)		(2.11)	(0.10)	

Percentage of families below poverty level (1979)			1.478**			1.263**
			(2.21)			(2.06)
Percentage of population with 16+ years of school (1960, 1980)	–0.423	–0.039	–0.501**	–0.030	0.063	–0.018
	(0.87)	(0.10)	(2.24)	(0.06)	(0.15)	(0.08)
Unemployment rate (1960, 1980)	2.385**	1.501	–0.395	–0.079	0.630	–0.255
	(2.30)	(1.57)	(0.74)	(0.08)	(0.73)	(0.50)
Manufacturing share (1960, 1980)	–0.081	–0.163	0.100	–0.095	–0.123	0.102
	(0.50)	(1.22)	(0.75)	(0.64)	(0.98)	(0.78)
Constant	1.194***	0.954***	0.466*	1.209***	1.162***	0.431*
	(3.29)	(3.49)	(1.70)	(3.77)	(4.94)	(1.68)
N	314	314	314	314	314	314
R^2	*.535*	*.603*	*.374*	*.662*	*.689*	*.447*

Note: To account for heteroskedasticity, the models are estimated using White robust standard errors. For the sake of brevity, the state dummy results are not reported. Numbers in parentheses are absolute values of *t*-statistics.
*Two-tailed statistical significance at 90 percent confidence. **Two-tailed statistical significance at 95 percent confidence. ***Two-tailed statistical significance at 99 percent confidence.

1982 to 1992.[11] The coefficients for the control variables generally all retain the same signs, magnitudes, and significance levels.

The total number of general-purpose local governments per 100,000 residents was found to have a negative relationship with local government spending growth in all six of the models (i.e., for both measures of spending growth and all three time periods). Four of the six coefficients were statistically significant. These findings are consistent with the view that an increase in competing jurisdictions restrains fiscal exploitation. For example, a one-standard-deviation increase in the number of local governments per 100,000 residents in 1962 (16.122) was associated with a 4.4 percentage point decline in the 1962 to 1992 growth of the local general expenditure share of money income.

To put these results in perspective, suppose that Lincoln, Nebraska, or Springfield, Illinois—the two metro areas surrounding the median 1960 population of 155,530—had increased their number of local governments per 100,000 residents by one standard deviation (equivalent to an increase of about twenty-five local governments in these areas).[12] The results suggest that, due to the slower growth in local government spending, the local government spending share of money income in Lincoln and Springfield would have been about 0.71 and 0.47 percentage points lower in 1992. The per capita level of local government spending would have been about $100 lower in Lincoln in 1992 and about $70 lower in Springfield.

The central city share of metro area population was found to have a positive relationship with local government spending growth in all six of the models (i.e., for both measures of spending growth and all three time periods). Five of the six were statistically significant. These findings are consistent with the view that an increase in interjurisdictional competition restrains fiscal exploitation. For example, a one-standard-deviation increase in the central city share of metro area population (0.184) in 1960 was associated with a 4.6 percentage point increase in the 1962 to 1992 growth of the local general expenditure share of money income.

Suppose that the city of Lincoln or Springfield had annexed surrounding suburbs and thereby increased the central city's share of metro area population by one standard deviation (18.4 percentage points). The results suggest that, due to the faster growth in local government spending, in 1992 the local government spending share of residents' money income in Lincoln and Springfield would have been about 0.77 and 0.51 percentage points higher. The per capita level of local government spending would have been about $110 higher in Lincoln in 1992 and about $80 higher in Springfield.

The number of special-district governments per 100,000 residents was found to have a positive relationship with local government spending growth

in five of the six models. However, only one of those five coefficients was statistically significant.

3.3. Regression Results: Interjurisdictional Competition and Local Government Spending Levels

Table 4 shows the results for spending levels when these variables are added to the core model described earlier. Here the dependent variables are the general expenditure share of money income and real per capita general expenditure in 1962, 1982, and 1992. The coefficients for the control variables generally all retain the same signs, magnitudes, and significance levels.

The total number of general-purpose local governments per 100,000 residents was found to have a negative relationship with local government spending in four of the six models (i.e., for both measures of local government spending in 1982 and 1992). However, none of those were statistically significant.[13] For 1962, the coefficients were positive, but smaller in absolute value and even less significant.

The central city share of metro area population was found to have a positive relationship with the level of spending in four of the six models. However, the relationship was statistically significant only for real per capita general expenditure in 1992. That result indicates that a one-standard-deviation increase in the central city share of metro area population in 1990 (0.197) was associated with a $70 increase in real per capita general expenditure in 1992. This finding is consistent with the view that an increase in competition restrains fiscal exploitation. For 1962, the coefficients were negative, but smaller in absolute value and less statistically significant.

Since spending levels can largely be explained by differences in tastes, the effect of interjurisdictional competition on spending levels would be expected to be weaker than the effect on spending growth. This could in part explain the insignificant coefficients for the spending level regressions in combination with the mostly significant coefficients for the spending growth regressions. This stronger impact of the differences in tastes can be seen in the fact that seven of the nine control variables were more statistically significant for spending levels than for spending growth.[14]

The number of special-district governments per 100,000 residents was found to have a positive relationship with local government spending in all six of the models (i.e., for both measures of local government spending in all three years). Four of the six coefficients were statistically significant. This is consistent with the findings in previous research (e.g., Nelson 1987; Zax 1989; Eberts and Gronberg 1990) and supports the view that special-district

Table 4
Local Government Spending Level and Interjurisdictional Competition

	General Expenditure Share of Money Income			Real Per Capita General Expenditure		
	(1) 1962	(2) 1982	(3) 1992	(4) 1962	(5) 1982	(6) 1992
General-purpose local governments per 100,000 residents (1962, 1982, 1992)	0.000037	–0.000053	–0.00015	0.340	–1.41	–3.84
	(0.21)	(0.26)	(0.69)	(0.27)	(0.70)	(1.37)
Central city share of metro area population (1960, 1980, 1990)	–0.0080	0.0097	0.015	–30.56	123.72	356.56**
	(0.77)	(0.98)	(1.60)	(0.41)	(1.22)	(2.45)
Special-district governments per 100,000 residents (1962, 1982, 1992)	0.00053***	0.00042*	0.0020	3.76***	4.81**	4.18
	(2.84)	(1.86)	(0.99)	(2.70)	(2.35)	(1.58)
Intergovernmental revenue share (1962, 1982, 1992)	–0.125***	–0.161***	–0.286***	–777.31***	–1,475.30***	–3,866.00***
	(4.58)	(6.63)	(7.19)	(4.37)	(6.35)	(7.38)
Log (population) (1960, 1980, 1990)	0.00038	0.0044**	0.0045**	–4.42	49.40***	86.50***
	(0.20)	(2.34)	(2.27)	(0.32)	(2.60)	(3.08)
Population density (1,000s of residents per square mile) (1960, 1980, 1990)	0.0011*	–0.00051	–0.0052***	13.27***	7.51	–37.46
	(1.78)	(0.40)	(3.73)	(2.89)	(0.55)	(0.96)
Growth in log of population, previous decade (1950-1960, 1970-1980, 1980-1990)	0.017*	–0.027*	0.016	152.79**	–380.57**	–210.75
	(1.74)	(1.70)	(0.76)	(2.21)	(2.30)	(0.71)
Real per capita money income (1,000s of 1996 $) (1959, 1979, 1989)	–0.0047	–0.0048***	–0.0057***	82.83***	64.92***	29.59
	(1.61)	(2.85)	(4.56)	(3.61)	(3.76)	(1.51)
Percentage of families earning less than $3,000 (1959)	0.107**			590.34**		
	(2.51)			(2.20)		
Percentage of families below poverty level (1979, 1989)		0.518***	0.877***		3,645.45***	7,748.46***
		(5.47)	(8.92)		(5.09)	(6.08)
Percentage of population with 16+ years of school (1960, 1980, 1990)	–0.119**	–0.082**	–0.104***	–885.65**	–797.31**	–1,556.27***
	(2.37)	(2.21)	(2.89)	(2.36)	(2.17)	(3.09)

Unemployment rate (1960, 1980, 1990)	–0.011	0.129	–0.089	–105.84	1,693.03*	–564.61
	(0.12)	(1.31)	(0.50)	(0.16)	(1.84)	(0.25)
Manufacturing share (1960, 1980, 1990)	–0.031*	–0.21	0.030	–259.27**	–311.72	112.24
	(1.74)	(0.94)	(1.11)	(1.99)	(1.42)	(0.31)
Constant	0.207***	0.232***	0.286***	692.06**	911.75**	2,370.51***
	(5.32)	(5.77)	(6.21)	(2.34)	(2.27)	(3.70)
N	314	314	314	314	314	314
R^2	*.754*	*.774*	*.781*	*.867*	*.819*	*.795*

Note: To account for heteroskedasticity, the models are estimated using White robust standard errors. For the sake of brevity, the state dummy results are not reported. Numbers in parentheses are absolute values of *t*-statistics.
*Two-tailed statistical significance at 90 percent confidence. **Two-tailed statistical significance at 95 percent confidence. ***Two-tailed statistical significance at 99 percent confidence.

governments are established to reap economies of scale and to circumvent fiscal limits on general-purpose governments.

4. Conclusions

Brennan and Buchanan's (1980) Leviathan hypothesis states that competition should restrict the ability of governments to engage in fiscal exploitation. Since residential mobility is the primary force driving that competition, the effects of interjurisdictional competition should be most evident at the local level. Previous work testing this hypothesis has examined only a subset of the largest metropolitan areas, so that those results may not be broadly applicable to all metro areas. To explore this relationship in greater depth, this article has employed a new comprehensive data set of all 314 metro this area for which historical data were available. The findings indicate that the more competitive the market for local government services, the slower the growth of local government spending, a result that is consistent with the Leviathan hypothesis. There is also some evidence that the level of spending is lower in more competitive areas, but the results here are much weaker.

The relationship between the structure of local government and government spending has direct relevance to contemporary policy debates. For example, individuals in Staten Island, New York, and San Fernando Valley, California—sizable communities within our nation's two largest metro areas (New York and Los Angeles)—have recently expressed their dissatisfaction with the quality of their local government by supporting efforts to detach from their central city and form new independent jurisdictions. In contrast, efforts to form consolidated local government are ongoing in numerous metro areas, including Baltimore and Norfolk, Virginia.

Imagine if dissatisfied residents in Staten Island and San Fernando Valley had had their way, and the number of local governments per 100,000 residents in 1962 had increased by one standard deviation. The results in this article suggest that, due to the slower growth in local government spending, in 1992 the local government spending share of money income in New York and Los Angeles would have been about 1.1 and 0.8 percentage points lower. The per capita level of local government spending would have been about $190 lower in New York in 1992 and about $130 lower in Los Angeles.

Appendix
Data Description

The data set includes all 314 U.S. metropolitan areas for which comparable historical data are available. The data are from U.S. Census Bureau sources.[a] To provide a consistent unit of analysis, all metro area data are for the area as defined in 1999.[b] Since official metro area boundaries often expand over time, this required collecting additional data for counties that have been added to individual metro areas over time and recalculating the earlier metro area totals. In addition, for areas that were first officially recognized as metro areas sometime after 1960, calculating the metro area totals required collecting data for each component county in those areas.

The 314 metropolitan areas consist of 255 MSAs (metropolitan statistical areas) and 59 PMSAs (primary metropolitan statistical areas), as defined in 1999. PMSAs are the component areas within CMSAs (consolidated metropolitan statistical areas). For example, San Francisco, Oakland, and San Jose are three of the six PMSAs within the San Francisco–Oakland–San Jose CMSA. Since CMSAs are fundamentally different from the standard MSAs and PMSAs, they are not considered separately here. Only their component PMSAs are included.

In the six New England states, the metropolitan areas are defined in terms of cities and towns rather than counties. As a result, comparable historical data are often unavailable for those areas. For that reason, the Office of Management and Budget (OMB) provides alternative county-based definitions known as NECMAs (New England county metropolitan areas). Those NECMA definitions were used for ten of the MSAs and one of the PMSAs examined in this article. The latter refers to the New Haven–Bridgeport–Stamford–Waterbury–Danbury, Connecticut, NECMA, which replaces the five PMSAs contained in the Connecticut portion of the New York CMSA. Unfortunately, the OMB does not provide NECMA definitions for the ten component PMSAs within the Boston-Worcester-Lawrence-Lowell-Brockton CMSA; thus historical data for those areas were not available.

Two other MSAs, Albuquerque, New Mexico, and Yuma, Arizona, were excluded because comparable historical data for those areas as currently defined were unavailable due to changes in county boundaries. Anchorage, Alaska, was excluded for similar reasons. However, with the exception of these thirteen areas for which historical data were unavailable, every other metro area is included in the analysis. This new, expanded data set contrasts with those used in previous work, which typically consisted of a subsample of the largest metro areas.

a. Those specific sources were various volumes of the *County and City Data Book* (1962, 1967, and 1994), the 1960 Census of Population's *Characteristics of Population*, and the 1962 *Census of Governments*. The most recent population and per capita income data were downloaded from the Census Bureau's Web site (www.census.gov).

b. See U.S. Office of Management and Budget, Statistical Policy Office, "Metropolitan Areas 1999: Lists I-IV," Attachments to OMB Bulletin No. 99-04, June 30, 1999, http://www.whitehouse.gov/omb/inforeg/msa-bull99-04.html.

Table A1
Summary Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
General expenditure share of money income, 1962	0.118	0.031	0.059	0.239
General expenditure share of money income, 1982	0.153	0.038	0.055	0.301
General expenditure share of money income, 1992	0.157	0.044	0.066	0.355
Real per capita general expenditure, 1962	904.78	303.50	303.71	1,863.88
Real per capita general expenditure, 1982	1,615.04	428.41	654.49	3,297.50
Real per capita general expenditure, 1992	2,261.33	598.25	1,063.42	4,807.94
Growth in log of general expenditure share of money income, 1962-1992	0.287	0.213	–0.660	1.014
Growth in log of general expenditure share of money income, 1962-1982	0.264	0.186	–0.503	1.024
Growth in log of general expenditure share of money income, 1982-1992	0.023	0.139	–0.371	0.692
Growth in log of real per capita general expenditure, 1962-1992	0.936	0.230	0.364	2.042
Growth in log of real per capita general expenditure, 1962-1982	0.599	0.197	–0.006	1.256
Growth in log of real per capita general expenditure, 1982-1992	0.337	0.143	–0.066	1.047
Number of general-purpose local governments per 100,000 residents, 1962	15.446	16.122	0.200	148.482
Number of general-purpose local governments per 100,000 residents, 1982	12.287	13.264	0.131	124.822
Number of general-purpose local governments per 100,000 residents, 1992	11.718	12.955	0.120	122.116
Central city share of metro area population, 1960	0.467	0.184	0	0.937
Central city share of metro area population, 1980	0.429	0.192	0	0.921
Central city share of metro area population, 1990	0.423	0.197	0	0.922
Number of special district local governments per 100,000 residents, 1962	10.786	12.415	0	72.874
Number of special district local governments per 100,000 residents, 1982	11.199	10.768	0	59.981
Number of special district local governments per 100,000 residents, 1992	11.343	10.726	0	62.166
Intergovernmental revenue share, 1962	0.333	0.110	0.100	0.730
Intergovernmental revenue share, 1982	0.419	0.094	0.179	0.723
Intergovernmental revenue share, 1992	0.379	0.098	0.121	0.646

Log of population, 1960	12.229	1.068	9.441	15.986
Log of population, 1980	12.559	1.025	10.976	15.929
Log of population, 1990	12.662	1.040	10.946	15.997
Population density (1,000s of residents per square mile), 1960	0.280	0.903	0.002	13.572
Population density (1,000s of residents per square mile), 1980	0.344	0.848	0.004	12.108
Population density (1,000s of residents per square mile), 1990	0.372	0.861	0.005	12.024
Growth in log of population, 1950-1960	0.259	0.217	–0.099	1.550
Growth in log of population, 1970-1980	0.164	0.148	–0.092	0.815
Growth in log of population, 1980-1990	0.103	0.128	–0.160	0.641
Real per capita money income (thousands of 1996 dollars), 1959	7.966	1.511	4.042	12.662
Real per capita money income (thousands of 1996 dollars), 1979	13.470	1.875	7.619	19.671
Real per capita money income (thousands of 1996 dollars), 1989	16.124	2.935	7.962	26.479
Percentage of families earning less than $3,000, 1959	0.223	0.097	0.072	0.542
Percentage of families below poverty level, 1979	0.093	0.036	0.037	0.290
Percentage of families below poverty level, 1989	0.100	0.043	0.027	0.363
Percentage of population twenty-five years of age and older with sixteen years of school or more, 1960	0.081	0.030	0.035	0.218
Percentage of population twenty-five years of age and older with sixteen years of school or more, 1980	0.164	0.055	0.078	0.386
Percentage of population twenty-five years of age and older with sixteen years of school or more, 1990	0.198	0.063	0.095	0.440
Unemployment rate, 1960	0.052	0.016	0.016	0.111
Unemployment rate, 1980	0.067	0.022	0.021	0.149
Unemployment rate, 1990	0.063	0.018	0.028	0.143
Manufacturing share of employment, 1960	0.238	0.119	0.042	0.537
Manufacturing share of employment, 1980	0.210	0.093	0.043	0.523
Manufacturing share of employment, 1990	0.171	0.073	0.043	0.463

Notes

1. Epple and Zelenitz (1981) developed a model similar to Brennan and Buchanan's (1980) in which the monopoly power of local governments is limited by interjurisdictional competition but is not eliminated.

2. Oates (1989, 1999) provided a review of some of that literature. For more recent evidence, see Zhang and Zou (1998) and Jin and Zou (2002).

3. Ideally, I would examine the fiscal outcomes for each individual general-purpose government in those metro areas. However, in the case of municipalities, boundary changes frequently occur, which make historical comparisons impossible. For example, in 1960 the boundaries of Phoenix, Arizona, encompassed 187 square miles (U.S. Census Bureau's *County and City Data Book* 1967). By 2000, that had more than doubled to 475 square miles (*County and City Data Book* 2000). There are no historical data for the individual unincorporated areas that were added, so there is no way to go back and calculate the 1960 figures for the city as currently configured. Since the data are not available to make historical comparisons of the fiscal outcomes in the many individual general-purpose governments where fiscal decision making actually occurs, the next best alternative is to examine fiscal outcomes in each local market, thereby aggregating the decisions of all the individual governments in that local market. (The metropolitan area concept is used to define the local labor market. Since it is a county-based concept, historical data can be updated when metro area boundaries are redefined.) This aggregation is fairly straightforward and is consistent with previous literature in this area (e.g., Zax 1989). For example, if the goal was to examine the effect of competition on the price of bread, one could in theory collect price data in every local market from every retail outlet that sells bread. Then, after choosing some measure of competition that would be identical for each retailer in an individual local market, one could estimate the effect that competition has on price or changes in price. Alternatively, one could use an average price in each local market. Due to data limitations, this procedure is in effect what is being done here. All else being equal, in a more competitive market, local governments will have less ability to extract monopoly rents, so that the level and growth of government spending in that market should be lower. The level of competition is measured at the metro area level, so the fiscal outcome is also measured at the metro area level.

4. The 2002 spending data from that year's *Census of Governments* (vol. 4, no. 5) were still unavailable as of October 2005.

5. The spending data reported in the *Census of Governments* (U.S. Census Bureau, www.census.gov) by county area include all local governments in that county (both general-purpose and special-purpose governments). (I have aggregated these for each metro area.) It is not available for the general-purpose governments only. So the metro area *general expenditure* measure that I am using includes the general expenditures of both general-purpose and special-purpose governments in each area. Note that "general expenditure" excludes utility and liquor store expenditure and employee retirement expenditure.

6. Those are performed in years ending in "2" and "7." The data for the number of governments in this article come from the *Census of Governments* for the years 1962, 1982, and 1992.

7. The official metropolitan area definitions often designate more than one central city for a metro area. In general, municipalities with populations greater than 50,000 are designated as central cities, but the official definition is much more complicated than that. The central city share measure used in this article is the total population of all central cities in the metro area divided by the total population of the metro area as a whole.

8. The initial level of spending is used only in the spending growth regressions.

9. The percentage below the poverty level was not available for 1959.

10. As with the core model, all the models in this section and the next section are estimated using White robust standard errors to account for heteroskedasticity.

11. Chow test results for the different time periods indicated that the differences across the two time periods (1962-1982 and 1982-1992) were significant at the 1 percent level, so that I can reject the hypothesis that the parameter values were the same in the two time periods.

12. The twenty-five refers to the actual number of governments (i.e., not per 100,000 residents) that corresponds to a one-standard-deviation increase for the median sized metro area. Thus, the median population of 155,530 was divided by 100,000 then multiplied by the standard deviation (for governments per 100,000 residents) of 16.122.

13. The variance inflation factors were calculated and did not provide evidence of the presence of multicollinearity, which could have been one possible explanation for the low statistical significance.

14. Zax (1989, 565) offered another possible explanation for similar findings of insignificant coefficients: "If local government hierarchies assign most services with potential scale economies to single-purpose governments, the efficiency of general-purpose governments should not depend on their populations. The insignificant coefficient on general-purpose governments per 1,000 capita is consistent with this assignment."

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Dean Stansel is an assistant professor of economics at Florida Gulf Coast University, Fort Myers. His research interests include state and local public finance, economic growth, urban economics, and fiscal policy rules. His recent publications appear in the *Journal of Urban Economics* and *Public Finance Review.*