Local Government Cooperation: The Relationship Between Metropolitan Area
Government Geography and Service Provision

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Abstract

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Fragmented metropolitan area government is expected to generate local government competition; whereas consolidated metropolitan area government is expected to promote local government cooperation. Few researchers have considered the possibility that at times local governments in fragmented metropolitan areas may find it in their self-interest to cooperate as well as compete.

One reason previous research has failed to fully examine local intergovernmental cooperation among fragmented local governments is that most studies rely on one of two definitions of fragmentation - the total number of local governments within a metropolitan statistical area and the per capita number of local governments within a metropolitan statistical area. Neither of these definitions however accounts for the geographic relationship among local governments. This omission in the literature is significant, as an increase in the geographic concentration of local governments may encourage the cooperative provision and production of specific types of goods and services.

This paper examines the relationship between fragmented metropolitan area government and the incidence of local intergovernmental agreements while accounting for the geographic relationship among local governments. It asks whether local governments in consolidated or fragmented metropolitan areas are more likely to engage in local intergovernmental agreements, and whether the geographic density of metropolitan area governments influences the likelihood that they will cooperate?
The empirical analysis concludes that the geographic density of metropolitan area
governments is a significant predictor of the incidence of local intergovernmental
agreements. As the number of local governments per square within a metropolitan area
increase so does the likelihood that local government cooperation. This relationship
appears to be stronger for capital-intensive goods and services than for labor-intensive
goods and services. The findings demonstrate that local governments in fragmented
metropolitan areas cooperate as well as compete.
Local Government Cooperation: The Relationship Between Metropolitan Area Government Geography and Service Provision

A great deal of scholarly research focuses on questions regarding the appropriate structure of metropolitan area government. The structure of metropolitan area government has been linked to government efficiency, service equity, government policy decisions, residential location decisions, and the distribution of wealth in a metropolitan area. The nature of the relationship between metropolitan area government and each of the variables is the subject of considerable debate. Proponents of fragmented local government argue that a larger number of local governments promotes Tiebout like competition, which generates policy efficiencies. Proponents of consolidated local government argue that larger local governments derive economic benefits from economies of scale while promoting service equality. Both sides of this debate agree that fragmented metropolitan area government leads to competition, but they do not agree on the social and economic impact of that competition. To further muddle the debate, the empirical research on the impact of consolidated versus fragmented metropolitan area government has generated a host of mixed results. Consequently, the debate rages on.

The paper injects two new elements into the study of metropolitan area government. First, it suggests that it is possible for fragmented metropolitan area government to encourage local intergovernmental cooperation as well as competition. Fragmented local governments may find it in their self-interest to cooperate in the provision and/or production of some publicly provided goods and services. When they do cooperate fragmented metropolitan area governments may be able to realize savings from economies of scale much like their consolidated local government counterparts. Second, it introduces a new conceptualization of fragmentation. Most research regarding
the impact of the structure of metropolitan area government rely on one of two definitions of fragmentation - the total number of local governments within a metropolitan statistical area and the per capita number of local governments within a metropolitan statistical area. Neither of these definitions however accounts for the geographic relationship among local governments. This omission in the literature is significant for two reasons. First, much recent urban research stresses the importance of place in the policy decisions made by local governments and the types of opportunities available to local residents (Drier, Mollenkopf, and Swanstrom 2001, Downs 1994, Rusk 1993, 1999, and Orfield 1997). Second, the geographic relationship of local governments may impact the likelihood of local government cooperation. An increase in the geographic concentration of local governments may encourage the cooperative provision and production of specific types of goods and services. The efficiency gains derived from this cooperation may allow local governments to address some of the social service inequalities often associated with fragmented metropolitan area government. By failing to examine the geographic aspect of fragmentation, many scholars may have too quickly reached the conclusion that fragmented local governments are more likely compete than cooperate in the provision of all publicly provided goods and services.

This paper examines metropolitan area governance by exploring the relationship between fragmented metropolitan area government and the incidence of local intergovernmental agreements. Specifically, it asks whether local governments in consolidated or fragmented metropolitan areas are more likely to engage in local intergovernmental agreements, and whether the geographic density of metropolitan area governments influences the likelihood that they will cooperate?
These questions are addressed in five sections. Section one defines local government cooperation in term of local intergovernmental service agreements. Section two examines the local government consolidation versus fragmentation debate and reviews the literature relevant to intergovernmental service agreements. Section three identifies testable hypotheses, reviews the data, and describes the research design. The final sections present the findings of the empirical analysis and discuss their implications.

**Defining Intergovernmental Cooperation**

Local intergovernmental cooperation, broadly defined, includes all policy activities that require some level of policy coordination between one or more local governments. These efforts may include formal or informal agreements among local jurisdictions and may (or may not) require the exchange of revenue. Formal intergovernmental cooperation often includes written agreements among local governments. In some cases, these agreements are codified by one or all of the participating local governments. Formal intergovernmental agreements may dictate a division of labor among local governments which may (or may not) require the transfer of funds between those governments. For example, a city and county may formally agree that the city will provide bus service to both city and county residents, and in return the county will maintain the roads in both areas. This division of labor may or may not require the exchange of revenue. Alternatively the county may simply contract with the city to provide bus service to its residents. This service arrangement would likely require a revenue based contract between the two areas, because the county is not providing a service benefit to the city in exchange for the bus service.
Not all local intergovernmental cooperation is formal. Informal intergovernmental cooperation is defined as unwritten agreements among city officials. These intergovernmental agreements are often the result of “handshake” deals among local officials, where the division of service responsibility is understood but never formalized. For example, a city may maintain the county parks within its jurisdiction, based on a mutual understanding between the directors of the city and county parks and recreation departments. Informal agreements often have the effect of functionally coordinating service activities, but they are often based on “handshake” deals. These types of agreements are most likely to occur when local government officials have worked repeatedly with each other for a number of years or when local government officials know each other through professional and educational networks such professional associations or graduate/professional school (Bingham et al 1981). Repeat interactions and previous relationships among local officials can generate significant reservoirs of trust and performance expectations that can facilitate local government cooperation. The existence of personal as well as professional relationships among local officials increases the likelihood that local governments will enter into informal intergovernmental agreements. Unfortunately, they are extremely difficult to quantify, because these agreements are not written and they rarely involve the transfer of funds between local governments.

All local intergovernmental cooperation, both formal and informal, is in effect institutional collective action. It is a group of institutions working collectively to achieve shared policy objectives. Local governments will choose to work together to receive benefits they could not otherwise receive (Olson 1965) and to advance common policy
goals and preferences (Rothenberg 1992). In other words, local governments will cooperate to provide their residents services they could not provide on their own or to provide their residents lower cost and/or higher quality services (Stein 1990).

The previous research on the impact of consolidated versus fragmented local metropolitan area government structure as well as the causes of local intergovernmental service agreements provides some explanation for local government collective action.

**Previous Research**

**Metropolitan area government: fragmentation versus consolidation**

The structure of metropolitan area governance has been linked to government efficiency\(^1\), service equity\(^2\), government policy decisions\(^3\), residential location decisions\(^4\), and the distribution of wealth in a metropolitan area\(^5\). Most of this research argues that fragmented and consolidated structures of local government will produce distinctly different policy outputs and impacts. Proponents of fragmented (more) local government argue that a larger number of small sized local governments generates intergovernmental competition, which leads to a smaller and more efficient public sector. The movement of consumer-voters between cities in a metropolitan area fuels this competition and acts as a

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fiscal constraint on the size of local government (Ostrom, Tiebout, and Warren 1961, Ostrom and Ostrom 1971, V. Ostrom 1974, Ostrom, Bish, and Ostrom 1988, and Parks and Oakerson 1989). Non-competition among local governments facilitates local bureaucrats’ pursuit of larger budgets and an expanded public sector (Niskanen 1994, Brennan and Buchanan 1980). Proponents of consolidated (less) local government argue that the costs of fragmentation outweigh the benefits. They claim that externalities, asymmetries of information, and a lack of economies of scale offset any efficiency gains derived from local government competition. They also link fragmented local government to the social costs of racial segregation and inequality of service provision across jurisdictions (Hill 1974, Neiman 1976, and Lowery 1998). Consolidated local governments are better able to contain any external costs or benefits. Consolidated local governments are better able to contain any external costs or benefits generated by publicly provided goods and services because their borders encompass a larger geography. Their large size also enables them to realize the benefits of economies of scale. Consolidated local governments minimize information asymmetries between government officials and constituents, as citizens are more likely to be aware of who governs them when there are fewer units of government. This streamlining is believed to provide more effective representation. Finally, consolidated metropolitan area government minimizes the ability of residents to sort themselves into homogenous groups, and makes it more difficult for productive capital and labor to vote with their feet and move among local jurisdictions.

Consolidated metropolitan area government reduces the likelihood of service inequalities across local governments. This is significant to many researchers who argue
that fragmented local government leads encourages disparities in the tax base available to
different local governments, which translates into disparities in quality and quantity of
goods and services available to local residents. This premise is the basis of the
social stratification-government inequality (SSGI) hypothesis, first examined by Hill
(1974) and Neiman (1976). The SSGI hypothesis argues that fragmented local
government leads to residential patterns that “systematically deprive minorities and the
poor access to the resources needed to address fundamental social problems” (Lowery
1998:3). There has been considerable debate regarding the empirical validity of the SSGI hypothesis. Ostrom (1983) provides a summary of the evidence refuting the hypothesis
and Lowery (1998) responds to Ostrom and provides evidence supporting the hypothesis.
Ostrom (1983) argues that the empirical evidence supporting the “eight essential
components” of the SSGI thesis is mixed at best and nonexistent in some cases. She
claims that while families of similar background may seek residence next to each other,
that fact does not “foreclose the possibility that values other than race and wealth may be
important to people in selecting a neighborhood” (Ostrom 1983: 95). She also notes that
empirical research finds municipal boundaries and social boundaries do not always
coincide, that fragmented municipalities do not automatically translate into inequality of
fiscal resources, and that higher levels of public resources do not always translate into
higher levels of service.

Lowery (1998) responds to Ostrom’s (1983) critique of the SSGI hypothesis. He
argues that recent research demonstrates that racial sorting is the dominant residential
pattern in spite of the fact that individuals move to an area based on tax/service bundles
(Teske et al. 1993, Lowery and Lyons 1989, Stein 1987, Dowding, John, and Biggs
He contends that most of the empirical evidence regarding minority/majority residential location decisions supports the SSGI hypothesis. For example, Rusk (1993) finds that racial segregation is more severe in fragmented areas than in areas with “elastic borders”. This racial segregation results in poor blacks becoming more centralized in the center city. As a result the city’s fiscal base declines, leading to less spending on programs targeted at the poor. Likewise, Schneider (1989) finds that spending on redistributive policies is lower in areas with highly fragmented government. Lowery concludes that cost of fragmented government are much high than any efficiency gains they might realize.

The debate summarized by Ostrom and Lowery demonstrates that fragmented and consolidated metropolitan area government structures are expected to generate distinct policy outcomes. The relative merits of those policy outcomes are at the heart of the fragmentation-consolidation debate.

It is possible, however, that the predicted negative relationship between metropolitan area fragmentation and local government cooperation could be mitigated by the geographic relationship of fragmented metropolitan area governments. As the density of local governments increases, it may be more efficient for fragmented local governments to cooperate rather than compete.

**Metropolitan area government: geographic density**

Geography impacts local government cooperation in a variety of ways. First, local governments are place-bound. They may be able to expand their boundaries by annexation or consolidation, but they are not mobile. This lack of mobility limits the number of potential collaboration partners. Local governments generally cooperate with
geographically proximate governments. Theoretically, a city could contract with another
city located in another part of the state or even the country, but the costs of providing
services across the miles make it prohibitively expensive. For example, piping clean
water from a county’s well into a city within that county is not as expensive as piping
clean water across the state.

The geographic limitation on potential contracting partners means that an increase
in the number of metropolitan area governments signals an increase in the number of
opportunities for intergovernmental cooperation. A large number of local governments in
a metropolitan area indicates a large number of potential service providers. The number
of available service providers is a key determinant of local government contracting. It is
impossible to contract for service production with other governments if they do not exist.
Morgan and Hirlinger (1991) recognize the importance of geography in their analysis of
intergovernmental service contracts. Their study of local intergovernmental agreements
includes a dummy variable to indicate if a city was located in a metropolitan area. They
reason that cities of all sizes located in metropolitan statistical areas are more likely to
have intergovernmental contracts than cities not located in metropolitan statistical areas
due to access to plenty of suppliers (i.e. other governments). Their findings confirmed
this hypothesis.

Morgan and Hirlinger’s study, however, only accounts for the supply-side impact
of geography; it does not account for the geographic relationship among metropolitan
area governments. For several reasons an increase in the geographic concentration of
local governments is likely to increase the propensity for intergovernmental cooperation.
First, the close proximity of local governments increases the likelihood that local
government officials in adjoining governments have personal as well as professional relationships. These formal and informal relationships can facilitate local government cooperation. Stone’s (1989) study of Atlanta finds that norms of reciprocity and trust generated by informal relationships among elected officials and the business community are key elements to a stable governing coalition. These same norms and informal relationships are important to local government cooperation. Personal relationships among local government officials across jurisdictions, and repeat interactions among those individuals, may be a catalyst for local government cooperation.

Second, the geographic density of metropolitan area governments also influences the ability of metropolitan area residents to live, work, and recreate in multiple communities. Increases in the geographic density of metropolitan area governments promote the fluid movement of residents across government borders, which create strong economic and social ties between these areas. These ties create political incentives for local elected officials to work together. Specifically, elected officials in multiple jurisdictions are able to take credit for policies that positively impact the entire metropolitan area - not just their own community. Each local official who takes credit for the benefits derived from local government cooperation should receive an electoral boost (Mayhew 1974).

Third, an increase in the geographic density of metropolitan area governments increases the likelihood that policy spillovers will affect multiple local governments.
Netzer (1997) argues this point.

It is inevitable that, if there are numerous local government units with substantial decision-making authority within a metropolitan area . . . the tax and expenditure decisions of individual units will have effects, positive and negative, that spill over the boundaries of that unit and affect households, firms and governmental entities elsewhere in the metropolitan area (Netzer 1997: 204).

All local governments in geographically dense metropolitan areas face similar problems of externalities. The desire to minimize positive and negative externalities should encourage local government cooperation.

**Capital-intensive goods and services**

Capital-intensive goods and services often require large amounts of equipment and materials, which are usually cheaper when purchased in large quantities. The average cost of these goods and services significantly decreases as the amount of equipment and materials being purchased (and the size of the population purchasing them) increases. Thus, these projects benefit from economies of scale.

Larger local governments have the tax base and access to capital markets necessary to raise the funds to provide capital-intensive goods and services themselves. They can also spread the costs over a larger population, which drives down the average cost of these goods and services. In contrast, smaller local governments have neither the tax base nor the access to capital markets necessary to fund the high start-up costs of many capital-intensive projects without incurring a large per capita tax burden. They also lack the population to make the average costs of these goods and services affordable. If smaller local governments want to provide their residents these goods and services, they must either pool their resources or contract with larger local governments (or private service vendor) for their production.
Local governments should be more likely to cooperate in the provision and/or production of capital-intensive goods and services because of the potential cost savings associated with economies of scale. Furthermore, cooperation should be facilitated by the lack of diversity policy preferences for capital-intensive goods and services. Metropolitan area residents are generally uniform in their expectation that clean water will come from the tap and that solid-waste and sewage will be removed from their home, all at a reasonable price. There is generally little concern over how their local governments choose make these services available to their residents.

In summary, an increase in the geographic density of metropolitan area governments should lead to an increase in the number of local intergovernmental agreements for capital-intensive goods and services.

Labor-intensive goods and services

Labor-intensive goods and services do not have the high start-up costs of capital-intensive goods and services. Nor does their average cost dramatically decrease with an increase in the amount of goods and services being produced. Consequently, smaller local governments may not realize economic benefits from collectively providing/producing labor-intensive goods and services. Altshuler et al. (1999) confirm this conclusion.

The preponderance of the evidence indicates that small local governments (and thus metropolitan areas characterized by fragmentation) are more efficient for labor-intensive services, whereas larger units are more efficient for capital-intensive services (because of economies of scale) and for certain overhead functions (Altshuler et al. 1999: 106).6

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The lack of cost savings associated with collectively producing labor-intensive goods and services indicates that local governments should not rush to cooperate in the production of these goods and services. Consequently, an increase in the geographic density of metropolitan area governments may not lead to an increase in the number of local intergovernmental agreements for labor-intensive goods and services.

**Hypotheses, Research Design, Data, and Operational Measures**

**Hypotheses**

Several testable hypotheses can be derived from the preceding discussion. The number of metropolitan area governments, the geographic density of metropolitan area governments, and the economic attributes of publicly provided goods and services should all influence the likelihood that local governments will engage in some form of intergovernmental collective action.

Metropolitan area fragmentation is thought to generate market-like competition among local governments over the attraction and retention of productive capital and labor (Tiebout 1956, Peterson 1981). This competition produces economic benefits for local governments; consequently, cooperation is often not in their economic self-interest. In addition, fragmented local governments may have diverse policy preferences that make it difficult to identify policies where cooperation is mutually beneficial. Metropolitan area government fragmentation (i.e. total number of general purpose governments per 10,000 population) is expected to be negatively related to the overall incidence of local intergovernmental agreements.

It is possible, however, that this negative relationship is mitigated by an increase in the geographic density of metropolitan area governments. Most publicly provided
goods and services produce some spillovers - positive or negative - that impact surrounding jurisdictions. As the number of geographically proximate jurisdictions increases, so does the incidence of spillovers. Geographically proximate local governments seeking to minimize the spillover costs and benefits may find it in their self-interest to cooperate. Thus, the likelihood of local intergovernmental agreements is expected to increase, as the number of geographically proximate jurisdictions increases.

Finally, the positive relationship between the geographic density of metropolitan area governments and local intergovernmental cooperation may be mediated by the economic attributes of publicly provided goods and services. Goods and services that are capital-intensive, rather than labor-intensive, are more likely to encourage local intergovernmental cooperation.

The empirical test of these hypotheses is limited to formal intergovernmental agreements that require the exchange of revenue. This type of intergovernmental agreement is easily identifiable and readily quantifiable. In addition, the exchange of revenues ensures that these agreements reflect substantive policy cooperation among local governments. The fact that they impact the budget decisions of local governments indicates they are more than paper agreements. These agreements are identified using the 1987 and 1992 Census of Governments Finance Records.

Research Design

The hypotheses are tested by estimating the incidence of intergovernmental agreements for 140 metropolitan statistical areas with 1990 populations greater than 250,000. The data were compiled from the Census of Governments 1987 and 1992:
The incidence of local intergovernmental agreements is an event count of the total number of local intergovernmental expenditures as reported in the *Census of Governments 1987 and 1992: Finance Statistics*. Each time a city or county government in a metropolitan area reported any level of local intergovernmental expenditures in the *1987 and 1992 Census of Governments*, it was coded a 1. These “ones” were then aggregated by metropolitan area to determine the total number of local intergovernmental agreements within a metropolitan area. The Atlanta metropolitan area had one of the highest numbers of local intergovernmental agreements with 158 in 1987 and 157 in 1992.

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7 This sample of MSAs was selected for two reasons: (1) most previous research regarding the economic relationship between center cities and their suburbs focuses on large MSAs, and (2) the larger MSAs tend to be more stable over time. Smaller MSAs are more likely to be new, making it difficult to fully assess this relationship across time.

It should be noted that several MSAs meeting the population criteria were excluded for other reasons. First, census data was not available for the center city of some MSAs. This omission was problematic, because the suburb variables were created by subtracting the center city data from the metropolitan area data. Second, many of the New England MSAs failed to meet conventional county definitions. Most MSA definitions are based on counties, but New England MSAs are defined using townships; consequently, these MSAs may include portions of numerous counties. This anomaly makes it difficult to compare the New England states to other states. Third, the state of Ohio was excluded because it appears there was a statewide change in the criteria used to identify intergovernmental expenditures. All of the Ohio MSAs reported significant decreases in the number of intergovernmental expenditures between 1987 and 1992. For example, the city of Cleveland reported 185 intergovernmental service agreements in 1987 and only 68 in 1992. These dramatic swings produced significant outliers that impacted the aggregate analysis. Ohio should be examined as a single case study to determine the exact cause of these changes.

Finally, MSAs are defined using 1999 Census definition of metropolitan areas. The same counties and center cities are examined in each decade, even if the census MSA definition was revised during that period. For example, in 1970 the Houston MSA includes five counties, whereas in 1999 the Houston MSA included six counties. For purposes of this analysis, the Houston MSA was defined using six counties for 1969-1999.

8 The dependent variables are based on the intergovernmental expenditures of city and county governments within the MSA rather than the intergovernmental expenditures of all taxing and spending jurisdictions. City and county expenditures were selected because these entities are general purpose governments that provide a variety of goods and services. This makes it possible to more fully examine the role of policy attributes in local governments’ decisions to cooperate. Single purpose governments, such as special districts and school districts, are not included in this analysis because their narrow functional scope of responsibility makes them more difficult to evaluate.
1992, and the metropolitan area of Sarasota, had the lowest number of local intergovernmental agreements with zero in both years.9

This study examines three different measures of the incidence of local intergovernmental agreements. These include: the total number of city and county intergovernmental agreements10; the total number of capital-intensive intergovernmental agreements;11 and the total number of labor-intensive intergovernmental agreements.12 Each function was classified as capital intensive or labor intensive based on the description provided by the Federal, State, and Local Governments Government Finance and Employment Classification Manual.

The first explanatory variable is the total number of general purpose local governments per 10,000 population13. This traditional measure of fragmentation is included to examine the relationship between metropolitan area government structure and the incidence of local intergovernmental agreements. The relationship is expected to be negative.

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9 The dependent variables only indicate the total number of local intergovernmental agreements by type within a metropolitan statistical area. They do not measure the amount of these expenditures nor do they indicate what percentage of local government resources are allocated toward intergovernmental expenditures. This coding decision was made because local intergovernmental expenditures are a relatively rare event. And it was difficult to fully evaluate the relationship between metropolitan area government structure and local government cooperation relying on the expenditure data.

10 The total incidence of intergovernmental expenditures for administration, airports, corrections, parking, education, fire, general control, highways, health, hospitals, housing, libraries, natural resources, police, parks, protective services, sewerage, public welfare, water transportation, and solid waste management.

11 Capital-intensive agreements: airports, highways, housing, libraries, natural resources, parking, parks, sewerage, and water transportation.

12 Labor-intensive agreements: administration, corrections, education, fire, health, hospitals, police, protective inspections, welfare, solid waste management and general control.

13 Fragmentation has also been measured as the total number of government units in a given geographic area. The per capita measure of fragmentation is used rather than the absolute measure of fragmentation, because it accounts for variations in the population across metropolitan areas.
The second explanatory variable is the number of general purpose governments per square mile. This measure taps the geographic density of local governments in a metropolitan area. As the number of local governments per square mile increases, so does the likelihood of policy externalities and spillovers. Local intergovernmental cooperation should be positively associated with an increase in the geographic density of local governments.¹⁴

Two control variables are also included in the models. One dummy variable is included to control for the influence of state law on local government decisions to engage in intergovernmental agreements. It is coded 1 if state law permits intergovernmental agreements and 0 otherwise. The data for these variables come from the Advisory Commission on Intergovernmental Relations (ACIR). This control variable is expected to be negatively related to the incidence of local intergovernmental agreements. States that have specific laws allowing intergovernmental agreements are actually regulating their use. The ACIR survey question asks if “interlocal service agreements are allowed by general law or State Constitution”. It does not ask if state law prohibits intergovernmental agreements. If states have laws regarding intergovernmental service agreements, they must be regulating the terms and conditions of their use. If states do not

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¹⁴ This is not the ideal measure of local government density, as it does not account for the exact geographic distribution of local governments within a metropolitan area. Limiting the sample to metropolitan areas with populations greater than 250,000 helps solve this problem, because it emphasizes the largest metropolitan areas where city and county governments are more likely to be spatially proximate to one another. In addition, this measure has the problem of scoring two metropolitan areas with same total land area and number of local governments the same, regardless of the location of those local governments within a metropolitan area. For example, MSA₁ and MSA₂ may each be 100 square miles and have 5 local governments. In MSA₁ all 5 governments may all share boundaries, while in MSA₂ they may be evenly distributed throughout the county. Obviously, MSA₁ more appropriately fits the theory. The ideal measure would use geographic information system (GIS) maps to calculate the distance between the center points of each local government in a metropolitan area. Unfortunately, such GIS data are not readily available for all 150 MSAs.
have laws regarding intergovernmental service agreements, cities and counties may be unregulated in their use of such agreements.\(^\text{15}\)

The second control variable is the percentage of metropolitan area population located in the center city. This variable is included to control for center city size. It could be positively or negatively related to local government cooperation. A positive relationship would indicate that local intergovernmental agreements are driven by the presence of a large center city that contracts with smaller local governments to provide them goods and services. A negative relationship would indicate that most local intergovernmental agreements are a product of smaller local governments pooling their resources to produce and provide specific goods and services among themselves.

Negative binomial regression is used to explain the incidence of local intergovernmental contracting. “Poisson and/or negative binomial regression is generally used when the dependent variable reflects a count holding discrete values and a preponderance of zeros and small values (Greene, 1993: 676-679)” (Bolks 2001: 21). In this case, a test for dispersion indicates that the dependent variable overdispersed, so a traditional poisson model is not appropriate.\(^\text{16}\) “In a poisson distribution the mean and variance are equal. When the variance is greater than the mean the distribution is said to

\(^{15}\) The ACIR reports that a majority of states have laws that specifically allow local intergovernmental service agreements. Unfortunately, the study does not elaborate on the nature and scope of the various state laws regulating intergovernmental agreements. The wording of the ACIR survey question does suggest that states that have laws permitting local intergovernmental service agreements are regulating this activity. This conclusion is confirmed by comparing responses to the intergovernmental agreement (IGA) ACIR survey question to other ACIR questions regarding state regulation of local governments. Basic variable correlation and factor analysis reveals that state government regulation of intergovernmental agreements is related to state government limits on local government borrowing, city debt, consolidation, and property taxes.

\(^{16}\) The Chibar test is a log likelihood test that is alpha = 0. The poisson models assume that alpha = 0; the negative binomial assumes that alpha does not = 0.
display overdispersion” (http://www.gseis.ucla.edu/courses/ed231c/notes1/nbreg1.html). In other words, in a poisson model the chance of each event occurring is constant of the other events in the model, whereas in a negative binomial the chance of each even occurring is contingent on the other events in the model. In the case of local intergovernmental cooperation, it is likely that one local government’s decision to contract with another local government for the production of goods and services would influence the likelihood that other metropolitan area governments would do the same. Theoretically, the negative binomial distribution is a proper fit for the model, and the diagnostic tests support this assumption.

**Findings**

Tables 1 and 2 report the negative binomial regression findings for the total number of metropolitan area local intergovernmental agreements, the total number of metropolitan area capital-intensive local intergovernmental agreements, and the total number of labor-intensive local intergovernmental agreements for 1987 and 1992. The empirical analysis strongly confirms the hypothesized relationships. As predicted, the geographic density of metropolitan area governments is significantly and positively related to the incidence of local intergovernmental agreements. As the number

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17 “Negative binomial regression is used to estimate count models when the poisson estimation is inappropriate due to overdispersion (which is most of the time). In a poisson distribution the mean and variance are equal. When the variance is greater than the mean the distribution is said to display overdispersion. The nbreg command estimation includes an ancillary parameter which is an estimate of the degree of overdispersion. For computational purposes, Stata estimates Ina which is then converted to a. When a is zero, negative binomial has the same distribution as poisson. The larger a is the greater the amount of overdispersion in the data. When there is overdispersion the poisson estimates are inefficient with standard errors biased downward yielding spuriously large z-values” (http://www.gseis.ucla.edu/courses/ed231c/notes1/nbreg1.html).

18 The data set contains information for two years 1987 and 1992, consequently it is difficult to conduct a time series analysis. The findings reported are the results of two separate regressions – one for each decade. However, the analysis was replicated using a pooled cross sectional time series design. The results of which confirm those reported in Tables 1 and 2.
of local governments per square mile increases, so does the number of local intergovernmental agreements.

Furthermore, the impact of density is mediated by the economic attributes of the goods and services being provided. This is best evidenced by the substantive interpretation for the regressions provided in Tables 3 and 4. A comparison of the substantive impact of the capital-intensive model and the labor-intensive model shows that the strongest impact of density is on capital-intensive metropolitan area local intergovernmental agreements. In 1992, moving from the maximum number of local governments per square mile to the minimum number of local governments per square mile produces a difference of 62 capital-intensive intergovernmental agreements. In contrast, moving from the maximum number of local governments per square mile to the minimum number of local governments per square mile only produces a difference of 20 labor-intensive intergovernmental agreements. A similar pattern is evident for 1987. Moving from the maximum number of local governments per square mile to the minimum number of local governments per square mile produces a difference of 74 capital-intensive intergovernmental agreements. Whereas, moving from the maximum number of local governments per square mile to the minimum number of local governments per square mile only produces a difference of 18 labor-intensive intergovernmental agreements.

The findings also demonstrate that the geographic density of metropolitan area governments is more important than metropolitan area government fragmentation in predicting the incidence of local intergovernmental agreements. As predicted, metropolitan area government fragmentation is negatively related to the incidence of all
three measures of local intergovernmental agreements, but it is only significant for capital intensive intergovernmental agreements in 1987. It is not significant in any of the models. Furthermore, its substantive impact is extremely limited. For 1987 capital intensive intergovernmental agreements moving from the maximum number of governments per square mile to the minimum number of governments per square miles only resulted in approximately 5 fewer intergovernmental agreements.

Overall the control variables behaved as predicted but they were not significant. The percentage of metropolitan area population in the center city is negative in every model except labor intensive agreements in 1987, but it insignificant in every model. The dummy variable for state intergovernmental agreement laws is negative and insignificant for each model.

These analyses demonstrate that the geographic density of metropolitan area governments is an important determinant of the incidence of local intergovernmental agreements. But the impact of density is mediated by the economic attributes of local intergovernmental agreements. Density has its strongest impact on capital-intensive agreements. The pseudo R squares of the explanatory models are relatively low, but they do not negate the finding that the geographic density of metropolitan area governments has a significant influence on local government policy decisions.

**Discussion**

The empirical findings provide strong evidence that the geographic density of metropolitan area governments is a significant predictor of the incidence of local intergovernmental agreements, and its impact is significantly stronger for capital-
intensive goods and services than for labor-intensive goods and services. It appears that an increase in the geographic density of metropolitan area governments increases the likelihood that policy spillovers (positive and negative) will impact multiple local communities. Local officials’ desire to contain these spillovers motivates local government officials to cooperate. Local governments want to minimize the number of communities free-riding on the positive externalities generated by some policies, as well as the number of communities paying the costs of negative externalities generated by other policies.

Local officials in metropolitan areas with geographically dense local governments are also more likely to use intergovernmental agreements to produce capital-intensive goods and services than labor-intensive goods and services. These communities are seeking to exploit the economies of scale associated with capital-intensive goods and services.

These findings demonstrate that previous research examining the relationship between metropolitan area fragmentation and the incidence of intergovernmental agreements relied on an incomplete measure of fragmentation. The geographic density of metropolitan area governments is far more important than the total number of governments per capita in explaining local government cooperation.

This conclusion has interesting implications for the impact of suburban sprawl on metropolitan area economic health. It suggests that a large number of suburban governments are not inherently bad for metropolitan areas. It is possible for geographically proximate fragmented metropolitan area governments to cooperate. An increase in the geographic concentration of local governments is an important
determinant of local government cooperation and may actually generate positive synergies from fragmentation. Intergovernmental agreements are a viable alternative to consolidation, and local governments are more likely to engage in such agreements when they are geographically dense. Thus, the ideal location for new suburban areas is proximate to existing local governments and the center city.

Overall the findings indicate that we need to rethink how we view the structure of metropolitan area government. It appears that the geographic relationship of local governments may be more important than the total per capita number of local governments in explaining local government cooperation.
<table>
<thead>
<tr>
<th></th>
<th>Total Number of Local IGAs</th>
<th>Capital-Intensive IGAs</th>
<th>Labor-Intensive IGAs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Density 1990</strong></td>
<td>38.40***</td>
<td>56.83***</td>
<td>20.03*</td>
</tr>
<tr>
<td></td>
<td>(4.73)</td>
<td>(4.97)</td>
<td>(2.09)</td>
</tr>
<tr>
<td><strong>Fragmentation 1990</strong></td>
<td>-0.40</td>
<td>-0.77</td>
<td>-0.72</td>
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<tr>
<td></td>
<td>(-1.18)</td>
<td>(-1.67)</td>
<td>(-1.78)</td>
</tr>
<tr>
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<td>-.21</td>
<td>-.49</td>
<td>-.20</td>
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<tr>
<td></td>
<td>(-.62)</td>
<td>(-1.16)</td>
<td>(-.47)</td>
</tr>
<tr>
<td><strong>% of metro area population in cc 1990</strong></td>
<td>-0.87</td>
<td>-0.72</td>
<td>-0.61</td>
</tr>
<tr>
<td></td>
<td>(-1.82)</td>
<td>(-1.15)</td>
<td>(-1.06)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>2.81***</td>
<td>1.63**</td>
<td>2.36***</td>
</tr>
<tr>
<td></td>
<td>(6.41)</td>
<td>(2.86)</td>
<td>(4.36)</td>
</tr>
<tr>
<td><strong>Pseudo R2</strong></td>
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<td>.05</td>
<td>.01</td>
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<tr>
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*P < .05
**P < .01
***P < .001
Table 2
Negative Binomial Regression Models for the Incidence of Local Intergovernmental Agreements
1987
(Z Scores)

<table>
<thead>
<tr>
<th>Density 1980</th>
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<th>Capital-Intensive IGAs</th>
<th>Labor-Intensive IGAs</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>42.96***</td>
<td>58.59***</td>
<td>25.75**</td>
</tr>
<tr>
<td></td>
<td>(5.05)</td>
<td>(4.65)</td>
<td>(2.45)</td>
</tr>
<tr>
<td>Fragmentation 1980</td>
<td>-0.47 (-1.45)</td>
<td>-1.04* (-2.23)</td>
<td>-0.32 (-.82)</td>
</tr>
<tr>
<td>IGA</td>
<td>-.23 (-.73)</td>
<td>-.49 (-1.09)</td>
<td>-0.33 (-.82)</td>
</tr>
<tr>
<td>% of metro area population in cc 1980</td>
<td>-0.34 (-.73)</td>
<td>-0.84 (-1.31)</td>
<td>.48 (.84)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.67*** (6.08)</td>
<td>1.82** (2.99)</td>
<td>1.77*** (3.25)</td>
</tr>
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<td>Pseudo R2</td>
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<td>.04</td>
<td>.01</td>
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*P < .05
**P < .01
***P < .001
Table 3  
Predicted Number of Local Intergovernmental Agreements  
1992

<table>
<thead>
<tr>
<th></th>
<th>Density 1990</th>
<th>Fragmentation 1990</th>
<th>IGA</th>
<th>% metro pop in center city</th>
</tr>
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<td><strong>Total IGAs</strong></td>
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</tr>
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<td>15.48</td>
<td>9.69</td>
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<td>13.99</td>
<td>14.91</td>
<td>13.47</td>
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<tr>
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<td>18.66</td>
<td>19.01</td>
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<td>4.73</td>
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<tr>
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<td>6.71</td>
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<tr>
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Predicted Number of Local Intergovernmental Agreements  
1987

<table>
<thead>
<tr>
<th></th>
<th>Density 1980</th>
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<th>IGA</th>
<th>% metro pop in center city</th>
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Bibliography


_____ 1983. *County and City Data Book.* Washington, D.C.


