

Too Many Cooks in the Kitchen?

Local Government Fragmentation and Economic Growth

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Abstract

In the US, the 49 largest metro regions account for more than 70% of GDP. Large metro regions are, and will continue to be, the centers of US growth and prosperity. Therefore, it is important to determine how to govern metro regions to ensure their continued economic success. Do united metro region governance structures result in better spending policies oriented towards long-term economic growth, or, do fragmented metro regions prosper because local government competition fuels more effective spending policies?

By looking at metro region unity, local government spending policies, and the economic growth of the 49 largest US metro regions, I find that united local government is better for economic growth. In united regions, local governments face less pressure from neighboring municipalities to compete for people and firms in the short-term. This allows municipalities in united regions to engage in less short-term consumption spending designed to lure consumer-voters from neighboring municipalities, resulting in improved economic growth prospects for the entire region. These conclusions suggest that to encourage economic growth in our large metro regions, we should pursue governance structures at the metro region level, rather than the village, town, city, or county level.

Introduction

More people than ever before are living in US cities, and global and national trends towards urbanization show no signs of slowing. Over the last century, the growth patterns of American cities have widely diverged. Some cities have annexed surrounding municipalities as they've grown, while other cities have maintained the same boundaries they had in the early 1800s when the urban area was nothing more than a village. Some cities have maintained density and vibrancy, while others have succumbed to sprawl and central city divestment in favor of the suburbs. Some cities have experienced robust economic growth, while others have wallowed in misery and bankruptcy. With the continued growth of the US urban population, city and metro region governance is an interesting question, especially for how it relates to metro region economic growth.

There are several determinants of local economic growth, though the amount of local control over these policy areas vary (Florida 2002; Glaeser 2011; Carlino and Saiz 2008; Jones 1990; Munnell and Cook 1990; Mathur 1999, Coe and Helpman 1995). Figure 1 outlines factors influencing economic growth, delineating those factors that local governments have some control over.¹

Figure 1

Factors affecting local economic growth

Some Local Policy Control	No Local Policy Control
Infrastructure Investment	Weather
Education Investment	Natural Endowments
Amenities Spending	State Devolved Powers
Services Spending	
Welfare Spending	
Tax Structure	

For those determinants that policymakers can control, how does municipal government fragmentation in metro regions impact policies and ultimately economic growth? Faced with the threat of competition from surrounding municipalities in their metro region, do local governments adopt shortsighted tax and spending policies in pursuit of economic development? Or, does intra-region competition spur municipalities to adopt better policies? Additionally, do the policies of local governments affect growth? Or, is the growth of metro regions determined by forces outside of local government control?

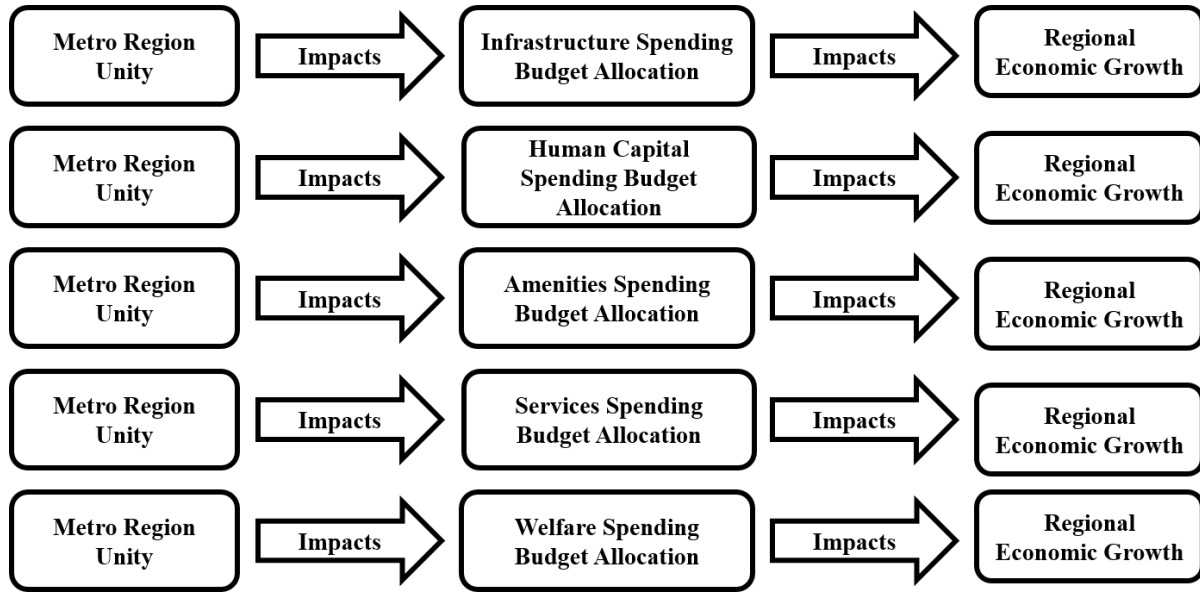
In metro regions that are less united (and therefore more fragmented), this paper presents evidence that the intra-metro region competition local governments face results in increases in services consumption spending that depresses economic growth. This conclusion was drawn by measuring the unity of metropolitan regions vis-à-vis their central city (with the boundaries of metro regions and classification of central cities coming from the US Census), and comparing unity scores to municipal spending policies and economic growth rates to see if unity in metro areas affected economic growth by acting through a few key policy spending areas. Figure 2 gives a visual representation of the relationships explored in this paper, showing how local

¹ Cities are a creation of state governments, and can only enact their own policies if they are a charter or home rule city. All of the cities in this paper are charter or home-rule cities. (Coester 2004).

government unity in metro regions can impact the spending policies of municipalities, and then how these spending policies can ultimately impact economic growth.

Figure 2

Relationship between unity, spending policies, and economic growth



Chicago presents an interesting example for how local governance may be impacting policies and ultimately economic growth. Flying through Chicago is a miserable experience. Of the 30 busiest airports in the US, Chicago’s Midway is the third worst for on-time departures. O’Hare is the fourth worst. Robert Sturgell, former head of the Federal Aviation Administration, has said that “a new Chicago airport, or a vast expansion of one of the city’s existing airports will be necessary to keep pace with booming demand for air travel in the coming decades” (Tarn 2008).

Despite recognizing that air infrastructure improvements are necessary, a lack of regional cooperation amongst municipal governments in Chicago is preventing improvements. The Chicago metro area is composed of nearly 1,751 local government entities, with policymakers representing diverse constituencies. This makes cooperation difficult, even for projects such as airport expansion that most people agree are necessary. The debate over how to expand Chicago’s air infrastructure has pitted urban officials favoring O’Hare expansion against northern suburb officials opposed to an O’Hare expansion because of the increase in noise it would cause, and southern suburb officials favoring a suburban airport (Mora 1999).

The inability of local governments in Chicagoland to cooperate on airport expansion may impact future economic development. Archer Daniels Midland (ADM, currently 27 on the Fortune 500 list) is looking to move its global headquarters to a city where investors can “get on a plane and fly nonstop to [their] headquarters” (Knight 2013). Chicago is currently in competition with Minneapolis and St. Louis for this multinational corporation that pays more than \$400 million dollars of Illinois salaries and taxes each year (Hinz 2013). Though local government disagreement over air infrastructure improvements may not impact Chicago’s ability to woo ADM in the short-term, in the long-term, it is easy to imagine a continued lack of cooperation on airport expansion resulting in inaction, and the loss of future economic benefits.

Recipe for a Successful City

Municipal governments in urban areas can enact their own tax structures and autonomously create spending policies. Additionally, municipal level decisions can have a large impact on the location choices of people and firms. According to the Tiebout model, the decisions of local municipalities play a large role in economic development. Municipal governments can structure their spending and tax schemes in different ways to attract people, and “consumer-voters” will move to communities that satisfy their public good preferences. Municipalities can affect their growth by adopting spending and tax bundles that are attractive to residents and businesses (Tiebout 1956). Several studies demonstrate the validity of this model. One such study found that property tax increases without increases in public goods provision will result in lower property values, with the decrease in property values a result of consumer-voters exhibiting less demand for the municipality. (Oates 1969, 968). Additionally, a recent study found that improvements in air quality in communities resulted in inflows of richer households. That is, wealthy consumer-voters adjusted their locational preferences because of local characteristics, showing that people can and do vote with their feet (Banzhaf and Walsh 2008).

However, some have challenged the idea that municipal governments are in complete control of their economic fate through the tax and expenditure schemes they develop. During the 1800s, Chicago, St. Louis, Cincinnati, and Milwaukee were investing in train infrastructure in the hopes of becoming the “gatekeeper” to the west. Chicago became the dominant city in spite of the fact that St. Louis, with its location on the Mississippi, was the more logical choice. This leads to the conclusion that the policies local governments implement may not be the only determinant of economic growth, though they are certainly a factor (Schragger 2010).

Assuming that cities can to some extent control their economic fate, there are three broad spending policy areas that determine city growth: human capital investment and amenities spending, infrastructure investment, and social services and welfare spending.

Human Capital: Amenities and Investment

For a city and its metro region to grow its economic pie, it needs to have a large amount of human capital; the educated people who will produce the ideas and innovation necessary to compete in a knowledge-based global economy. (Florida 2002).

Amenities are a key determinant of municipal economic growth because they increase the municipality’s human capital by influencing the location choices of people and firms. Smart people are a fickle commodity because they have the ability to move. Therefore, municipalities will be in constant competition with municipalities in their metro region, and other metro regions, for the intelligent people they need to facilitate economic growth. Research shows that quality of life and amenities are a key factor in attracting smart consumer-voters to cities, and that these smart people cause economic growth. If cities and their metro regions provide high levels of amenities, it means that they will attract the talented consumer-voters so crucial to the production of new ideas necessary to thrive in a globalized marketplace (Florida 2002; Glaeser 2011; Carlino and Saiz 2008). If amenities can influence economic growth by attracting smart people to cities and their metro regions, then determining that certain government structures promote amenities investment would be an important finding for figuring out how to govern urbanized metro areas.

Though the accumulation of amenities may be a worthy goal in and of itself, for economic growth, the real value lies in their ability to attract human capital to a city and its metro region. An additional component to economic growth is the accumulation of home-grown

human capital through government expenditures on schools, universities, and research parks. Investments in human capital are important because they develop the talented, creative people that are the essential input in formulating new ideas and products. In order to be successful, municipalities need to have high levels of human capital, which they can get through attraction (by providing amenities) or by nurturing human capital through expenditures (human capital investment).

Research shows that an individual's increase in human capital is a determinant of economic growth because it leads to innovation and individual productivity increases and resulting spillover benefits. Furthermore, government spending is necessary for human capital accumulation. Highly skilled employees often leave firms, so firms will under-invest in human capital, meaning governments must pick up the provision of this quasi-public-good (Mathur 1999; Coe and Helpman 1995). As with amenities spending, if it is found that certain local government structures lend themselves to greater investments in human capital, then this should influence how we govern metro regions because of the importance of human capital to economic growth.

Infrastructure Investment

In addition to human capital, infrastructure is an important ingredient in the economic growth of municipalities. For the purposes of this paper, infrastructure that relates to city growth includes transportation (airports, roads, and ports), sewer and water management expenditures, and utilities². These are the basic structural items that people and businesses need to survive and thrive. Things such as highways, sewer systems, and electricity are all forms of backbone infrastructure that are essential for people, businesses, and regions to reach their full economic potential. However, these are all items with high costs and diffuse benefits that the private sector often does not provide, leaving government to fill the provision void. Research shows that public infrastructure investment has a positive effect on economic and employment growth, does not crowd out private investment, and makes labor and private capital more productive. Furthermore, not all investments have the same return. Investments in sewer systems and highways are particularly supportive of economic growth (Munnell and Cook 1990). Determining how local government competition affects infrastructure spending decisions will enlighten policymakers as to how to structure local governments to maximize the value of spending policies.

Social Services and Welfare Spending

However, not all spending is beneficial for municipal economic growth. Just like too much salt can ruin a recipe, too much spending on certain areas can wreck a city. Amenities, human capital, and infrastructure spending are beneficial because they act as investments. By spending money now, the hope is that they will improve the capital stock of the municipality later on. Social services, such as welfare programs and police protection, do not have this same affect. Jones finds that welfare spending has a negative relationship to economic growth because it is consumption spending and not investment spending (Jones 1990, 226). Welfare and services spending are short-term consumption expenditures, so they don't have the same impact on aiding economic growth as more investment oriented spending does. Though services and welfare expenditures are often necessary, for a municipality to succeed economically, it should keep these expenditures to a minimum to allow for more spending on the areas that lay the foundation

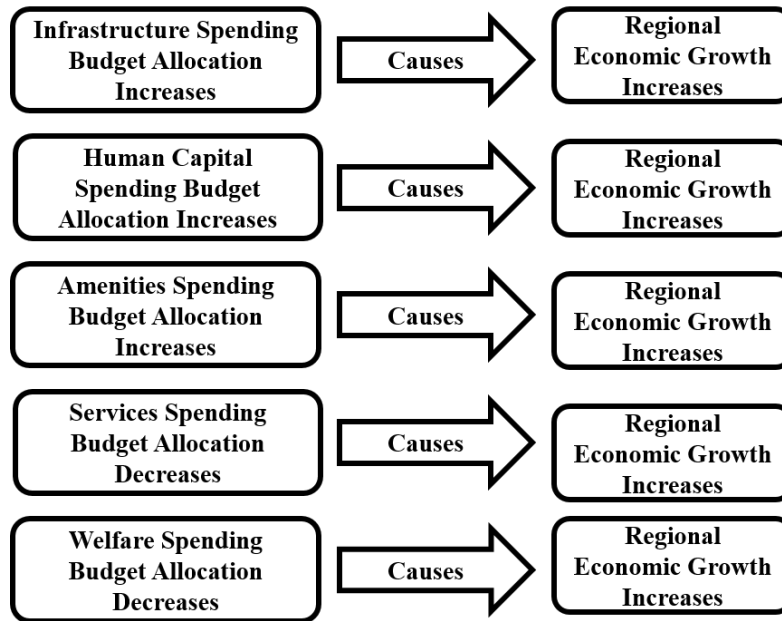
² The data source for this paper does not include a line item for technology infrastructure, like fiber optic cables, hence its omission.

for future economic growth. If cities and surrounding municipalities in more fragmented regions spend more on social services and welfare than cities and surrounding municipalities in united regions, then this should encourage regionalism efforts to protect municipalities from existing in areas that pressure them into bad spending policies.

Figure 3 illustrates what the relevant literature suggests the relationship is between spending policies and economic growth.

Figure 3

Relationship between spending policies and economic growth



Too Many Chefs in the Kitchen: Metro Regions, Cities, and Growth

Individual municipalities can influence their economic growth in a multitude of ways. They can provide more amenities to attract smart and talented residents. They can invest in institutions that help people improve their human capital. They can provide the expensive support infrastructure that people and businesses need to be successful. Finally, they can limit expenditures on social services and welfare. However, municipal governments do not make their spending decisions in isolation. In addition to the influence that federal and state policies may have, competing local governments can exert pressure on the decisions of neighboring municipalities.

Human capital investment is an area where municipal government competition in metro regions can adversely impact spending policies. Human capital is an amorphous concept. Unlike investments that have tangible returns, increasing human capital through educational gains is hard for people to conceptualize. Additionally, investments in human capital may not pay dividends to the investor. If municipal governments increase a person’s human capital by giving them new skills, there is no guarantee that they will receive the benefits from that person because people can move.

Spillovers to human capital investment also exist. The productivity gains to human capital investment generally don’t accrue to just one person, but everyone that they may work

with. Because of this, local municipalities, especially those in fragmented regions where there are many other municipal governments, might have incentives to under invest in human capital. If all local governments except for one invest in human capital, then that lone municipality will benefit from productivity gain spillovers. In this hypothesized world, this municipality will receive a large benefit at very little cost. This creates incentives for all local governments to attempt to free ride, potentially leading to a chronic underinvestment in human capital. Fragmented metro regions may experience an amplification of this underinvestment. As the number of local government structures increases, it means each government will have an even greater interest in attempting to free ride. Although human capital investment has substantial returns to the area that does the investing, these returns can migrate across regions. The fact that knowledge spillovers exist may decrease municipal human capital investment (Coe and Helpman 1995; Glaeser et al 1991).

Furthermore, fragmented local government in a metro region can have an adverse effect on infrastructure investments. Though infrastructure investments are good, they do have decreasing marginal returns. There are only so many sewer systems, roads, etc. that places need. By not having a coherent infrastructure investment plan, the aggregation of individual municipal government spending decisions in a metro region may mean an over provision of infrastructure, or a failure to provide the right infrastructure, resulting in a sub-optimal use of public funds. This sub-optimal use may then cause an exodus of consumer-voters moving to other metro regions throughout the US that have more cooperative and effective spending policies across local governments. For example, the creation of the first interstate highway system will have a greater impact on productivity and economic growth than the creation of a second interstate highway system, illustrating the diminishing returns to infrastructure investment (Fernald 1999). In fragmented metro regions, increasing municipal governments may result in duplicitous investments in areas such as sewer systems, as separate governments construct their own systems, even if the need isn't there.

In addition, local government services and welfare spending can rise in fragmented regions. If municipalities are constantly competing for people and jobs, then newer, suburban municipalities may be able to lure affluent residents away from central cities and older municipalities by offering consumer-voters public goods for immediate consumption in the form of increased services spending. This results in the central city being left with a population that requires more welfare services (meaning the city has less money to devote to good types of spending), and a smaller tax base that they can draw from, and suburban communities spending inordinate amounts of money on services to attract residents (Ornstein 1982).

Finally, high levels of government fragmentation that result in sub-optimal spending policies can have their negative affects amplified. Because of the close proximity of local governments to each other in a metro region, the negative effects of competition can reinforce themselves. The economic growth of one municipality is connected to the growth of its surrounding municipalities. Just as a rising tide raises all ships, a sinking municipality can drag down its neighbors, causing ever-expanding economic dead-zones. This is especially apparent in the relationship between the central city and the region as a whole. Because the central city is often the dominant economic and political force in a region, an economically declining central city can have an adverse effect on surrounding cities, towns, villages, counties, etc. Studies show that there is a strong positive correlation between the economic condition of central cities and their metro regions (Furdell and Wolman 2006) and that the economic fates of metropolitan

regions closely follow the fate of central cities (Savitch et al. 1993). These studies show that there is a linkage between the growth rates of municipalities within a region.

In cohesive metro areas, people can no longer act in accordance with the Tiebout model and easily express their preferences for different municipalities. Metro region unity prevents people from self-selecting out of central cities and into other municipalities within the metro region that may have an adversarial relationship with the central city. This spares central cities from confronting shrinking tax bases, needy populations, and inhibited growth potential. Additionally, it prevents local governments in the same metro region from competing with one another for residents and businesses by offering services, public goods for immediate consumption to lure consumer-voters. If there is a strong linkage between the growth rates of neighboring municipalities, with the central city having a particularly large impact on metro region growth, then we do not want to have fragmented government structures that encourage competition and bad, short-term focused spending policies. Metro region government unity can prevent people from using their location decision power to inadvertently force local governments in the same metro region into competition, resulting in bad spending policies and inhibited economic growth potential.

An Empirical Analysis

If metro region government unity can prevent municipalities within the same metro region from competing for residents and businesses by pursuing bad spending policies, then metro regions with more united local governments should experience stronger economic growth. This paper looks at the impact of government fragmentation on spending policies for the central city, and for all local governments in a metropolitan region, and then at the impact of spending policies by central cities and all local governments in a metro region on the economic growth of the metro region.³

1. Unity and Central City Spending Policies

Hypothesis: Greater local government unity will result in more spending on infrastructure, human capital, and amenities, and less spending on services and welfare by central cities.

Observable implications: A positive correlation between unity and central city budget allocations for infrastructure, human capital, and amenities, and a negative correlation between unity and central city budget allocations for services and welfare spending.

2. Central City Spending Policies and Economic Growth

Hypothesis: Long-term investment oriented spending on infrastructure, human capital, and amenities is good for economic growth. Short-term consumption spending on welfare and services is bad for economic growth.

Observable implications: A positive correlation between central city infrastructure, human capital, and amenities spending, and economic growth, and a negative relationship between central city services and welfare spending and economic growth.

³ Taxes are an important determinant of economic growth within a municipality's control. Given the complexity of tax schemes and the fact that low taxes may not be the best policy, they will not be addressed in this paper.

3. Unity, Central City Spending Policies, and Economic Growth

Hypothesis: Metro region unity is good for economic growth because it encourages long-term investment oriented spending policies in central cities.

Observable implications: A positive correlation between metro region unity and central city infrastructure, human capital, and amenities spending, and a positive correlation between those spending categories and economic growth. A negative correlation between unity and central city services and welfare spending, and a negative correlation between those spending categories and economic growth.

4. Unity and Metro Region Spending Policies

Hypothesis: Greater local government unity will result in more spending on infrastructure, human capital, and amenities, and less spending on services and welfare by all local governments in a metro region.

Observable implications: A positive correlation between unity and metro region budget allocations for infrastructure, human capital, and amenities, and a negative correlation between unity and metro region budget allocations for services and welfare spending.

5. Metro Region Spending Policies and Economic Growth

Hypothesis: Long-term investment oriented spending is good for economic growth, short-term consumption spending is bad for economic growth.

Observable implications: A positive correlation between metro region infrastructure, human capital, and amenities spending, and economic growth, and a negative relationship between metro region services and welfare spending and economic growth.

6. Unity, Metro Region Spending Policies, and Economic Growth

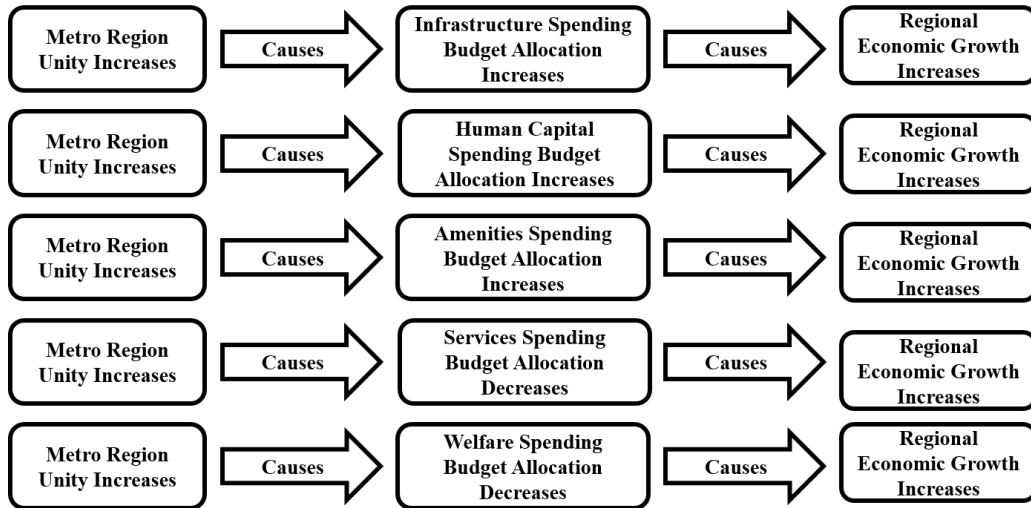
Hypothesis: Metro region unity is good for economic growth because it encourages long-term investment oriented spending policies by all local governments in a metro region.

Observable implications: A positive correlation between metro region unity and metro region infrastructure, human capital, and amenities spending, and a positive correlation between those spending categories and economic growth. A negative correlation between unity and metro region services and welfare spending, and a negative correlation between those spending categories and economic growth.

Figure 4 presents an illustration of the hypothesized relationship between unity, spending policies, and economic growth for central cities and all local governments in a metro region.

Figure 4

Hypothesized relationship between unity, spending policies, and economic growth



Data Analysis

Utilizing the total expenditure line item from the US Census of Local Governments, each metro region for each year receives a unity score, which is the amount of spending conducted by the central city in a metro region compared to the amount of spending carried out by all the constituent local governments in a metro region:

$$\text{Metro Region Unity} = \frac{\text{Central City Spending}}{\text{Metro Region Spending}}$$

Other scholars use fragmentation measurements that include population within municipalities or number of local governments (Mitchell-Weaver et al. 2000, 876). However, for policies, money is power. There can be thousands of local governments in a region, but if the central city spends the majority of the region’s money, then the policies of the region will mimic what the policies would be in a region with only one government, which is why this analysis uses a score built around central city spending.

To determine what the spending priorities of a government are, spending line items from the Census of Local Governments are placed into categories: infrastructure spending, human capital spending, amenities spending, services spending, and welfare spending. The priority placed on a given category is measured as the percent of total spending the individual category comprises of the budget for the central city and the metro region as a whole (with the metro region data calculated by summing up all the expenditures for all local governments in a region).⁴

The measurement for economic growth rates is the change in median per capita income from the beginning to the end of a five-year period. For example, the economic growth rate for a

⁴See Appendix B for the line items that each category includes.

region for 1972 is the percent increase in per capita income from 1972 to 1977. In this way, the economic growth measurement is lagged behind the unity and spending policy measurements.

To determine if unity relates to growth (and if there is then a reason to investigate it in a more nuanced manner), economic growth is regressed on unity in a multivariate model controlling for the percent of people in a metro region with some level of post-secondary education and the geographic region that each metro region is in (New England, West Coast, etc.). Post-secondary education is used as a control because it captures what some argue is the most important determinant of economic growth. Geographic regions are used as controls to account for the broader shift in national economic activity (from the Northeast and Midwest to the South and West), weather advantages that certain places may have, and city age (with older cities and governance structures in the Northeast and Midwest). Controls for the industrial diversity of each metro region or state-local government relationship for each region are not used because they are roughly captured in the geographic region control (the industrial mix and state-local government relationship would be more similar in two western states than in a western and northeastern state).

If higher unity ratio scores (where the central city spends a larger amount of money compared to the surrounding region, meaning the region is less fragmented) correlate to higher growth rates, that would suggest that unity has a positive impact on economic growth. It would suggest that in metro regions, united local government structures are preferable to very fragmented local governments. To understand why this relationship may occur, a series of multivariate regression analyses are used to determine if local government unity and its impact on central city policies causes economic growth changes. A multivariate regression analysis is performed for each individual spending category regressed on unity with controls for post-secondary education and geographic region to determine if unity impacts local government spending policies. Then, a multivariate linear regression analysis is performed with economic growth regressed on all the spending categories, controlling for post-secondary education and geographic region to determine if the spending policies affect economic growth. The economic growth measurement is lagged to measure growth for the five years after the unity and spending policy measurements.

From the regressions, if unity correlates to changes in an individual spending policy, and an individual spending policy correlates to economic growth in the same way, then it would suggest that unity influences economic growth by working through the spending policy. These regressions are performed for central cities and the aggregation of local governments in a metro region. A test is considered statistically significant if its p-value is less than .02.

Additionally, a Sobel-Goodman mediation analysis is performed on the data. A Sobel-Goodman test looks at an independent variable, a dependent variable, and a hypothesized mediation variable. A positive test would suggest that the impact of the independent variable on the dependent variable passes through the independent variable's impact on the mediating variable. For the Sobel-Goodman analysis, each individual budget allocation category for the central city and metro region is used as a mediating variable, with the independent variable being unity, and the dependent variable being economic growth.

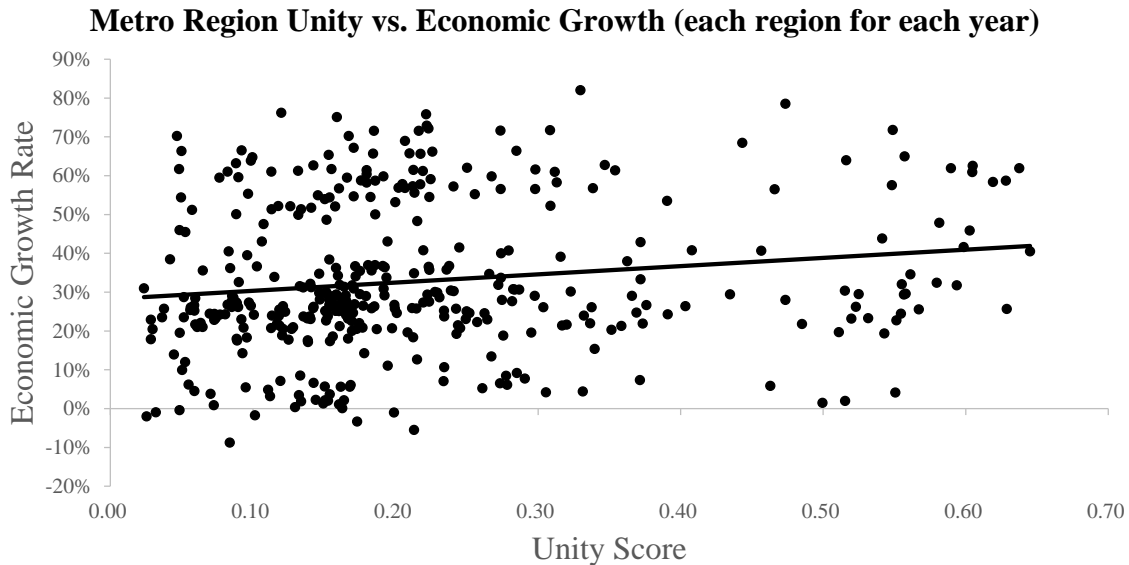
Data

The dataset is the 49⁵ largest metro regions in the US, their constituent counties, largest cities, and other local governments. The constituent local governments for metro regions are based on US Census categorization of local governments into metro regions. The central city for each metro region is the city that leads the naming of the metro region (for example, Atlanta is the central city in the “Atlanta – Sandy Springs – Marietta Metropolitan Statistical Area”). The spending policy dataset is the US Census of Local Governments and covers the years 1972-2007 in five year increments. Spending data comes from one source so that the data isn’t biased by individual municipality accounting practices. Economic growth data on metro region median per capita income changes comes from the Bureau of Economic Analysis. The control data on post-secondary education comes from the American Community Survey, and the geographic region designations are from the US Census Department.

Local Government Unity and Economic Growth

The regression results suggests that there is greater economic growth in more united metro regions⁶. The results show that a 10% increase in regional unity correlates to a 1.24% increase in metro region growth when controlling for post-secondary education and geographic region. Graph 1 presents the unity measurement for each metro region for each year and its corresponding growth rate to illustrate the relationship between unity and growth.

Graph 1



⁵ 49 because the author’s hometown and the place he is most curious about, Buffalo, NY, is the 49th largest US metro region.

⁶ See Appendix A for a listing of metro regions based on unity.

Table 1 displays the multivariate regression results.

Table 1

Economic growth regressed on unity, education, and region

Independent Variable	Coefficient	P-Value	R2	Observations
Metro Region Unity	1.24%	0.008	0.610	392
	(0.047)			
Post-Secondary Education	-9.97%	0.000	0.610	392
	(0.043)			
New England	-0.74%	0.001	0.610	392
	(0.023)			
Middle Atlantic	-0.26%	0.322	0.610	392
	(0.026)			
East North Central	-0.16%	0.539	0.610	392
	(0.025)			
West North Central	0.80%	0.004	0.610	392
	(0.028)			
South Atlantic	0.66%	0.019	0.610	392
	(0.028)			
East South Central	1.34%	0.000	0.610	392
	(0.021)			
West South Central	0.47%	0.016	0.610	392
	(0.019)			
Mountain	0.61%	0.030	0.610	392
	(0.028)			
Pacific	0.74%	0.001	0.610	392
	(0.023)			

Additionally, when looking at the average growth rates for the 10 most and least united metro regions for each year, it appears as if metro region unity has a greater impact on growth rates during economic downturns. Consistent with the broader trend, the most united regions always experience a higher average growth rate than the least united regions over the following five years. However, the difference between the average growth rates is larger during economic downturns. In 1977, 1987, and 2007, the difference between the growth rates is greater than 3.0%. Outside of these years, the largest difference is 2.7%. 1977 measures the economic growth rates for the years 1977-1982 during the Volcker recession, 1987 measures growth for 1987-1992 during the Savings and Loans Crises, and 2007 measures the growth rates during the Great Recession. The most and least united metro regions each contain a broad cross section of geographic regions and size, so the differences in growth rates are probably not attributable to some other characteristic inherent in the metro regions. Table 2 presents this data.

Table 2

Average economic growth differences: most and least united regions

Year	Most United	Least United	Difference
1972	57.59%	56.85%	0.74%
1977	67.58%	61.73%	5.85%
1982	39.27%	38.09%	1.18%
1987	29.47%	26.37%	3.11%
1992	25.82%	23.12%	2.70%
1997	24.27%	21.78%	2.50%
2002	25.23%	24.91%	0.32%
2007	5.26%	1.88%	3.38%

Since the regression of economic growth on unity presents evidence that there is a relationship between unity and growth, especially during economic downturns, it is important to look at spending policies to see if the impact of unity on economic growth is a result of the impact of unity on the spending policies of local governments, and subsequent impact on economic growth.

Unity and Central City Spending

Cities in metro regions that are 10% more united tend to see a 1.93% increase in infrastructure spending, a 2.98% increase in human capital spending, a 1.24% increase in welfare spending, a 3.36% decrease in services spending, and no impact on amenities spending. Table 3 presents the results from a series of multivariate regression analyses where each spending category was individually regressed on unity, with controls for post-secondary education and geographic region.

Table 3

Central city spending changes resulting from a 10% increase in unity

Dependent Variable	Coefficient	P-Value	R²	Observations
Central City Infrastructure Spending	1.93%	0.000	0.379	392
	(0.054)			
Central City Human Capital Spending	2.98%	0.000	0.517	392
	(0.042)			
Central City Amenities Spending	0.04%	0.822	0.096	392
	(0.018)			
Central City Services Spending	-3.36%	0.000	0.452	392
	(0.027)			
Central City Welfare Spending	1.24%	0.000	0.208	392
	(0.022)			

The increases in infrastructure and human capital budget allocations are consistent with the idea that greater metro region unity results in more advantageous spending policy decisions. Cities that face less intra-region competition may have any easier time justifying long-term infrastructure investments and human capital spending. Furthermore, the services spending results support the theory of unity resulting in better policies. Lower “bad” spending suggests that the central city isn’t facing intra-region pressure from other municipalities to spend money irresponsibly. These results suggests that absent pressure to compete intra-metro region for consumer voters, central cities enact more prudent spending policies.

The anomaly for these results is amenities spending and welfare spending. If metro region unity encourages good spending, then it should result in greater central city *investment* in amenities. In this instance, the data used to measure amenities spending may not be the proper data. Based on the Census of Local Governments, spending on parks and hospitals is categorized as amenity spending. These measurements would fail to capture amenity investment, such as spending on a convention center, art museum, or sports stadium.⁷ Furthermore, it would fail to account for that fact that many urban amenities are in no way, shape, or form provided by the government. The increase in welfare spending is curious, but may be the result of the unity measurement capturing larger cities. If the unity measurement captures larger cities, than the increase in welfare spending associated with unity may just be showing that larger cities have more federal and state devolved authority over welfare program implementation, resulting in higher levels of welfare spending regardless of metro region unity.

Central City Spending and Economic Growth

Though metro region unity has a strong correlation to central city spending decisions, a multivariate model regressing economic growth on all spending categories while controlling for post-secondary education and geographic region suggest that central city spending decisions do not affect economic growth. Table 4 presents the regression results.

Table 4

Economic growth rate changes from a 10% increase in central city category spending

Independent Variable	Coefficient	P-Value	R2	Observations
Central City Infrastructure Spending	-1.40%	0.090	0.670	392
	(0.082)			
Central City Human Capital Spending	-0.29%	0.729	0.670	392
	(0.083)			
Central City Amenities Spending	2.45%	0.104	0.670	392
	(0.150)			
Central City Services Spending	-2.68%	0.036	0.670	392
	(0.128)			
Central City Welfare Spending	0.72%	0.606	0.670	392
	(0.139)			

⁷ The author is aware that the value of these as amenities is hotly contested.

Since there is no significant relationship between any spending policy and economic growth, it means that local government unity does not impact economic growth through the spending policies of central cities. If that were the case, then there would be a linkage between unity impacting spending policies and those spending policies impacting growth. One potential explanation is that it takes a long time for city policies to ultimately impact the growth of the metro region. However, even lagging the growth rates 20 years (instead of five) and seeing how central city policies relates to economic growth results in no relationship between spending policies and growth, suggesting that the importance of the central city to regional economic growth is overstated.⁸

Unity and Metro Region Spending

Since there was no apparent relationship between unity, central city spending policies, and metro region economic growth, it is important to look at the budgeting decisions of the entire metro area, utilizing the same two-step process of multivariate regression analysis.

From the five multivariate regression models with each individual spending policy regressed on unity, controlling for post-secondary education and geographic region, a 10% increase in metro region unity aligns with a 1.96% increase in infrastructure spending, a 0.42% increase in welfare spending, a 1.22% decrease in human capital spending, a .052% decrease in amenities spending, and a 0.39% decrease in services spending by local governments. Table 5 presents a breakdown of the correlation between a 10% increase in metro region unity and aggregate local government budget allocations in metro regions.

Table 5

Metro region spending changes resulting from a 10% increase in unity

Dependent Variable	Coefficient	P-Value	R2	Observations
Metro Region Infrastructure Spending	1.96%	0.000	0.278	392
	(0.031)			
Metro Region Human Capital Spending	-1.22%	0.000	0.355	392
	(0.022)			
Metro Region Amenities Spending	-0.52%	0.000	0.209	392
	(0.013)			
Metro Region Services Spending	-0.39%	0.000	0.322	392
	(0.010)			
Metro Region Welfare Spending	0.42%	0.003	0.397	392
	(0.014)			

Increasing unity correlated to greater infrastructure and lower services spending is consistent with the central city results, and the idea that greater unity (and less local government competition) will result in increases in good spending and decreases in bad spending.

However, it is surprising that there is a negative relationship between unity and human capital and amenities spending, and a positive relationship between unity and welfare spending. If unity encourages good spending, then the expectation would be that increasing unity is related

⁸ See Appendix C for the central city spending policies to 20 year lag economic growth data.

to increasing expenditures on human capital and amenities. The data do not appear to support that conclusion. The fact that welfare spending increases as unity increases may be the result of the same phenomenon as in the central city results. Local governments in united regions may have more welfare spending responsibilities from the state because they are larger and more important relative to local governments in fragmented regions.

Metro Region Spending and Economic Growth

For spending policies and economic growth, a model regressing economic growth against all categories of spending, controlling for post-secondary education and geographic region, suggests that a 10% increase in services spending relates to an 8.63% decrease in economic growth rates. Table 6 displays these findings.

Table 6

Economic growth rate changes from a 10% increase in metro region category spending

Independent Variable	Coefficient	P-Value	R2	Observations
Metro Region Infrastructure Spending	0.60%	0.784	0.673	392
	(0.218)			
Metro Region Human Capital Spending	1.45%	0.516	0.673	392
	(0.224)			
Metro Region Amenities Spending	-0.51%	0.858	0.673	392
	(0.288)			
Metro Region Services Spending	-8.63%	0.021	0.673	392
	(0.371)			
Metro Region Welfare Spending	5.62%	0.038	0.673	392
	(0.270)			

The regression analysis suggests increases in services spending are bad for economic growth. The substantial decline in economic growth associated with increases in services spending agrees with the idea that short term consumption spending can have chilling effects on economic growth.

Metro region welfare spending nearly has a statistically significant relationship with economic growth, with welfare spending correlating to stronger growth. This might be a function of the safety net effects of welfare spending. It was noted earlier that more united regions experienced stronger economic growth during recessionary periods. The fact that increased welfare spending is correlated to stronger economic growth may be the cause of this phenomenon. Stronger growth in united metro regions, especially during recessions, may be due to increased welfare spending in those regions during recessions, which cushions the impact of economic downturns.

Recipe for Growing the Economic Pie

Metro region services spending is the only linking variable where the unity to spending policy regressions and spending policies to economic growth regressions exhibit a consistent relationship. Therefore, the regression analyses suggests that the correlation between metro

region unity and economic growth works through local government services spending across all local governments in the metro region. Metro region unity correlates negatively to services spending, and services spending correlates negatively to growth. This leads to the conclusion that unity is good for growth because it results in lower short-term services consumption spending by local governments. Figure 5 presents the complete findings of the regression analyses and the direction of relationships that are statistically significant.

Figure 5

Summary of regression findings

Independent Variable	Direction	Mediating Variable	Direction	Dependent Variable
Metro Region Unity	Positive	Central City Infrastructure Budget Allocation	None	Economic Growth
Metro Region Unity	Positive	Central City Human Capital Budget Allocation	None	Economic Growth
Metro Region Unity	None	Central City Amenities Budget Allocation	None	Economic Growth
Metro Region Unity	Negative	Central City Services Budget Allocation	None	Economic Growth
Metro Region Unity	Positive	Central City Welfare Budget Allocation	None	Economic Growth
Metro Region Unity	Positive	Metro Region Infrastructure Budget Allocation	None	Economic Growth
Metro Region Unity	Negative	Metro Region Human Capital Budget Allocation	None	Economic Growth
Metro Region Unity	Negative	Metro Region Amenities Budget Allocation	None	Economic Growth
Metro Region Unity	Negative	Metro Region Services Budget Allocation	Negative	Economic Growth
Metro Region Unity	Positive	Metro Region Welfare Budget Allocation	None	Economic Growth

Sobel-Goodman Mediation Test Analysis

The results of the Sobel-Goodman mediation tests corroborate the story told by the regression analysis. The Sobel-Goodman test looks at an independent variable, a dependent variable, and a mediator variable to determine how much of the impact of the independent variable on the dependent variable passes through the independent variable’s impact on the mediator variable, and subsequent mediating variable impact on the dependent variable. Several Sobel-Goodman tests were run with unity as the independent variable, economic growth as the dependent variable, and each individual spending category for cities and metro regions as a mediator variable. The test results show that unity does have an effect on economic growth, most likely through unity’s impact on local government services spending across the metro region.

Metro region services spending is the only spending variable that the impact of unity on economic growth passes through. Nearly 70% of the impact of unity on economic growth passes through metro regions services spending. Table 7 outlines the results of the Sobel-Goodman tests, with the coefficient outcome listed as the mediating explanation.⁹

⁹ The mediating explanation is the percent of the impact of unity on economic growth that passes through each mediating variable. For the Sobel-Goodman test, a small or negative mediating explanation (the test result coefficient) is an irrelevant finding. A small mediating explanation means that very little of the impact of the independent variable (unity) on the dependent variable (economic growth) passes through the mediating variable. A negative coefficient means that the effect of the independent variable on the dependent variable is opposite the impact of the independent variable on the dependent variable that passes through the mediating variable. Unlike the multivariate regression analysis, a negative coefficient for the Sobel-Goodman test does not mean that there is a negative relationship between the spending category and growth, it means that the impact of unity on growth is not related to the unity-spending policy relationship because they operate in different directions.

Table 7

Percent of unity impact on economic growth passing through each spending variable

Mediator Variable	Mediating Explanation	P-Value	Z-Score	Observations
Central City Infrastructure Spending	-4.26%	0.550	-0.598	392
	(0.015)			
Central City Human Capital Spending	1.10%	0.882	0.148	392
	(0.016)			
Central City Amenities Spending	-5.07%	0.360	0.012	392
	(0.002)			
Central City Services Spending	-13.58%	0.448	-0.760	392
	(0.038)			
Central City Welfare Spending	0.89%	0.892	0.137	392
	(0.014)			
Metro Region Infrastructure Spending	-9.42%	0.431	-0.787	392
	(0.025)			
Metro Region Human Capital Spending	-32.05%	0.002	-3.122	392
	(0.022)			
Metro Region Amenities Spending	-1.43%	0.514	-0.653	392
	(0.005)			
Metro Region Services Spending	69.79%	0.000	4.769	392
	(0.032)			
Metro Region Welfare Spending	-2.00%	0.620	-0.496	392
	(0.009)			

The analysis shows that only metro region services spending has a statistically significant and relevant relationship to unity and growth. For metro region services spending, nearly 70% of the total effect of unity on economic growth passes through the metro region services spending budget allocation. Figure 6 shows the impact of economic growth on unity without the mediating variable.

Figure 6

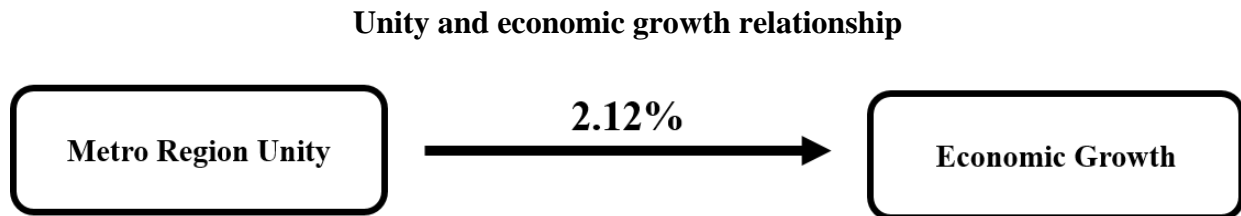
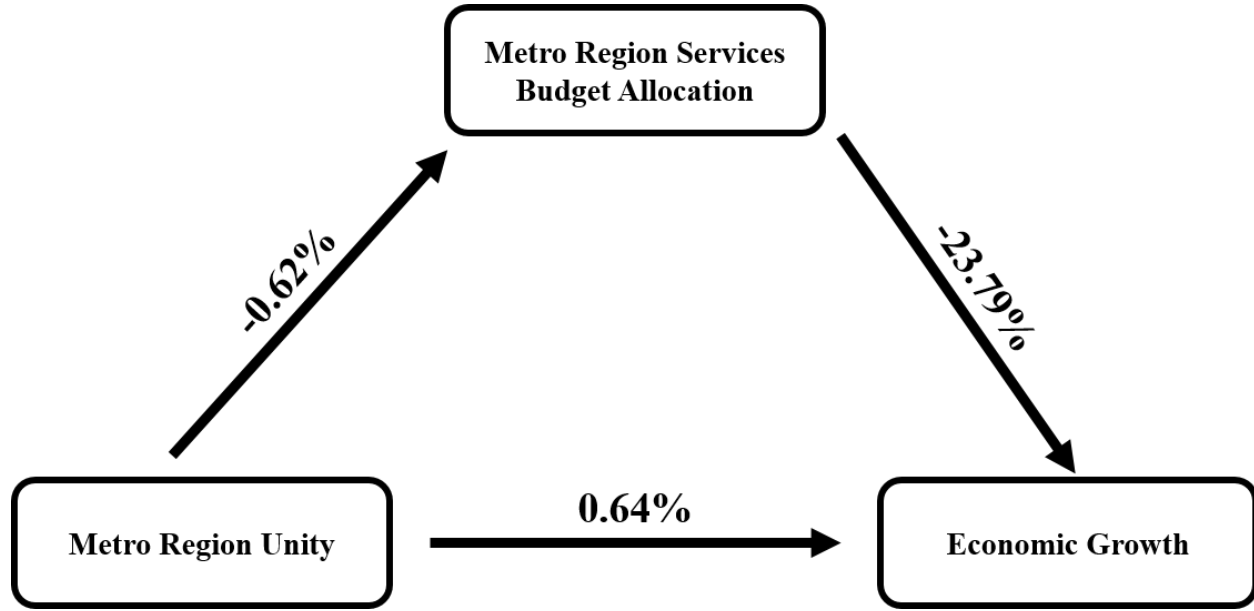


Figure 7 shows the impact of a 10% increase in metro region unity on the metro region services spending budget allocation. Additionally, it shows that a 10% increase in unity correlates to a 0.64% increase in economic growth when explicitly excluding metro region services spending. Finally, it shows that metro region unity correlates negatively to metro region services spending, and metro region services spending correlates negatively to growth. The test shows that unity correlates positively to growth, and that unity correlates negatively to services spending and

services spending correlates negatively to growth, meaning unity correlates positively to growth because it results in less services spending.

Figure 7

Unity, metro region services spending, and economic growth relationship



Conclusion

“That the poorest and most thinly populated [counties] would be greatly benefitted by the opening of good roads, and in the clearing of navigable streams within their limits, is what no person will deny...a meeting has been held of the citizens of Jacksonville, and the adjacent [county], for the purpose of deliberation and enquiring into the expediency of constructing a railroad.”

-Abraham Lincoln March 9, 1832

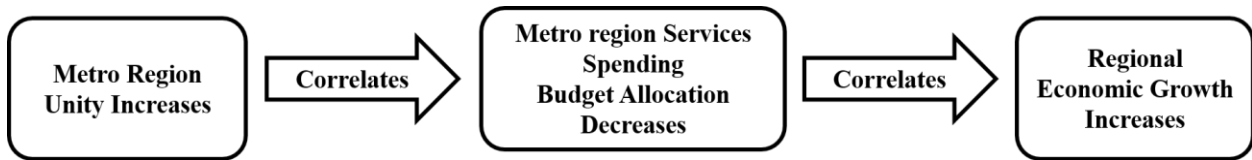
Local government cooperation being necessary for growth promoting government policies is an old idea. Going back to the Chicago example, it has been nearly 20 years since serious debate and studies began to highlight the need for a new airport in the metro area. City-suburban fragmentation continues to hinder plans to expand air infrastructure in Chicago. If Chicago ultimately loses out on the relocation of Archer Daniels Midland, it will be a forgone economic benefit to the city. Chicago demonstrates how bad policy caused by regional fragmentation can depress economic growth.

Motivated by situations similar to Chicago, this paper looked at the relationship between metro region unity, local government spending policies, and economic growth. The most important finding from this study is that metro region unity has a positive correlation to economic growth. For policymakers, it suggests that encouraging unity will not have detrimental effects on economic growth. Additionally, there seem to be strong relationships between unity and the spending policies of all local governments in a metro region. Finally, this paper shows

that of the different types of local government spending policies, services spending appears to have the most direct relationship to economic growth. Figure 8 shows the linkage between unity, metro region services spending, and economic growth.

Figure 8

Unity, metro region services spending, and economic growth linkages



The metro region data supports the idea that spending on services is bad for economic growth, and that unity can combat this bad spending. Metro region unity has a negative correlation with metro region budget allocations on services expenditures. Metro region services spending budget allocation increases have a negative correlation to economic growth. From those two relationships, we can observe the link between unity impacting region wide spending policies, and those policies then impacting economic performance. Though it is difficult to prove causation, they seem to suggest that unity is good because it will result in lower short term consumption spending on services, which is then good for growth, a conclusion the Sobel-Goodman tests also support. According to the Tiebout model, consumer-voters will move to municipalities that provide them with the public goods they desire. In fragmented metro regions, this can create a vicious competition for people, forcing local government leaders into short-sighted overspending on services. Spending that will not have a positive impact on economic growth. The data supports this idea as services spending is lower in united regions, suggesting that policymakers in those regions don't face the same intra-metro region pressure to compete for consumer-voters and offer them services. Lower service spending correlating to improved economic performance then supports the idea that services expenditures are bad, and that we can combat them by pursuing policies that foster greater local government unity in metro regions.

For the other types of spending, the results are inconclusive. They suggest that unity generally encourages infrastructure and human capital spending by local governments, particularly central cities. This would be consistent with the idea that in united regions, local governments can engage in long-term investment oriented spending policies that do not produce public goods for immediate consumption. However, the data also suggests that unity encourages more spending on welfare, which doesn't make sense if less competition allows municipalities to spend less on immediately consumable public goods. Additionally, outside of services spending, there are no spending policies that correlate to economic growth, even though past research suggests that local government spending policies have a relationship to economic growth.

The surprising welfare spending result and lack of a relationship between most spending policies and economic growth point to areas for further study. Future research should use a more robust data set incorporating more targeted city finance data attuned to the individual quarks of local governance, and a greater amount of control variables. The fact that unity seems to encourage welfare spending may be because the unity measurement was biased towards larger local governments, governments that may have more state devolved power over welfare spending (an individual quark outside of the scope of this paper). Additionally, scholars should

continue investigating what factors contribute to the economic growth of cities and regions, especially factors that are in the control of policymakers. Furthermore, this analysis cannot show causation, and it is possible that economic growth causes unity, certain spending policies cause unity, or economic growth causes certain spending policies. However, the idea that unity is an effect and not a cause is highly unlikely. Local government is a creature of state government and changes slowly. Because of this, it is unlikely that unity is impacted much by growth, spending policies, or any other variable because of the difficulty in changing state laws in regards to local governance. However, it is possible that growth caused certain spending policies. Therefore, future research should strive to show causation.

Despite this paper's limitations, there is evidence that metro regions should pursue more local government cooperation purely for the fact that it will not deter economic growth. In fact, it may have a slightly positive impact on growth. Though the impact in any given year on overall growth is small (less than 2% according to this analysis), compounded yearly over decades, the impact of unity on growth could become quite pronounced. Because fragmentation is still a relatively new phenomena (suburbs have only been around since World War II), future research into this topic may show an even greater effect of unity on growth than this paper. In addition to not deterring growth, unity may in fact be beneficial by lowering competition amongst municipalities in the same region for consumer-voters. In hyper-fragmented regions, local governments compete with their neighbors for residents and businesses by offering short-term services for immediate consumption. Because of the short-term nature of services spending it doesn't aide in economic growth, and detracts from the money that can be spent in other areas to help long-term growth prospects. Therefore, unity is probably good for growth because it lowers intra-metro region competition, discouraging spending on local government services. The fact that cities such as Kansas City, Louisville, Nashville, Jacksonville, Indianapolis, Pittsburgh, Toronto and London have all pursued government consolidation initiatives suggests that it is a policy local government officials should consider when confronting economic stagnation.

Appendix A

Average metro region unity scores

Rank	City	Unity Average (1972-2007)	Rank	City	Unity Average (1972-2007)
1	Memphis	0.5763	26	Milwaukee	0.1719
2	New York City	0.5551	27	Orlando	0.1692
3	Nashville	0.5537	28	Boston	0.1688
4	Jacksonville	0.5125	29	San Diego	0.1677
5	San Antonio	0.4332	30	Phoenix	0.1674
6	Richmond	0.3996	31	Seattle	0.1626
7	Baltimore	0.3904	32	Los Angeles	0.1588
8	Austin	0.3772	33	Charlotte	0.1480
9	Washington DC	0.3477	34	Cleveland	0.1467
10	Indianapolis	0.2893	35	St. Louis	0.1396
11	Oklahoma City	0.2629	36	Dallas	0.1391
12	New Orleans	0.2611	37	San Jose	0.1350
13	Philadelphia	0.2579	38	Portland	0.1320
14	Virginia Beach	0.2450	39	Raleigh	0.1282
15	Denver	0.2431	40	Providence	0.1193
16	San Francisco	0.2202	41	Atlanta	0.1097
17	Buffalo	0.2140	42	Las Vegas	0.0975
18	Louisville	0.2120	43	Tampa	0.0945
19	Columbus	0.2101	44	Minneapolis	0.0817
20	Houston	0.2053	45	Pittsburgh	0.0765
21	Detroit	0.2022	46	Sacramento	0.0735
22	Cincinnati	0.1887	47	Hartford	0.0513
23	Chicago	0.1769	48	Riverside	0.0456
24	Birmingham	0.1762	49	Miami	0.0359
25	Kansas City	0.1758			

Appendix B

Line item category classification				
Human Capital	Amenities	Infrastructure	Services	Welfare
Education	Hospitals	Air Transportation	Corrections	Housing
Libraries	Parks	Highways	Fire	Welfare
		Parking	Health	
		Sewage	Judicial	
		Utilities	Police	
		Water Management	Public Buildings	
		Water Transportation	Staff	

Human Capital spending is any spending that is relevant to education. In this case, education spending by a municipality includes all spending on elementary, secondary, and collegiate education. Amenity expenditures is spending that makes an area more attractive. Parks and hospitals are both services that people can use, and may cause people to move to an area. Infrastructure spending is any spending that provides necessary services that help business operate that the private sector won't normally provide. Services spending is any spending focused on short term consumption. Fire, police, staff, and public buildings (if they are used for services employees) are for short term consumption because the services rendered are consumed immediately. Welfare spending is any spending that is earmarked for people eligible for federal welfare spending (including health spending) and housing subsidies (or municipal expenditures linked to supporting communities with heavily subsidized housing). Inspiration for how to classify certain types of line item spending was influenced by the work of Andrew F. Haughwout (1997, 1999, 2002) for infrastructure spending and Thomas L. Gais (2009) for welfare spending.

Appendix C

Economic growth rate changes over 20 years from a 10% increase in central city category spending

Independent Variable	Coefficient	P-Value	R2	Observations
Central City Infrastructure Spending	-1.93%	0.819	0.001	98
	(0.841)			
Central City Human Capital Spending	9.62%	0.290	0.012	98
	(0.904)			
Central City Amenities Spending	5.35%	0.055	0.038	98
	(2.753)			
Central City Services Spending	-3.39%	0.823	0.001	98
	(1.516)			
Central City Welfare Spending	1.51%	0.442	0.006	98
	(1.952)			

Since lagging the economic growth data over a 20 year period doesn't result in any statistically significant relationships between city spending policies and economic growth, it suggests that central city spending policies do not impact economic growth.

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