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Local decentralization and local economic growth: A cross-sectional examination of US metropolitan areas

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Abstract

This paper builds on the growing empirical literature that explores the relationship between government structure and economic growth. It uses a new data set of 314 US metropolitan areas to examine the relationship between local decentralization and local economic growth. The results indicate a negative relationship between the central-city share of metro area population and economic growth and a positive relationship between both the number of municipalities per 100,000 residents and the number of counties per 100,000 residents and economic growth. Those findings provide support for the hypothesis that decentralization enhances economic growth.

Keywords: Growth; Decentralization; Interjurisdictional competition; Local government; Fragmentation

1. Introduction

Decentralization is increasingly seen as a tool to promote economic development. As Oates [14] explained, "[t]he basic economic case for fiscal decentralization is the enhancement of economic efficiency: the provision of local outputs that are differentiated according

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to local tastes and circumstances results in higher levels of social welfare than centrally determined and more uniform levels of outputs across all jurisdictions."

There are two primary mechanisms involved here. The first is related to Hayek's [8] knowledge problem, which states that the wide dispersion of knowledge dooms central planning to failure.[1] Decentralized authorities are much better equipped to provide the economically efficient quantity and quality of public goods. They are in a better position to be responsive to variations in local demand.

The second mechanism is related to the idea of government as monopolist. As Brennan and Buchanan [4] explained, "The potential for fiscal exploitation varies inversely with the number of competing governmental units in the inclusive territory." More recent work on "market-preserving federalism" echoes this theme. "The fundamental political dilemma of an economic system is that a state strong enough to protect private markets is strong enough to confiscate the wealth of its citizens" (Weingast [21]). Increased competition between individual governments can limit government's ability to extract monopoly rents, thereby enhancing economic efficiency, and thus economic growth.

There is a growing empirical literature that tests this theory of a link between fiscal decentralization and economic development. Much of that work has utilized the nation as its unit of analysis. For example, Kim [10] found a positive relationship between fiscal decentralization and economic growth using an international panel data set. Using data for 80 countries, Huther and Shah [9] also found a positive correlation between fiscal decentralization and economic growth. In contrast, Davoodi and Zou [5] found a negative relationship between fiscal decentralization and economic growth in developing nations, but no relationship in developed nations. And Xie et al. [22] found a negative, but not very significant, relationship between the aggregate local share of US government spending and US economic growth.

One problem with utilizing the nation as the unit of analysis is that there are numerous important differences (e.g., cultural and institutional) between countries that are very difficult to quantify, and thus difficult to incorporate into an econometric test. In addition, national and state boundaries can be relatively arbitrary, and substantial variation can occur amongst local economies within those boundaries. Furthermore, reliable historical data can sometimes be difficult to obtain for more than a relatively small number of countries. One way to get around those problems is to examine smaller political units within a single nation.

[1] "The economic problem of society is ... a problem of the utilization of knowledge not given to anyone in its totality. ... [This] is at least one of the main problems of economic policy—or of designing an efficient economic system. ... This is not a dispute about whether planning is to be done or not. It is a dispute as to whether planning if to be done centrally, by one authority for the whole economic system, or to be divided among many individuals" (pp. 519–520).

"If we can agree that the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place, it would seem to follow that the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them. We cannot expect that this problem will be solved by first communicating all this knowledge to a central board which, after integrating *all* knowledge, issues its orders. We must solve it by some form of decentralization. ... We need decentralization because only thus can we ensure that the knowledge of the particular circumstances of time and place will be promptly used" (p. 524).

Using data from Chinese provinces, Zhang and Zou [24] found a negative relationship between the ratio of provincial government spending to central government spending and provincial economic growth. That finding contradicts the often-asserted hypothesis that greater decentralization is associated with higher economic growth.[2] Lin and Liu [11] also examined data from Chinese provinces. They found the expected positive relationship between fiscal decentralization and economic growth.

Akai and Sakata [1] used US states as their unit of analysis. Since conditions in the states are relatively similar, this addresses the issue of substantial cultural or institutional differences between nations that arises in previous work. They found a positive relationship between fiscal decentralization within states and state economic growth.

Decentralization has two distinct dimensions: the vertical dispersion of power between the top level of government and the lower levels, and the horizontal dispersion of power among individual lower-level governments.[3] Most of the work on decentralization and economic growth has focused on the first dimension, using measures such as the lower-level government's share of total government spending to measure the degree of decentralization. An alternative approach is to focus on that second dimension of decentralization, the level of horizontal dispersion of power among individual lower-level governments. Such local decentralization is sometimes referred to as fragmentation. It is a measure of the level of interjurisdictional competition between local governments.

Bradbury et al. [3] used the number of municipalities within a metropolitan area to measure the degree of local decentralization. For the 121 cities of over 100,000 population in 1970 (which were also the largest in their metro areas), they found a negative relationship between the number of separate municipalities in the metro area and the 1970–1975 central-city population growth rate relative to the growth rate in the surrounding metro area. These results contradict the idea that local decentralization is beneficial to economic growth. However, the results do not measure the effect on the economic growth of the entire local economy (or, metro area). Greater decentralization in each individual local economy should have a positive effect on the entire local economy as a whole. Results for the relationship between the number of municipalities and population growth in the metro area as a whole were not reported.

Foster [6] examined the relationship between the decentralization of local government and metro area population growth in 129 of the 149 largest PMSAs (primary metropolitan statistical areas) in 1988. The strongest result was the finding of a negative coefficient for the percentage of suburban population residing in unincorporated territory. Foster interprets higher values of this variable as indicating a higher level of political consolidation (or centralization), in that a greater proportion of the metro area population is thereby served by a single general-purpose government, in this case a county government. Thus, the negative coefficient indicates that greater consolidation (or, less decentralization) is associated with lower growth. In contrast, the finding of a positive (although very small) coefficient for the

[2] It should be noted, as a frame of reference, that Chinese provinces are much larger than US states, thus the size of jurisdictions being examined is still quite large.

[3] See Zax [23] and Oates [13] for further discussion of this distinction in the context of the impact of decentralization on the size of the public sector.

average size of suburban municipalities contradicts the theory that decentralization is good for local growth.

One weakness of Foster's analysis is that the only control variables were population density, metropolitan area age, and four regional dummy variables. Standard control variables for the economic determinants of growth, such as initial levels of income and education, were not included, nor were other standard variables such as the unemployment rate or the manufacturing sector's share of employment. Omitting such important variables can produce biased estimates and invalid tests of hypotheses. In addition, rather than examining all metro areas, Foster examined only a subsample of the largest areas. Thus, the results may not be generalizable to all metro areas.

Nelson and Foster [12] examined the relationship between the dollar value change in per capita personal income and a variety of governmental structure variables in the 287 largest metropolitan areas. The strongest result was the finding of a negative coefficient for the central-city share of metro area population, which provides support for the hypothesis that greater local decentralization is associated with higher growth.[4] In contrast, the authors find a positive coefficient for the average size of suburban municipalities, which contradicts the hypothesis that decentralization enhances economic growth.

In contrast to Foster [6], Nelson and Foster's analysis seems to suffer from overspecification. In addition to 12 government structure variables, Nelson and Foster included 28 control variables, including the important standard economic determinants of growth that were omitted in Foster [6].[5] The inclusion of numerous conceivably irrelevant variables could help explain their large number of insignificant coefficients. Another potential weakness is that, unlike most other empirical work in this area, they use the dollar value change in per capita income rather than the percentage change. Finally, although Nelson and Fos-

[4] As Foster [6] had previously stated, "[h]igh values [of central-city dominance] signal more consolidated metropolitan areas in that greater proportions of the metropolitan area population are served by a single general-purpose government" (p. 530). Nevertheless, Nelson and Foster [12] assert the opposite. "A negative association with per capita income growth is expected with respect to central-city dominance because its income growth will lag behind the metropolitan area as a whole … These expectations are consistent with the centrist view" (p. 316). However, if central-city incomes lag behind suburban incomes, then cities in which the central city has expanded to include larger shares of those wealthier suburban areas should have higher income than those central cities with smaller shares of metro area population. Moreover, the centrist view is that greater levels of consolidation are associated with higher economic growth. Thus, as Foster [6] indicated, the finding of a negative coefficient on central-city dominance must *contradict* the centrist view and support the view that local decentralization is good for growth.

Incidentally, a similar contradictory interpretation occurs with the percentage of suburban population living in unincorporated territory, which was insignificant in Nelson and Foster [12]. Foster [6] interpreted higher values of this variable to indicate *less* decentralization: "[h]igh values suggest high political integration in that a greater proportion of the metropolitan population is served by a single general-purpose government; in this instance, a county government" (p. 531). Nelson and Foster [12] interpret this identical variable in exactly the opposite way, with higher values being said to indicate *greater* decentralization: "[t]he reason is that unincorporated areas are highly fragmented through the presence of numerous, usually small scale, special-service districts" (p. 316). However, the ratio of special service districts to general-purpose governments is itself a separate independent variable in their model.

[5] Only ten of those 28 variables were statistically significant at the 0.05 level or higher; 15 of them had t-statistics with absolute values less than one.

ter [12] use a much larger sample than did Foster [6], they still only use a subset of the largest metropolitan areas, rather than all metro areas.

Unlike most previous work on decentralization and economic growth, this paper focuses on the local level of government. This avoids the problems associated with using data from a set of widely disparate countries and allows for a much larger sample size. Using a new data set, this paper will provide the first empirical test of the relationship between decentralization and economic growth that examines *all* US metropolitan areas, not just a subsample of the largest ones. The remainder of the paper proceeds as follows. Section 2 discusses the data set and the econometric model. The results are presented in Section 3, and Section 4 offers concluding remarks.

2. Data sample and model specification

This empirical analysis examines economic growth in all 314 US metropolitan areas for which comparable historical data are available. (Appendix A provides a more detailed discussion of the data sample.) Following the approach of Barro [2] and Glaeser et al. [7], I examine data for the period 1960 to 1990.

The model examines two dependent variables to gauge metro area economic growth: growth in the log of population and growth in the log of real per capita money income.[6] Although 2000 population data are available, the most recent local income data available are from the 1990 Census (1989 per capita money income).[7] Thus, for consistency, the sample period examined is 1960 to 1990.[8]

In studies of economic growth in a cross section of countries, per capita GDP is the standard measure. However, with metropolitan areas within a single nation, the high mobility of labor (compared to the relatively low mobility across nations) renders a measure such as per capita income somewhat less appropriate (Glaeser et al. [7]). Changes in metro area income may not only reflect changes in productivity, but also changes in the attractiveness of that area. To the extent that labor markets are highly competitive, employers in areas with a low quality of life will have to pay higher wages in order to attract workers. (However, this effect could be offset by lower property values in declining areas.) Thus, economically declining areas may exhibit increasing per capita income that does not reflect increased economic output. In the context of high mobility, population growth is the more straightforward measure of local economic growth because it reflects the extent to which metropolitan areas are becoming more attractive to residents and businesses. Nevertheless, both measures are used as dependent variables.

[6] The nominal income figures were converted to real terms using the chain-type price index for GDP, from *Economic Report of the President*, February 2001, p. 284.

[7] The Census documents how much income individuals earned in the previous year, thus the data on per capita money income are actually for the year before each Census (1959 and 1989). As of June 2003, the full set of 1999 data was not yet available.

[8] For brevity, the results for 1960 to 2000 population growth are not reported. They were very similar to the 1960 to 1990 results discussed herein.

The main variables of interest are the measures of decentralization. As was stated previously, decentralization has two distinct dimensions: vertical dispersion between national and subnational levels of government and horizontal dispersion at the local level (sometimes called fragmentation). In cross-sectional studies of nations, the most commonly used measure of decentralization is the subnational government share of total government spending. This provides a measure of that first dimension of decentralization (vertical dispersion). Since the unit of analysis here is the local economy, the focus is instead on the second dimension of decentralization (horizontal dispersion at the local level). There is a well-developed literature on the fiscal effects of this local dimension of decentralization.[9] The most often used measure of local decentralization in that literature is the number of "general-purpose governments," defined by the Census Bureau as county governments and sub-county general-purpose governments, the latter of which is further divided into municipal governments and township governments.[10] This provides a measure of the number of suppliers of general local government services available in a given metro area. Since the quality of local schools tends to have a strong impact on residential choice, the number of public school systems is also included.[11] These data on the number of governments are available from the US Census Bureau in their *Census of Governments* [18], collected every five years.[12] To account for the widely varying size of metro areas, the number of governments is typically divided by the population.

A central-city concentration index—the central-city population divided by the metro area population—is another variable that has often been used to measure the level of local decentralization. It provides a measure of the extent to which the central city (or cities) dominates the market for local government services.[13]

An illustration of how the number of local governments varies across metro areas is provided in Table 1 using selected pairs of large metro areas. The Washington DC metro area has nearly twice as many residents as the Baltimore metro area, but it has more than four times as many general-purpose local governments. New York has about 13 percent more residents than Chicago, but Chicago has five and a half times more local governments. San Diego has about eight percent more residents than St Louis, but St Louis has 16 times as many local governments. The central-city share of total metro area population provides further evidence of the wide variation in the decentralization of government in US metro areas. In each of the pairs in Table 1, the central city in the area with fewer local

[9] Oates [13,15] provides a survey of the literature that examines the impact of decentralization on tax and spending levels.

[10] Municipal and township governments are distinguished primarily by the historical circumstances surrounding their incorporation. They typically have similar powers and perform similar functions.

[11] In the terminology of the Census Bureau reports, "public school systems" represents the sum of "school districts" and "dependent school systems."

[12] Those are performed in years ending in "2" and "7." The data for the initial number of governments in this paper come from the 1962 *Census of Governments* [18], the one in closest proximity to our base year of 1960.

[13] The official metropolitan area definitions often designate more than one central city for a metro area. In general, municipalities with populations over 50,000 are designated as central cities, but the official definition is a bit more complicated than that.

Table 1
Local decentralization in selected pairs of metropolitan areas

Metropolitan area	2000 population	Rank among all 314 MAs	# of local govts 1992	Rank among all 314 MAs	# of govts 1992:			% of central-city metro area population 1990
					County	Municipal	Township	
Washington DC–MD–VA–WV PMSA	4,923,153	5	113	27	18	95	0	19.8
Baltimore, MD PMSA	2,552,994	17	26	141	6	20	0	32.3
Chicago, IL PMSA	8,272,768	3	460	1	9	293	158	42.9
New York, NY PMSA	9,314,235	2	83	43	3	52	28	86.2
Detroit, MI PMSA	4,441,551	6	218	6	6	113	99	28.6
Houston, TX PMSA	4,177,646	7	86	40	6	80	0	51.8
Minneapolis–St Paul MN–WI MSA	2,968,806	12	344	4	13	191	140	25.2
Phoenix–Mesa, AZ MSA	3,251,876	11	34	115	2	32	0	68.9
St Louis, MO–IL MSA	2,603,607	16	307	5	11	224	72	24.1
San Diego, CA MSA	2,813,833	14	19	176	1	18	0	49.9
Pittsburgh, PA MSA	2,358,695	21	418	2	6	238	174	15.4
Tampa–St Petersburg–Clearwater, FL MSA	2,395,997	19	39	107	4	35	0	29.9

governments accounts for about twice as much of the total metro area population as the central city in the area with more local governments.

To measure the level of decentralization within metropolitan areas, this paper follows the convention in prior studies by using the following independent variables: the number of general-purpose governments per 100,000 residents in 1962 (disaggregated into its three components: county governments, and the two types of sub-county general-purpose governments: municipal governments and township governments)[14] and the number of public school systems per 100,000 residents in 1962. Since it is intended to measure the same thing, the central-city share of metro area population in 1960 is tested separately.[15]

Following Glaeser et al. [7], the control variables are: the 1950–1960 growth in the log of population,[16] the log of 1960 population, 1959 real per capita money income, 1960 un-

[14] Township governments are used in only 20 states, and there are no organized county governments in Connecticut, Rhode Island, the District of Columbia, and limited portions of other states. The number of general-purpose governments is subdivided into its three components to better account for these types of variations. Similar results (not reported herein) to those discussed in the next section were found when it was subdivided into just two components: county governments and sub-county general-purpose governments.

[15] As Table A.3 in Appendix A shows, similar results were found when this measure was tested together with the others.

[16] Note that 1950–1960 growth in the log of real per capita income was not included because comparable metro area data for 1950 were not available.

employment rate, 1960 manufacturing sector share of total employment, 1960 percentage of population (age 25 and older) with 16 or more years of school,[17] and forty-eight state dummy variables.[18]

Table A.1 in Appendix A provides summary statistics for all the variables. Table A.2 provides additional details about the local decentralization variables.

3. Regression results

3.1. Core growth model

As a benchmark for comparison, Table 2 shows the OLS regression results from a specification that includes only the core set of control variables. To account for heteroskedasticity, the models are estimated using White robust standard errors. The variance inflation factors were calculated and did not provide evidence of the presence of multicollinearity.

As shown in Table 2, metro areas with faster population growth between 1950 and 1960 tended to continue to grow faster between 1960 and 1990. This finding of persistence of population growth rates is consistent with the findings of Glaeser et al. [7] for cities. In relation to income growth, the coefficient on initial real per capita income is negative and highly significant. This finding of conditional income convergence is also consistent with previous work. Metro areas with higher initial income also had slower population growth.

As expected, higher initial unemployment rates were found to be associated with slower growth of both population and per capita income at high levels of statistical significance. The manufacturing sector's share of employment in 1960 was also found to have the expected negative coefficients for both growth variables. The percentage of population with 16 years of school or more, a proxy for human capital, was found to have the expected positive relationship with economic growth, but the coefficient for the income growth regression was statistically insignificant.

3.2. Local decentralization and growth

Table 3 shows the results when the local decentralization variables are added to the core model.[19] A positive coefficient on the number of government variables would be consistent with the theory that decentralization will produce superior economic performance. In contrast, a positive coefficient on the central-city concentration variable would contradict

[17] Glaeser et al. [7] also used median years of schooling. With the percentage of population variable, data for counties added to the official metro areas since 1960 could be obtained and the 1960 figures for the metro areas as currently defined could be calculated. This was not possible with the median years of schooling data.

[18] Other than Anchorage, which was dropped due to reasons discussed in Appendix A, there are no metro areas in Alaska. Since the component areas of the Boston CMSA/NECMA had to be dropped (also discussed in Appendix A), there are no metro areas in New Hampshire either. District of Columbia is the omitted dummy, leaving 48 state dummy variables.

[19] As with the core model, to account for heteroskedasticity, the models are estimated using White robust standard errors; and, the variance inflation factors were calculated and did not provide evidence of the presence of multicollinearity.

Table 2
Core model, metro area growth

	Growth in log of population, 1960–1990	Growth in log of real per capita money income, 1959–1989
Growth in log of population, 1950–1960	0.616***	0.000
	(5.65)	(0.00)
Log (population, 1960)	−0.030	0.011
	(1.12)	(1.27)
Real per capita income (1000s of 1996 dollars), 1959	−0.055*	−0.033***
	(1.79)	(3.07)
Unemployment rate, 1960	−4.042***	−2.634***
	(3.68)	(5.92)
Manufacturing share, 1960	−0.354*	−0.142*
	(1.71)	(1.64)
Percent of population with 16+ years of school, 1960	1.589**	0.337
	(2.52)	(1.21)
Constant	1.312***	1.090***
	(5.30)	(11.32)
N	314	314
R-squared	0.735	0.695

Notes. 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% confidence.
** Idem., 95%.
*** Idem., 99%.

that theory. The coefficients for the control variables generally all retain the same signs, magnitudes, and significance levels.

The number of county governments per 100,000 residents was found to have a positive and highly statistically significant relationship with both population growth and per capita income growth. A one standard deviation increase in the number of county governments per 100,000 residents in 1962 (0.902) was associated with an 11.7 percentage point increase in the 1960–1990 population growth rate and a 2.5 percentage point increase in the 1959–1989 real per capita income growth rate. This finding is consistent with the view that an increase in decentralization promotes economic growth.[20]

To put this in perspective, suppose Springfield, Illinois or Lincoln, Nebraska, the two metro areas surrounding the median 1960 population of 155,530, had increased their number of county governments per 100,000 residents by one standard deviation (equivalent to an increase of about 1.4 county governments in these areas). The results suggest that between 1960 and 1990 the Springfield metro area would have grown by an extra 26,500

[20] An anonymous reviewer has suggested that what these results indicate is that growth causes more counties, not the other way around. However, to account for such a potential reverse causality problem, 1950–1960 population growth was included as a control variable. Furthermore, when the absolute number of counties in 1992 was regressed on 1960–1990 population growth and a constant, there was a statistically significant *negative* relationship between previous growth and the number of counties. Finally, this criticism does not apply to the results for the central-city share measure described below.

Table 3
Metro area growth and local decentralization

	Growth in log of population, 1960–1990	Growth in log of population, 1960–1990	Growth in log of real per capita money income, 1959–1989	Growth in log of real per capita money income, 1959–1989
County governments per 100,000 residents, 1962	0.130***		0.028**	
	(5.24)		(2.31)	
Municipal governments per 100,000 residents, 1962	0.002		0.003**	
	(0.68)		(2.15)	
Township governments per 100,000 residents, 1962	−0.001		−0.000	
	(0.81)		(0.21)	
Public school systems per 100,000 residents, 1962	0.000		−0.000	
	(0.14)		(0.53)	
Central-city share of metro area population, 1960		−0.276***		−0.125***
		(2.84)		(3.66)
Growth in log of population, 1950–1960	0.674***	0.575***	0.019	−0.018
	(7.26)	(5.28)	(0.44)	(0.42)
Log(population), 1960	0.042**	−0.031	0.028***	0.010
	(2.19)	(1.20)	(3.70)	(1.21)
Real per capita income (1000s of 1996 dollars), 1959	−0.067**	−0.041	−0.033***	−0.027**
	(2.48)	(1.34)	(3.42)	(2.51)
Unemployment rate, 1960	−3.691***	−3.591***	-2.445***	−2.430***
	(3.34)	(3.24)	(5.50)	(5.47)
Manufacturing share, 1960	−0.253	−0.363*	−0.116	−0.145*
	(1.36)	(1.79)	(1.38)	(1.70)
Percent of population with 16+ years of school, 1960	1.676***	1.753***	0.375	0.411
	(2.99)	(2.81)	(1.42)	(1.49)
Constant	0.231	1.269***	0.780***	1.071***
	(0.78)	(5.11)	(6.42)	(11.37)
N	314	314	314	314
R-squared	0.780	0.744	0.719	0.708

Notes. 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% confidence.
** Idem., 95%.
*** Idem., 99%.

residents and Lincoln would have grown by an extra 23,500. Real per capita money income would have increased by an extra $450 in the Springfield metro area and by an extra $420 in Lincoln.

The number of municipal governments per 100,000 residents was found to have a small, but statistically significant, positive correlation with per capita income growth. A one standard deviation increase in the number of municipal governments per 100,000 residents in 1962 (5.929) was associated with a 1.8 percentage point increase in the 1959–1989 real per capita income growth rate. This finding supports the hypothesis that decentralization improves economic growth. In terms of population growth, the coefficient on the number of municipal governments per 100,000 residents was positive but statistically insignificant.

Neither the number of township governments per 100,000 residents nor the number of public school systems per 100,000 residents was found to have a statistically significant relationship with either measure of local economic growth.

For both growth measures, the central-city share of metro area population was found to have a negative coefficient and was significant at the 99% level. A one standard deviation increase in the central-city share of metro area population in 1960 (0.184) was associated with a 5.1 percentage point decline in the 1960–1990 population growth rate and a 2.3 percentage point decline in the 1959–1989 real per capita income growth rate. This finding also supports the view that decentralized local government improves economic performance.[21]

Suppose that the city of Springfield or Lincoln 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 estimated coefficients suggest that between 1960 and 1990 the Springfield metro area would have grown by about 10,600 fewer residents and Lincoln would have grown by nearly 9500 fewer. Real per capita money income would have grown by $400 less in the Springfield metro area and by $375 less in Lincoln.

These results suggest that it does matter whether metro areas have a few, large, monopolistic local governments or many, small, competitive ones. The findings are consistent with the theory that decentralization enhances economic growth.

3.3. Comparison to previous findings

These findings contradict some findings in previous work by Foster and Nelson. One possible explanation is that previous research has employed a smaller data set, a subsample of the largest metro areas. That approach may produce results that are not generalizable to all metro areas. In contrast, this paper used a more comprehensive data set of all metro areas. As a result, the 314 metro areas in our sample range widely in their population size, from 2000 populations of 57,813 in Enid, OK and 66,533 in Casper, WY to 9.5 million in Los Angeles–Long Beach and 9.3 million in New York.

It seems reasonable to conclude that areas like the latter huge metropolises are fundamentally different in many ways from areas like the former small to medium-sized metro

[21] As suggested by an anonymous referee, one alternative interpretation of these findings (the fact that central-city share of metro area population has a negative relation to metro area economic growth) is simply that most economic growth does not originate in the central city. However, if one wanted to test the hypothesis that growth was greater in suburbs than in central cities, then this would certainly not be the most direct way to do so. The unit of analysis should be the municipality (some of which would be central cities and some of which would be suburbs), not the metro area. Furthermore, that ignores the larger issue this paper seeks to address, which is what makes local economies (that is, metro areas, not cities) grow. If mobile factors of production take into consideration the quality and quantity of local government services when deciding where to locate, then the nature of the market in which those services are provided would be an important factor. When the market for local government services is less monopolistic (or more competitive), then the greater diversity of choice of local government providers should make those areas more attractive to residents and businesses. The central-city population share is one of the two types of variables commonly used to measure the level of competition in markets for local government services. The results herein suggest that it has a significant impact on the growth of local economies.

areas. For instance, highly populated areas may be more likely to exhibit high demand for mass transit services. Since mass transit services create externalities that are difficult to internalize in a system of many, small local governments, their efficient provision likely requires a system of fewer large local governments (or perhaps a separate regional special district government). As a result, the relationship between the level of local government fragmentation and economic performance may be very different for the largest metro areas than for the smaller ones.

Stansel [16] examined this possibility in further detail, and found that the relationship between decentralization and economic growth was indeed weaker for the largest 100 metro areas (those with 2000 population over 500,000) than for the smallest 214 metro areas (with 2000 population below 500,000).

There are several other possible reasons for the difference in the findings here compared to those in the work of Foster and Nelson. Foster [6] left out key explanatory variables such as initial levels of income, education, the unemployment rate, and the manufacturing sector's share of employment. Omitting such important variables can produce biased estimates and invalid tests of hypotheses. This paper includes those explanatory variables.

Nelson and Foster [12] suffered from overspecification. In addition to 12 government structure variables, the authors included 28 control variables. The inclusion of numerous conceivably irrelevant variables could help explain their large number of insignificant coefficients.[22] This paper includes only six basic control variables in addition to the five explanatory variables intended to measure the level of local decentralization.

Unlike most other empirical work in this area, Nelson and Foster [12] use the dollar value change in per capita income rather than the percentage change. This paper uses the growth in the log of real per capita income, rather than the dollar value change.

4. Conclusion

Decentralization is increasingly seen as a tool to promote economic development. Using a new data set, this paper has provided the first empirical test of the relationship between decentralization and economic growth that examines *all* US metropolitan areas (for which comparable historical data were available). The results provide support for the theory that decentralization increases economic growth. Examining metro areas in the same nation rather than countries themselves enables us to avoid the problems associated with some previous work that used data from a set of widely disparate countries. It also allows for a much larger sample size.

The relationship between the structure of local government and economic growth has direct relevance to contemporary policy debates. For example, individuals in Staten Island, NY and San Fernando Valley, CA—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

[22] Only ten of those 28 variables were statistically significant at the 0.05 level or higher; 15 of them had t-statistics with absolute values less than one.

government are ongoing in numerous metro areas, including Baltimore, MD, and Norfolk, VA.

If dissatisfied residents in Staten Island and San Fernando Valley had had their way, and the number of county governments per 100,000 residents had increased by one standard deviation, the results suggest that between 1960 and 1990 the New York and Los Angeles metro areas each would have grown by an extra 1.1 million residents and real per capita money income would have increased by an extra $530 in New York and by an extra $490 in Los Angeles.

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Appendix A

The data set includes all 314 US metropolitan areas for which comparable historical data are available. Those 314 metropolitan areas consist of 255 MSAs (metropolitan statistical areas) and 59 PMSAs (primary metropolitan statistical areas), as defined in 1999 by the US Office of Management and Budget [20]. 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 & PMSAs, they are not considered separately herein. 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. Comparable historical data are often unavailable for those areas. For that reason, the 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 paper. The latter refers to the New Haven–Bridgeport–Stamford–Waterbury–Danbury, CT 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 weres not available.

Two other MSAs, Albuquerque, NM and Yuma, AZ, were excluded because comparable historical data for those areas as currently defined were unavailable due to changes in county boundaries. Anchorage, AK was excluded for similar reasons. However, with the exception of these 13 areas for which historical data were unavailable, every other metro area is included in the analysis. This new, comprehensive data set contrasts with those used in previous work in this area, which consisted of a subsample of the largest metro areas.

Table A.1
Summary statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
Growth in log of population, 1960–1990	314	0.433	0.373	−0.178	2.268
Growth in log of real per capita money income, 1959–1989	314	0.709	0.141	0.405	1.239
Number of general-purpose local governments, 1962	314	40.939	58.388	1	445
# of g.p. local governments per 100,000 residents, 1962	314	15.446	16.122	0.200	148.482
Number of county governments, 1962	314	2.500	2.478	0	20
# of county governments per 100,000 residents, 1962	314	1.200	0.902	0	7.940
Number of municipal governments, 1962	314	22.408	32.157	0	277
# of municipal governments per 100,000 residents, 1962	314	8.011	5.929	0	37.322
Number of township governments, 1962	314	16.032	29.998	0	210
# of township governments per 100,000 residents, 1962	314	6.235	12.787	0	117.843
Number of public school systems, 1962	314	37.850	55.140	1	409
# of public school systems per 100,000 residents, 1962	314	16.251	22.718	0.107	207.184
Central-city share of metro area population, 1960	314	0.467	0.184	0	0.937
Growth in log of population, 1950–1960	314	0.259	0.217	−0.099	1.550
Log of population, 1960	314	12.229	1.068	9.441	15.986
Population (1000s), 1960	314	419.497	839.267	12.594	8,759.400
Population (1000s), 1990	314	611.088	1038.200	56.735	8863.164
Population (1000s), 2000	314	697.084	1162.299	57.813	9519.338
Real per capita money income (thousands of 1996 dollars), 1959	314	7.966	1.511	4.042	12.662
Real per capita money income (thousands of 1996 dollars), 1989	314	16.124	2.935	7.962	26.479
Unemployment rate, 1960	314	0.052	0.016	0.016	0.111
Manufacturing share of employment, 1960	314	0.238	0.119	0.042	0.537
Percent of population 25+ years of age with 16+ years of school, 1960	314	0.081	0.030	0.035	0.218

The data for the 314 metropolitan areas are from US Census Bureau sources.[23] To provide a consistent unit of analysis, all metro area data are for the area as currently defined. 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 1960 metro area totals. In addition, for areas that were first officially recognized as metro areas sometime after 1960, calculating the 1960 metro area totals required collecting data for each component county in those areas.

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Table A.2
Measures of local decentralization

Variable	Mean	Median	Lowest	Metro area	Highest	Metro area
Number of general purpose local governments, 1962	40.94	21	1	Honolulu, HI	445	Chicago, IL
			2	Fort Myers–Cape Coral, FL	412	Pittsburgh, PA
			2	Laredo, TX	362	Minneapolis–St Paul, MN–WI
			2	Missoula, MT	362	Philadelphia, PA–NJ
			2	Punta Gorda, FL	295	St Louis, MO–IL
			2	San Angelo, TX	218	Detroit, MI
			2	Victoria, TX	214	Cleveland–Lorain–Elyria, OH
			3	11 MAs	205	Cincinnati, OH–KY–IN
# of general-purpose local governments per 100,000 residents, 1962	15.45	10.28	0.20	Honolulu, HI	148.48	Grand Forks, ND–MN
			0.86	New York, NY	106.58	Fargo–Moorhead, ND–MN
			1.13	Tucson, AZ	101.80	Bismarck, ND
			1.16	San Diego, CA	87.06	St Cloud, MN
			1.21	Los Angeles–Long Beach, CA	64.14	Wausau, WI
Number of county governments, 1962	2.50	2	0	Five MAs[a]	20	Atlanta, GA
			1	139 MAs	18	Washington, DC–MD–VA–WV
			2	73 MAs	13	Minneapolis–St Paul, MN–WI
# of county governments per 100,000 residents, 1962	1.20	1.01	0	Five MAs[a]	7.94	Punta Gorda, FL
			0.02	Los Angeles–Long Beach, CA	6.35	Naples, FL
			0.03	New York, NY	4.77	Athens, GA
			0.10	San Diego, CA	4.49	Flagstaff, AZ–UT
			0.10	Nassau–Suffolk, NY	4.15	Charlottesville, VA
Number of municipal governments, 1962	22.41	13	0	Barnstable–Yarmouth, MA	277	Chicago, IL
			1	Eight MAs	230	Pittsburgh, PA
			2	13 MAs	212	St Louis, MO–IL
# of municipal governments per 100,000 residents, 1962	8.01	6.64	0	Barnstable–Yarmouth, MA	37.32	Greeley, CO
			0.20	Honolulu, HI	34.82	St Cloud, MN
			0.49	New York, NY	30.29	Joplin, MO
Number of township governments, 1962	16.03	0	0	195 MAs	210	Philadelphia, PA–NJ
			2	Jersey City, NJ	176	Pittsburgh, PA
			7	Omaha, NE–IA	169	Minneapolis–St Paul, MN–WI

(*Continued on next page*)

Table A.2 (*Continued*)

Variable	Mean	Median	Lowest	Metro area	Highest	Metro area
# of township governments per 100,000 residents, 1962	6.23	0	0	195 MAs	117.84	Grand Forks, ND–MN
			0.33	Jersey City, NJ	81.81	Bismarck, ND
			0.33	New York, NY	75.45	Fargo–Moorhead, ND–MN
Central-city share of metro area population, 1960 (%)	46.7	46.2	0	Four MAs[b]	93.7	Laredo, TX
			2.9	Monmouth–Ocean, NJ	92.3	Amarillo, TX
			11.0	Dover, DE	91.0	San Angelo, TX
			11.5	Myrtle Beach, SC	90.1	Odessa–Midland, TX
			12.8	Benton Harbor, MI	89.4	New York, NY

[a] Five metro areas have no county governments: Hartford, CT; Honolulu, HI; New Haven–Bridgeport–Stamford–Danbury–Waterbury, CT; New London–Norwich, CT–RI; and Providence–Fall River–Warwick, RI–MA.

[b] Four metro areas have no designated central city: Bergen–Passaic, NJ; Brazoria, TX; Middlesex–Somerset–Hunterdon, NJ; and Nassau–Suffolk, NY.

Table A.3
Metro area growth and local decentralization

	Growth in log of population, 1960–1990	Growth in log of real per capita money income, 1959–1989
County governments per 100,000 residents, 1962	0.126***	0.027**
	(4.96)	(2.14)
Municipal governments per 100,000 residents, 1962	0.0002	0.002
	(0.07)	(1.46)
Township governments per 100,000 residents, 1962	−0.002	−0.000
	(0.94)	(0.35)
Public school systems per 100,000 residents, 1962	0.000	−0.000
	(0.08)	(0.56)
Central-city share of metro area population, 1960	−0.188*	−0.085**
	(1.92)	(2.23)
Growth in log of population, 1950–1960	0.639***	0.003
	(6.88)	(0.07)
Log(population), 1960	0.037**	0.026***
	(1.99)	(3.36)
Real per capita income (1000s of 1996 dollars), 1959	−0.061**	−0.030***
	(2.29)	(3.10)
Unemployment rate, 1960	−3.516***	−2.366***
	(3.19)	(5.29)
Manufacturing share, 1960	−0.268	−0.123
	(1.46)	(1.45)
Percent of population with 16+ years of school, 1960	1.766***	0.415
	(3.18)	(1.58)
Constant	0.318	0.820***
	(1.08)	(6.54)
N	314	314
R-squared	0.784	0.724

Notes. 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% confidence.
** Idem., 95%.
*** Idem., 99%.

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