

Political Fragmentation & Economic Growth in U.S. Metropolitan Areas*

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This paper analyzes the impact of local political fragmentation on long-run population, employment, and per capita money income growth in 314 U.S. metropolitan areas. The results suggest a positive relationship between fragmentation and long run population growth; however, the type of fragmentation matters. Local government fragmentation in both the horizontal (cities) and vertical (special districts) are important. The results do not generalize to long run employment or per capita money income growth. These findings partially support the hypothesis that governmental fragmentation can enhance local economic growth; however, taking into account the local context in the measurement of local political structure is important.

Keywords: growth, decentralization, fragmentation, competition

Introduction

Metropolitan economic growth is of some importance to both scholars and policymakers; however, economic growth is uneven in the United States. Some metropolitan areas grow rapidly while others languish and decline. The underlying fundamentals of the economy of a city are thought to play a large part in this growth (Glaeser, Scheinkman, and Shleifer 1995) as does a warmer climate (Rappaport 2007). Additionally, some public policies can influence metropolitan growth (Bartik 1991; Gabe and Kraybill 2002).¹ A less studied factor that can influence metropolitan economic growth is the organization of local government (Foster 1993; Nelson and Foster 1999; Stansel 2005; Grassmueck and Shields 2010; Hammond and Tosun 2011). This potential source of growth has received significant attention in the international sphere with the assertion that decentralization of public service delivery and revenue generation from national to metropolitan levels can fuel local economic growth (Martinez-Vasquez, Lago-Penas, and Sacchi 2017).

In the U.S. context, the question of the influence of local government organization on metropolitan growth has been examined precious few times. There is significant disagreement in the literature about how to measure local government structure, the time period over which to measure growth, and the correct geographic aggregations to observe growth. These disagreements have led to a confusing set of results with little consensus among them. A potential unified source of this disagreement is the vast and complex local government structure in the United States. Krueger and Bernick (2010) may say it best, “[i]f one were to start from scratch to design an optimally operating state and local governance system that eliminated diseconomies of scale, jurisdictional

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¹Though there is evidence that some economic development policies may hinder economic growth. See Patrick (2014) and Harger and Ross (2016) for recent examples.

externalities, the adverse consequences of competition yet met the personal preferences for goods and services for the maximum number of residents...it would undoubtedly look quite different."

This paper addresses the complexity of U.S.-styled local government structure and its relationship with economic growth in 314 metropolitan statistical areas from 1960 to 2000. There is disagreement in the extant literature on the relative impact of local government structure on economic growth. A fragmented local government system is a means provide a larger number of taxing/spending bundles that allows residents to more perfectly match to their preferences. This increased competition between local governments for residents should constrain the size of public sector, increase governmental efficiency, and lead to higher growth. Alternatively, a consolidated local government system will capture economies of scale, provide better coordination in land use planning, and eliminate counterproductive competition in economic development, all leading to higher growth.

The analysis to follow is similar in scope to the recent examinations of local government structure and economic growth in the U.S. context (Stansel 2005; Grassmoeck and Shields 2010; Hammond and Tosun 2011). However, it builds on these contributions in a number of important ways. First, the complexity of U.S. local government structure is fundamental aspect of the analysis. Rather than measuring local government structure in an absolute manner (i.e. number of governments per capita) as much of the recent literature does, this analysis takes the approach of Foster (1993) and attempts to incorporate the complexity of local governments. Second, this analysis focuses on the metropolitan area at the end of the time period (2000) as the unit of analysis. This is similar to Stansel (2005) and Grassmoeck and Shields (2010); however, the choice of MSA as a unit of analysis is key to the first contribution. If metropolitan regions are consolidating public services across jurisdictional boundaries through special districts or other mechanisms, measuring local government complexity on the city or county level may not be adequate to capture these effects. Selecting a geography to aggregate over that takes this into account is vital in adequate capturing the full extent of local government structure.

The remainder of the article proceeds as follows. First, I examine the previous literature, both theoretical and empirical, pertaining to decentralization and economic growth in the U.S. and global contexts. Next, I examine the prior conceptualizations of decentralization in the U.S. context and suggest alternatives. Third, a model based on Glaeser, Scheinkman, and Shleifer (1995) is presented. Finally, regression results are discussed, extensions and sensitivity analyses are conducted, and the policy implications of the results are explored.

Previous Literature

As noted by Grassmoeck and Shields (2010), the connection between local government structure and economic growth is through the services and infrastructure provided by such governments. Local governments collect tax and other revenues and convert them into inputs and services for household and firms. These inputs and services are wide ranging including consumption amenities (parks, libraries, public museums), transportation and other infrastructure, education, and protective services (police and fire). Households and firms then sort into jurisdictions (or collections of overlapping jurisdictions) that most closely satisfy their preferences for services and taxation. In doing so, efficiency in provision is achieved and the most efficient jurisdictions grow. Grassmoeck and Shields (2010) contend differences in efficiency across areas should manifest itself, at least in part, in differences in economic growth.

The governance arrangements for metropolitan areas in the United States are complex. As of 2012, metropolitan areas are layered into a federal system with one national government, fifty independent states, and 90,107 local governments of various type. Among general purpose local governments, there are 3,031 county governments and 35,879 sub-county general purpose local governments composed of 19,519 municipalities and 16,360 towns or townships.² The remainder of local governments are single purpose in nature with 18,880 school districts and 38,266 special districts.

The extant literature disagrees about how efficiency should best be achieved. Proponents of a fragmented system, typically from the public choice tradition, suggest efficiency is best achieved through a system of many local governments competing for mobile resources. Proponents of a more consolidated system contend there are significant economies of scale and scope in local government service provision and efficiency is best achieved through limiting the number of local governments.

Competition & Economic Growth

The public choice literature largely posits a positive relationship between local political fragmentation and metropolitan growth through increased efficiency (Tiebout 1956). This increased efficiency leads to an environment more conducive to economic growth. Efficiency is secured by inter-jurisdictional competition between a large number horizontally arranged local governments. As Tiebout (1956) and other explain, a sufficiently large number of local public good providers will act like private market actors, competing with each other for mobile residents. This competition between public good producers drives high quality public service provision at low tax prices. Additionally, given many public good producers, a large variation in public service/tax bundles are produced allowing mobile citizen-voters to efficiently sort into localities that most perfectly satisfy their preferences for public service provision and tax price (Ostrom, Tiebout, and Warren 1961).

In addition to horizontally arranged local governments, the public choice tradition suggests that overlapping governments (such as special districts or school districts) can provide additional avenues for efficiency through the separation of “production” from “provision” of public services (Hawkins 1987; Parks and Oakerson 1989). The efficiency gained from this separation works similarly to the competition-induced efficiency described above. Provision refers to the decisions related to the adequate level of public services for an area. Production is the delivery of those services. There is no need for decisions related to the provision and actual act of production of public services to be done by the same local government. Often, efficiency can be gained by separating the two. For instance, a small city may wish to provide library services to its citizens; however, due to the small size of the jurisdiction, production of this service is too inefficient to be feasible. This small city may band together with other adjacent cities who also wish to provide library services and produce this service on a more regional scale, capturing economies of scale and increasing efficiency. Since these decisions are made at a sub-metropolitan scale, on a service by service basis, and being mindful of the unique properties of the service in production and provision to enhance efficiency, it is assumed that services provided in this manner would be more efficient than from a single, metropolitan scale general purpose government.

²Towns or townships are an authorized form of local government in 20 U.S. states: Connecticut, Illinois, Indiana, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, and Wisconsin.

As Foster (1993) notes, the consolidationist or government reformist argument that large, political integrated structures enhance growth is based on an assumption of efficiency. Rather than focusing on competition-induced efficiency, government reformers stress the importance of administrative efficiency as a means to growth. Efficiency is gained by realizing economy of geographic scale in production (Bish 1971; Advisory Commission on Intergovernmental Relations 1974) as well as the ability to internalize inefficient externalities of public service provision (Rusk 1993). Additionally, transaction costs should be lower and the cost of migration to the metropolitan area (one point of contact) should be lowered (Committee for Economic Development 1970; Foster 1993).

The government reform tradition also argues for the elimination of overlapping jurisdictions. It is believed these overlapping governments are a source of inefficient duplication of services (Advisory Commission on Intergovernmental Relations 1964) as well as increasing the overall size of the local public sector due to commons issues (Berry 2008). Because overlapping governments often lack coordination, they are likely to over-provide public services through either of the mechanisms above. Consolidating these overlapping jurisdictions into a single, large, general purpose government is thought to eliminate the lack of coordination and provide the most efficient level of service provision (Committee for Economic Development 1966).

Early empirical research on the determinants of metropolitan growth (or decline) typically omit any political structure variables. For instance, Carlino and Mills (1987) include no political structure variables in their examination of county-level growth. Similarly, Bradbury, Downs, and Small (1982) only examines political structure in the context of suburban growth of a metropolitan area relative to the central city. Foster (1993) is likely the first to directly examine the link between local political structure and metropolitan level population growth. She finds that larger unincorporated suburban areas and higher numbers of school districts per municipality are associated with lower metropolitan population growth between 1960 and 1980. In a similar analysis, Nelson and Foster (1999) find metropolitan areas where the central city population dominates the metro population have lower personal income growth. Areas with larger suburban cities are associated with higher growth.

The recent literature on the connection between political structure and long run economic growth is generally supportive of the public choice perspective. However, each finds a different aspect of political fragmentation to be important. Stansel (2005) finds more counties per capita important for long-run metropolitan level population growth between 1960 and 1990. He also finds counties per capita and municipalities per capita to be important for long-run metropolitan level income growth. In separate models, Stansel finds that areas with large central cities relative to the metropolitan area in the initial period (1960) experience lower growth for both population and income. Grassmueck and Shields (2010) find the number of governmental unit per capita negatively associated with both employment and income growth in metro areas between 1992 and 2002. These results are at odds with Stansel (2005), but the index related results suggest a positive correlation between horizontal and vertical aspects of fragmentation and income, employment, and population growth over the same time period. Grassmueck and Shields (2010) demonstrate their horizontal fragmentation results are driven by municipalities. Lastly, Hammond and Tosun (2011) find general purpose local governments per capita are associated with negative population and employment growth rates for non-metropolitan counties between 1970 and 2000 and no relationship for metro counties. Special districts per square mile was positively associated with metropolitan county population and employment growth and unrelated for non-

metropolitan counties. It is unclear what to draw from this confusing set of results other than local governance structures appears to be positively associated with economic growth in some instances, but the literature is uncertain which aspects of local political structure are important.

Dimensions of Competition & Fragmentation

As alluded to in the previous section, the U.S. local government system is complex. As Boyne (1992) explains, local government structure consists of two elements: fragmentation v. concentration and horizontal v. vertical. *Fragmentation* often refers to number of local governments in absolute or relative terms, but it can be operationalized in various ways. *Concentration* refers to the distribution of responsibilities or spending among local governments. Both fragmentation or concentration can be in the vertical or horizontal directions. *Horizontal* fragmentation or concentration relates the two concepts among the same kinds of governments while *vertical* relates the two concepts between different forms of government. This analysis and all of the preceding analyses deal with fragmentation; however, only Grassmueck and Shields (2010) attempts to delineate between horizontal and vertical fragmentation.

In the U.S. context, the horizontal v. vertical distinction is important. Unlike many European countries, there are numerous layers of U.S. local governments, expressly laid out in a vertical manner. Cities, counties, and in 11 states, towns/townships overlap each other to form a patch-work of general purpose local government. Special purpose local governments can overlap to an even greater extent as any individual location may be serviced by numerous special districts and school districts.

Feiock and Carr (1997) Hall, Matti, and Zhou (2018) Feiock (2009) Ostrom (1972) Frisenken and Norris (2001) Norris (2001) Reese (2004) Yasuoka (2008) Martin and Schiff (2011) Carr, Bae, and Lu (2006) Carr and Feiock (1999) Jepson (2008) Savitch and Vogel (1996)

Data & Model Specification

The local governance structure of metropolitan areas in the United States is complex; however, the measurement of political structure vis-à-vis economic growth has hardly attempted to incorporate this complexity. Most of the more recent literature (Stansel 2005; Grassmueck and Shields 2010; Hammond and Tosun 2011) measures local government fragmentation in an *absolute* (counts of governments) or *relative* (governments divided by population or land area) manner. Foster (1993) explains this is problematic because absolute or relative measures do not address three dimensions of local governance. The first is *inclusiveness*. At least at the time of her writing, local government fragmentation tended to be measured as total number of governments in a relative or absolute sense. However, there are multiple types of local governments (counties, cities, towns/townships, school districts, and special districts) endowed with different powers and having different service responsibilities. Lumping these governments together in a measure of fragmentation is inappropriate. While this has changed over time, the criticism stands and serves as a guide for constructing measures of fragmentation. Second is *local government scale*. Local governments range in size and influence in metropolitan areas with larger governments contributing less to fragmentation than smaller ones. An ideal measure of fragmentation will take this into account. Finally, the *primacy of county government* is an important concept. In parts of the country, not all residents live in an incorporated place making county government an important service provider.

In light of these criticisms, what is the most appropriate operationalization(s) of local government fragmentation? Following Foster (1993), three variables measuring municipal stricture and two variables measuring single purpose government structure are used. The first is the share of metropolitan population in central cities (Foster 1993; Nelson and Foster 1999; Stansel 2005). Metropolitan areas may have more than one central city³ but generally a metropolitan area will only have one. As the share rises, more residents are served by one large general purpose government, signaling lower levels of political fragmentation. The second is the extent of suburban municipal fragmentation. This is defined as the ratio of residents who live in suburban municipalities divided by the number of suburban municipalities yielding the average population of a suburban city in the metropolitan area (Nelson and Foster 1999). As this ratio increases, fragmentation declines. The final variable measuring municipal structure is the proportion of non-central city residents living in unincorporated areas (Foster 1993). This measures the importance of county government and high values signal lower levels of political fragmentation. For all three variables, an increase signals lower levels of political fragmentation.

The final two political fragmentation variables measure the influence of single-purpose local governments. This is done with two variables: school district decentralization and special district overlap. School district decentralization operationalized as the number of school districts divided by the total number of non-overlapping general purpose governments (Foster 1993).⁴ If there are many school districts per city/town, local political fragmentation is enhanced. Lastly, special district overlap is operationalized as the number of special districts divided by the total number of non-overlapping general purpose governments (Foster 1993; Nelson and Foster 1999; Berry 2008). Again, higher levels of this variable are indicative of more fragmentation.

The models presented below examine three indicators of economic growth: growth in log population, growth in log employment, and growth in log real per capita money income.⁵ The first two are generally accepted measures of local economic growth. The third, real per capita income growth, is somewhat problematic. As Glaeser, Scheinkman, and Shleifer (1995) argue, real income growth is a better indicator of national economic growth. At the local level, individuals are mobile and will likely move in response to changes in productivity (wages). Additionally, employers may have to compensate workers for low quality of life with higher wages. The combination of these effects muddies the connection between income growth and actual economic growth. Nevertheless, much of the prior literature examines real income growth and it is included here as well. As can be seen in table 1, metropolitan areas have grown by roughly 50 percent in population, 100 percent in employment and, 70 percent in real per capita money income between 1960 and 2000. However, there is much variance around these averages. The geographic variation in population growth can be seen in figure 1, employment growth in figure 2, and real per capita income growth in figure 3. Some similarities exist between the three types of growth with growth largely occurring in the southern and western regions of the United States; however, there is extreme variation in all three measures, geographically.

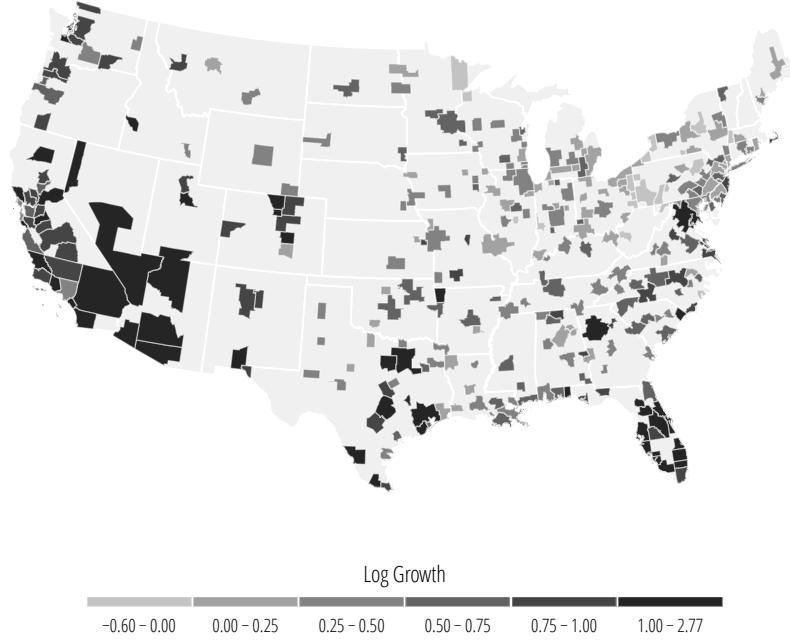
Connecting any covariates to metropolitan economic growth is rife with potential problems. As cities are large interconnected systems, nearly every potential relationship is endogenous.

³The Office of Management and Budget often designates multiple cities in a MSA as “central.” Generally, this is cities over 50,000 in population; however, the reality of assignment to “central” status is much more complex.

⁴In 11 states, towns may overlap other forms of general purpose local government and serve as supplements to other governments.

⁵Specifically, these are defined as $\ln(var_{2000}/var_{1960})$ where var is population, employment, or per capita money income.

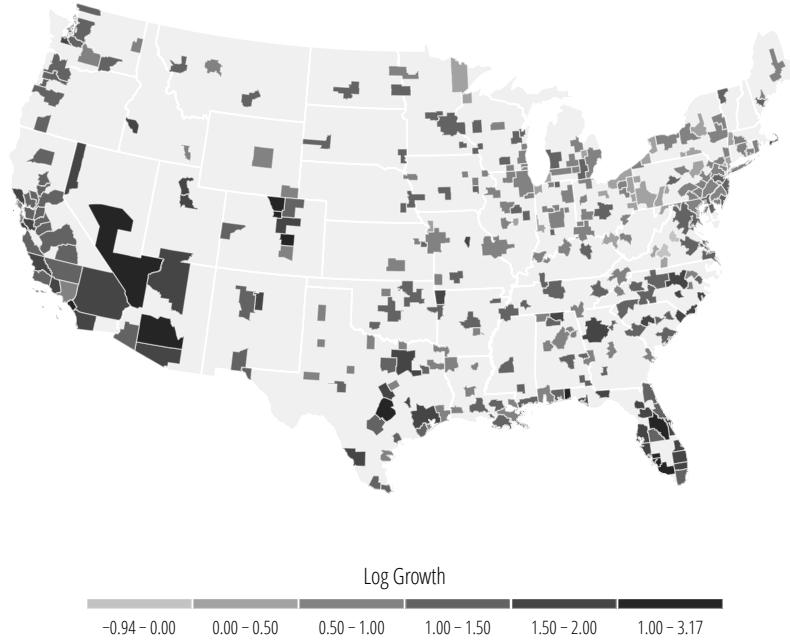
Figure 1: Population growth, 1960 - 2000



Glaeser, Scheinkman, and Shleifer (1995) proposes a framework for examining the correlates of long run economic growth where long run growth is a function of variables measured at the beginning of the time period. For this analysis, growth from 1960 to 2000 is a function of variables in 1960 (or 1962). By arranging the model specification in this manner, the risk of endogeneity is curtailed as future growth cannot influence past levels of the covariates. Following Glaeser, Scheinkman, and Shleifer (1995) as well as the more recently literature on local government fragmentation and long-run economic growth (Stansel 2005; Hammond and Tosun 2011), a number of control variables are introduced. First, the initial conditions for each type of growth and per capita money income are included. These two variables set the baseline for estimating long run growth with initial conditions. To these initial variables, prior growth is added to control for the trajectory of the metropolitan areas.⁶ One might expect that metropolitan areas already in decline or experiencing rapid growth in the pre-trend time period may continue to do so in the long-run. Lastly, three variables measuring the economic health of the metropolitan area are introduced. The unemployment rate in 1960 controls for the overall economic health and one might expect that distressed metropolitan areas in 1960 will struggle to achieve rapid long run growth. The share of employment in manufacturing in 1960 controls for potential impact of the massive shift away from manufacturing. Those metropolitan areas with large exposure to the manufacturing sector are likely to experience low or negative long run growth as those jobs shifted to different regions in the U.S. and internationally. Finally the percentage of the population with 16 plus years

⁶Unfortunately, 1949 per capita money income is unavailable. Pre-trend population growth is substituted.

Figure 2: Employment growth, 1960 - 2000



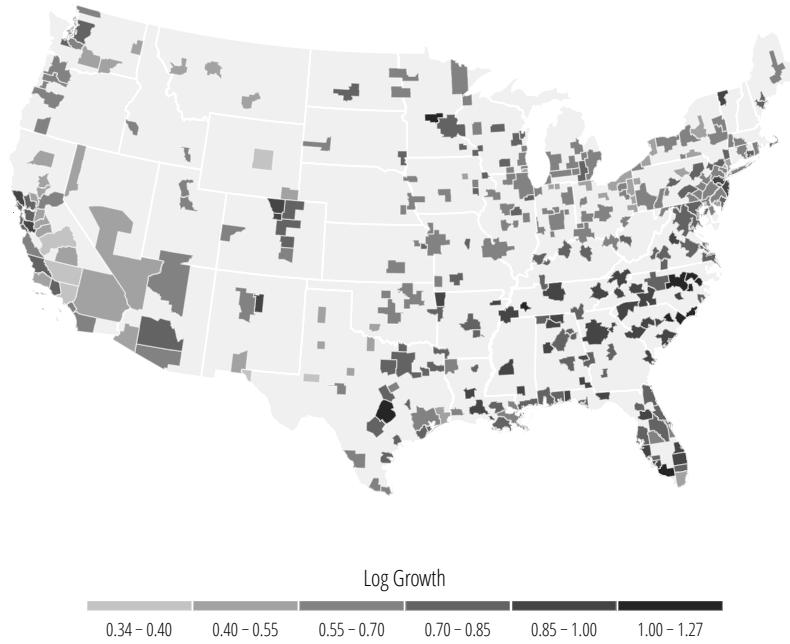
of schooling is included to control for the ability of the metropolitan area to be a driver in the shift to the knowledge economy over the time period. Much research suggests that a highly educated workforce is a correlate of growth (Glaeser and Saiz 2004).

The main data sources are the 1962 Census of Governments (COG) and the 1960 and 2000 Census of Population and Housing (CPH). The unit of observation is the primary metropolitan statistical area (PMSA) and are defined at the end of the time period by the 1999 MSA definition to capture all possible effects as metropolitan areas expand over 40 years. PMSAs in Alaska (1, Anchorage) and Hawaii (1, Honolulu) are excluded. Additionally, the components of the Boston-Worcester-Lawrence, MA-NH-ME-CT consolidated metropolitan statistical area (CMSA) are excluded because there are no county-based definitions of the component PMSAs.⁷ The final dataset is identical to Stansel (2005) and includes 314 PMSAs in 45 states. Data sources and summary statistics for all of the variables are reported in table 1.

The impacts of local political fragmentation on growth are identified by regressing population, employment, and real income growth on the five measures of local political fragmentation and the above control variables. State fixed effects are included to control for important state-specific unobservables such as weather or geography that are common to all PMSAs in a state. These fixed effects also control for laws related to local government creation, annexation, home rule authority,

⁷CMSAs and PMSAs in much of the northeast are defined by township rather than county. OMB provides a means to convert these definitions to a county-based system (New England County Metropolitan Areas); however, these are not available for component PMSAs of a CMSA.

Figure 3: Real per capita money income growth, 1960 - 2000



etc. To account for any state-specific correlation in the residuals, the errors are clustered on the state.

Regression Results

The empirical results for population, employment, and real per capita money income growth are presented in table 2. As mentioned above, positive signs for central city share, suburban municipal fragmentation, and suburban unincorporated population and negative signs for school district decentralization and special district overlap are indicative of the “government reformist” perspective. The opposite signs are indicative of the “polycentrist” perspective.

Turning first to population growth, note the statistically significant correlations between central city population share, suburban municipal fragmentation, and special district overlap and long run population growth. All three have signs consistent with the polycentrist perspective suggesting increased fragmentation leading to enhanced long run population growth. A 10 percent increase in the initial share of central city population is associated with 2.9 percentage point decrease in population growth between 1960 and 2000. This is roughly similar to that found by Stansel (2005) using the 1960 to 1990 time period. The results in table 2 suggest that increasing the average size of suburban cities by one thousand residents is associated with a decrease of 0.7 percentage point increase in population growth;⁸ however, this is only statistically significant at the

⁸The exact point estimate is 0.00000691.

Table 1: Summary statistics

Variable	Source	Mean	St. Dev.	Min.	Max.
Growth in log of population, 1960-2000	CPH	0.562	0.455	-0.240	2.770
Growth in log of employment, 1960-2000	CPH	1.075	0.498	-0.943	3.166
Growth in log of real per capita money income, 1959-1999	CPH	0.701	0.158	0.343	1.266
Population (1000s), 1960	CPH	411.858	833.223	12.594	8759.400
Population (1000s), 2000	CPH	691.711	1161.358	57.813	9519.338
Employment (1000s), 1960	CPH	151.682	331.624	3.656	3696.104
Employment (1000s), 2000	CPH	413.221	686.318	10.724	5388.789
Real per capita money income (\$1000s), 1959	CPH	10.122	1.904	5.145	16.113
Real per capita money income (\$1000s), 1999	CPH	20.299	3.463	9.899	36.651
Central city population share, 1960	CPH	0.468	0.185	0.000	0.937
Suburban municipal fragmentation, 1960	CPH	3407.841	4659.769	0.000	41103.000
Suburban unincorporated population, 1960	CPH	0.674	0.193	0.138	1.000
School district decentralization, 1962	COG	1.806	2.471	0.000	17.500
Special district overlap, 1962	COG	1.739	2.61	0.000	17.000
In population, 1960	CPH	12.215	1.061	9.441	15.986
In employment, 1960	CPH	11.157	1.100	8.204	15.123
Real per capita income (\$1000s), 1959	CPH	10.122	1.904	5.145	16.113
Growth of log population, 1950-1960	CPH	0.260	0.217	-0.099	1.550
Growth of log employment 1950-1960	CPH	0.218	0.215	-0.114	1.572
Unemployment rate, 1960	CPH	0.052	0.016	0.016	0.111
Manufacturing share, 1960	CPH	0.236	0.119	0.034	0.537
Percent of population with 16+ years of school, 1960	CPH	0.081	0.030	0.024	0.218

N=314

CPH is the Census of Population and Housing

COG is the Census of Governments.

ten percent level. Foster (1993) finds no analogous effects in the 1960 to 1980 time period. There is no relationship between suburban unincorporated population and long run population growth.

Special district overlap is positively associated with long run population growth. A one district per non-overlapping general purpose government increase is associated with a two percentage point increase in population growth. This result is not generally found in the literature. Foster (1993) finds no relationship between special district overlap and population growth, 1960 to 1980. There is no discernible relationship between school district decentralization and population growth. Along the remaining two models, there are no statistically significant correlations between political fragmentation at the beginning of the time period and long run employment or per capita real money growth. Although using different variables and aggregations, this null finding is similar to that of Hammond and Tosun (2011).

The remainder of the control variables largely perform as expected. Similar to the findings of others, pre-initial period growth is influential on future long-run growth (Glaeser, Scheinkman, and Shleifer 1995; Stansel 2005; Hammond and Tosun 2011). If a metropolitan area was growing from 1950 to 1960, that growth continued in the 1960 to 2000 period on average. There is little evidence of convergence over time except for real money income. High initial per capita money income is associated with lower long run growth in per capita money income. This is a result echoed by Glaeser, Scheinkman, and Shleifer (1995), Stansel (2005), and Hammond and Tosun (2011). Initial levels of unemployment, manufacturing shares, and educational endowments are all influential on long run growth in ways consistent with the literature. High levels of initial unemployment reduce long run growth across all three indicators. Glaeser, Scheinkman, and Shleifer (1995) explains this negative sign is likely the result of two effects: emigration in response to the business cycle or low human capital endowments. All three models control for initial period

Table 2: Metro area growth & local political fragmentation

	(1) Growth in log of population, 1960-2000	(2) Growth in log of employment, 1960-2000	(3) Growth in log of real per capita money income, 1959-1999
<i>Political Fragmentation (start of period)</i>			
Central city population share	-0.2863** (-2.38)	-0.1338 (-0.81)	-0.0725 (-1.09)
Suburban municipal fragmentation	-0.0000* (-1.69)	-0.0000* (-1.86)	-0.0000 (-1.49)
Suburban unincorporated population	-0.1024 (-0.70)	-0.1146 (-0.80)	-0.0820 (-1.57)
School district decentralization	0.0089 (0.80)	0.0089 (0.85)	-0.0038 (-0.91)
Special district overlap	0.0200** (2.05)	0.0109 (0.97)	0.0020 (0.41)
<i>Control Variables (start of period)</i>			
In population	0.0009 (0.01)	– (0.32)	0.0023 (0.14)
In employment	– (0.32)	0.0184 (0.32)	– (0.32)
Real per capita money income	-0.0540 (-0.93)	-0.0581 (-1.17)	-0.0253** (-2.28)
Growth of log population, 1950-1960	0.6527*** (5.87)	– (5.54)	-0.0570 (-1.36)
Growth of log employment, 1950-1960	– (5.54)	0.9230*** (5.54)	– (5.54)
Unemployment rate	-5.1266*** (-5.84)	-4.5169*** (-5.16)	-2.5270*** (-4.68)
Manufacturing share	-0.3879 (-0.97)	-1.1486*** (-3.37)	-0.1123 (-0.96)
% of population with 16+ years education	2.2789 (1.61)	1.6496 (1.41)	0.6606* (1.69)
State fixed effects	Yes	Yes	Yes
N	311	311	311
Adj. R ²	0.674	0.661	0.606

Notes: Singleton states (i.e. states with a single MSA) excluded. This is computationally more efficient and can help avoid biasing standard errors. See Correia (2015) for a deeper explanation. Inclusion of singletons does not change the results. Cluster (MSA)-robust *t*-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

educational attainment so the negative sign on unemployment is likely the result of emigration. Lastly, higher initial exposure to manufacturing is associated with lower long run growth for employment. As manufacturing declined in metropolitan areas, non-manufacturing industries did not take the place of former industries (Glaeser, Scheinkman, and Shleifer 1995). Rather, jobs moved away from metro regions.

Overall, the three models paint a picture where local political fragmentation is important for the attraction of individuals to a metropolitan area. As Tiebout (1956) suggests, individuals will sort to areas that most closely match their preference for public services and taxation. Increased local fragmentation allows for a more diverse collection of spending and taxing bundles allowing for better sorting. As the results presented above suggest, both municipal fragmentation and special districts are important. The combination of two likely creates more differentiation between areas and more choice across which to sort. These factors appear unrelated to growth in jobs

or income. This finding is somewhat at odds with the previous literature that suggest local fragmentation can be associated with increased growth in jobs or income. An important exception to assertion is for metropolitan areas where central places are not dominant.

Extensions & Sensitivity Analysis

Glaeser, Scheinkman, and Shleifer (1995) explain there are important regional differences in long run growth. It is possible these differences extend to the relationship between local political fragmentation and growth. Table 3 splits the original dataset into four Census regions and re-estimates the results from table 2. In general, the influence of local political fragmentation is confined to metropolitan areas in the northeast (Panel A) and south (Panel C). Similar to the results in table 2, the signs are consistent with the “polycentrist” perspective. However, different from the results in table 2, the findings consistent with the “polycentrist” perspective are not confined to population growth alone. From Panel A, three of the five political fragmentation variables are influential for long-run employment growth as well as for long-run per capita money income growth. In the southern region (panel C), increased political fragmentation is associated with higher population growth as well as money income growth. In both instances, smaller central city population shares and more special district overlap is associated with higher levels of growth. Overall, the results from table 3 suggest the findings in table 2 mask important regional variation in the relationship between local political fragmentation and long-run economic growth.

There is some concern the results from table 2 may be overly influenced by extreme values of growth. As can be seen in figures 1, 2, and 3, there are a few of metropolitan areas with growth much above or much below what is typical. These extreme values could mask or overstate the relationship between local political fragmentation and long run growth. This potentiality is explored in table 4 where the dependent variables are trimmed using three different methods. Panel A trims the upper and lower five percent of observations in the distribution of dependent variables. Panel B trims the upper and lower ten percent of observations in the distribution of dependent variables. Finally, panel C trims observations above or below three standard deviations from the mean of growth. Among population growth models, Panel A trims 31 observations, panel B trims 64 observations, and panel C trims four observations. In all three operations, the findings are qualitatively similar to those found in table 2 and supportive of the polycentric perspective. There is little reason to suggest the results in table 2 are driven by outliers in growth.

Policy Implications & Conclusions

This analysis seeks to explore the relationship between local political fragmentation and long-run economic growth in 314 U.S. metropolitan areas from 1960 to 2000. Following Glaeser, Scheinkman, and Shleifer (1995) and others, a model of long-run growth is specified. Paying specific attention to the unique aspects of U.S. local government, a number of variables are layered onto this model. The results suggest that increased local political fragmentation for both municipalities as well as single purpose governments enhances long-run metropolitan area population growth. However, the same factors are largely unrelated to growth in employment or per capita money income. Similar to Hammond and Tosun (2011), this analysis suggests that the unique aspects of special district forms of local government, flexibility and their ability to overlap other governments, can enhance population growth.

Table 3: Metro area growth & local political fragmentation by region

	Panel A: Northeast			Panel B: Midwest		
	Population	Employment	Income	Population	Employment	Income
Central city population share	0.2754 (1.58)	0.1786 (1.27)	-0.1591* (-2.49)	0.0304 (0.10)	0.0996 (0.32)	0.0179 (0.13)
Suburban municipal fragmentation	-0.0000* (-2.34)	-0.0000*** (-4.37)	-0.0000** (-3.01)	-0.0000 (-0.37)	-0.0000 (-0.83)	0.0000 (0.33)
Suburban unincorporated population	-0.5893** (-2.81)	-0.7622*** (-4.05)	-0.1385 (-1.98)	0.0767 (0.28)	-0.0744 (-0.32)	0.0742 (0.71)
School district decentralization	0.2207 (1.94)	0.1557 (1.38)	0.0315 (1.83)	0.0079 (0.68)	0.0243* (1.98)	0.0020 (0.22)
Special district overlap	0.1029 (1.86)	0.1993** (3.34)	0.0509** (3.14)	-0.0274 (-0.35)	-0.0190 (-0.22)	-0.0185 (-1.23)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	43	43	43	79	79	79
Adj. R^2	0.576	0.737	0.579	0.554	0.645	0.526
	Panel C: South			Panel D: West		
	Population	Employment	Income	Population	Employment	Income
Central city population share	-0.6081** (-2.49)	-0.3218 (-0.72)	-0.1108** (-2.14)	-0.6659 (-1.81)	-0.4275 (-0.95)	-0.0546 (-0.29)
Suburban municipal fragmentation	-0.0000 (-1.41)	-0.0000 (-0.19)	-0.0000 (-1.62)	-0.0000 (-0.44)	-0.0000 (-0.93)	-0.0000*** (-3.18)
Suburban unincorporated population	0.0108 (0.04)	0.1216 (0.83)	-0.1554* (-1.86)	-0.1770 (-0.49)	-0.2056 (-0.53)	-0.1844 (-1.11)
School district decentralization	-0.0154 (-0.55)	-0.0151 (-0.59)	-0.0073 (-1.63)	0.0249 (1.50)	0.0150 (1.32)	0.0003 (0.05)
Special district overlap	0.0486** (2.83)	0.0244 (1.16)	0.0206** (2.83)	0.0089 (1.03)	0.0052 (0.62)	-0.0047 (-1.20)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	126	126	126	63	63	63
Adj. R^2	0.531	0.476	0.648	0.533	0.531	0.303

Notes: Control variables are not reported. Cluster-robust t -statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

As Martinez-Vasquez, Lago-Penas, and Sacchi (2017) note, the relationship between local fragmentation and long-run economic growth is likely an endogenous one. This can arise due to an omitted variable influencing both fragmentation and economic growth. More likely, areas that want to generate long-run economic growth could strategically construct their local government structure in an attempt to achieve such growth. The preceding analysis takes steps to mitigate the first concern by fully specifying an accepted model of long run economic growth in the literature (Glaeser, Scheinkman, and Shleifer 1995). The second concern is dealt with by using initial period measures of fragmentation as is now common in the literature (Akai and Sakata 2002; Stansel 2005; Hammond and Tosun 2011). However, neither are likely to full account for the potential endogeneity. Ultimately, the literature is hampered by a lack relevant, time-variant instruments (Martinez-Vasquez, Lago-Penas, and Sacchi 2017).

The results of this analysis present a number of implications for policymakers interested in enhancing economic growth in urban areas. First, local political fragmentation may be a route for long run population growth. The results presented here suggest a small central city ringed by many small suburban cities sets the stage for future growth better than a more consolidated model. An important caveat is having more school districts per city does not appear to have any influence on long run population growth. However, if a policymaker is wanting to position

Table 4: Sensitivity Analysis

	Panel A: 5% Trimmed			Panel B: 10% Trimmed			Panel C: ± 3 S.D Trimmed		
	Population	Employment	Income	Population	Employment	Income	Population	Employment	Income
Central city population share	-0.3186** (-2.62)	-0.1911 (-1.52)	-0.11150** (-2.52)	-0.1651 (-1.50)	-0.1804 (-1.55)	-0.1197*** (-2.91)	-0.2600** (-2.34)	-0.1462 (-1.18)	-0.0712 (-1.11)
Suburban municipal fragmentation	-0.0000** (-2.35)	-0.0000** (-2.27)	-0.0000** (-1.29)	-0.0000*** (-2.62)	-0.0000*** (-3.57)	-0.0000 (-0.60)	-0.0000** (-2.54)	-0.0000** (-2.50)	-0.0000* (-1.70)
Suburban unincorporated population	-0.1341 (-0.91)	-0.1527 (-1.01)	0.0075 (0.21)	-0.0865 (-0.66)	-0.1557 (-1.15)	0.0116 (0.34)	-0.1548 (-1.19)	-0.1578 (-1.30)	-0.0723 (-1.48)
School district decentralization	0.0137** (2.24)	0.0127* (1.98)	-0.0022 (-0.66)	0.0070 (1.37)	0.0087 (1.07)	0.0009 (0.28)	0.0140** (2.11)	0.0080 (0.91)	-0.0034 (-0.85)
Special district overlap	0.0150* (1.82)	0.0082 (0.81)	-0.0013 (-0.19)	0.0220*** (3.16)	0.0139 (1.56)	-0.0017 (-0.27)	0.0156* (1.78)	0.0148 (1.16)	0.0018 (0.38)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	279	279	279	244	245	248	306	306	309
Adj. R ²	0.588	0.595	0.553	0.518	0.538	0.526	0.661	0.678	0.590

Notes: Control variables are not reported. Cluster-robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

a metropolitan area for future employment or per capita income growth, there are other more important factors such as an educated workforce. Overall, the results suggest that if policymakers are really interested in enhancing long run economic growth, political fragmentation is a rather minor tactic. Focusing on improving educational attainment and improving and diversifying your area's industrial base are more powerful means of achieving long run growth.

As others have noted, the way in which decentralization or political fragmentation is measured is important (Martinez-Vasquez, Lago-Penas, and Sacchi 2017). Future research should focus on refining measures of local political fragmentation in the US context. Additionally, more effort should be exerted to identify viable time-variant instruments, so more current analyses of economic growth and local political structure can be conducted. The growth in special districts in the US is largely unexamined in the context of this and other long-run analyses because of the starting time. Over the last 50 years, the growth in special district has topped 200 percent on average and the results presented here suggest this should have an impact on local economic growth.

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