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# A Transaction Costs Explanation of Interlocal Government Collaboration

Skip Krueger
*University of North Texas*, skrueger@unt.edu

Michael McGuire
*Indiana University*, mcguirem@indiana.edu

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Skip Krueger
Assistant Professor
Department of Public Administration
University of North Texas
Denton, TX 76203
skrueger@unt.edu

Michael McGuire
Associate Professor
School of Public and Environmental Affairs
Indiana University
Bloomington, IN 47405
mcguirem@indiana.edu

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**ABSTRACT**

This study develops a model of collaboration choice among city governments. The theoretical model suggests that collaboration is a function of transaction costs that vary with different institutional arrangements utilized in cities, as well as the degree of competition between cities. This study argues that cities facing high transaction costs and high competition are less likely to participate in collaboration and to participate less deeply. Underlying these environmental factors are resource factors that create incentives for cities to collaborate for efficiency gains, which affect both the decision to collaborate and the depth of collaboration. Hypotheses are tested to explain why cities choose to participate in collaboration in the first stage of the analysis and how deeply they collaborate in the second stage. Utilizing a Heckman model of this two-stage process, we find broad support for a number of variables that measure each of these theoretical constructs.

## INTRODUCTION

Over roughly the last decade, a growing number of scholars have documented a variety of collaborative mechanisms that city governments utilize to formulate and implement public policy. These interactions can take many forms, from relatively simple joint service agreements for fire service to complex, ongoing interactions involving multiple implementation decision points and actual exchange of financial resources. For example, studies of collaborative network behavior measure the number and type of contacts within a network to evaluate outcome effectiveness. Examples from research on economic development policy (Agranoff and McGuire 1998, Agranoff and McGuire 2001, Agranoff and McGuire 2003, McGuire 1999, McGuire et al. 1994), education policy (Meier and O'Toole 2002, O'Toole and Meier 1999, O'Toole and Meier 2003, O'Toole, Meier, and Nicholson-Crotty 2003), and mental health networks (Milward and Provan 1998a, Milward and Provan 1998b, Milward and Provan 1999, Milward, Provan, and Else 1993, Provan and Milward 1995) are noteworthy examples.

Interlocal agreements have been studied as part of intergovernmental relations for some time. Although such collaboration is seemingly ubiquitous among cities, research has only recently begun to demonstrate that administering policy interlocally is much different – and

substantially more difficult – than traditional, agency-centered, top-down management. However, the existing research rarely speaks to the question of why governments choose to collaborate rather than go it alone. In this regard, the processes occurring in such complex governing arrangements as interlocal collaboration, characterized as they are by multiple agencies without a formal hierarchy, can be viewed as collective – political – choices, in addition to a purely management tool.

This study presents a model of collaboration choice focusing on the exchange of interlocal financial resources. The model is tested on a dataset of 2,825 cities across the United States using two variants of the Heckman technique for estimating models. We utilize the amount of interlocal dollars received by cities as the measure of collaboration, whereby the first stage of the decision process – choosing to collaborate – can be operationalized as whether or not dollars are received. In the second stage, the degree of collaboration is measured by the *amount* of dollars received. Thus, the dependent variables in the model are, first, the binary choice of whether or not to collaborate and, second, the degree of collaboration, measured as dollars transferred from one city to another.

Interlocal collaboration requires substantial incentives to overcome the difficulties and loss of policy autonomy associated with coordinated implementation in a more pluralistic policy environment. If the motivation to generate slack resources is omnipresent, as Niskanen (1971) suggests, and if the opportunities to acquire resources through collaboration exist, why is there so much variability in the use of collaboration as a policy making and administration tool? This variability of collaborative behavior across cities suggests that the choice to collaborate is more complex than a focus on the underlying motivation to generate slack resources implies; the choice to collaborate (or not) does not occur in a vacuum. Environmental attributes alter the

payoff structures potential collaborators face, changing their preferences for collaboration. While myriad factors might be considered as potentially impacting collaboration choice, three are important: institutional arrangements and the transaction costs associated with them, interlocal competition, and the underlying motivation to reap slack resources.

## INSTITUTIONS AND TRANSACTION COSTS

Coase's (1937) work marked the beginning of the recognition of the role of transaction costs in the theory of the firm, and the extension of these ideas to other forms of institutional governance. In this framework, firms are viewed as governance structures rather than as mere production-distribution entities. Williamson's reinvigoration of the transaction cost approach made the material approachable for political science. For Williamson, transaction costs can be defined as the "comparative costs of planning, adapting, and monitoring task completion under alternative governance structures" (1989, 142). In other words, the costs of striking a deal vary, depending on the institutions in place. Some institutions create more costs for deal making than others. Political scientists and economists have applied this approach to governance institutions. They have utilized this approach to describe a variety of political phenomena, from the Congressional-bureaucratic relations, to regulatory policy, and to the development of majority voting blocks in European parliaments (Austen-Smith and Riker 1987, Baron 1991, Dixit 1996, Epstein and O'Halloran 1994, Epstein and O'Halloran 1999, Shepsle 1979, Shepsle and Weingast 1987).

While the research on institutions generally has been prolific in recent years, the application of these ideas to collaborative behavior is mostly absent. Although rarely conceptualized this way (see Milward and Provan 1998b for an interesting exception), interlocal

collaborative settings themselves can be conceptualized as institutions created to help reduce the transaction costs associated with collaborative policy making and implementation operating at the collective choice level, using Ostrom's (1999) taxonomy of institution types.

Constitution-level institutions -- charters at the municipal level -- may alter the decision processes at the collective choice level, but what city-charter level institutions might matter? This study suggests that at a minimum, three institutions matter most: city manager versus other forms of government, at-large versus single-member (ward) district representation, and partisan versus non-partisan elections. Since the reform era, these institutions have been center stage in the debate about the best way to organize municipal governments. In their study of the city manager form, Feiock, Jeong and Kim (2003, 617) point out that: "The form of government embedded in the city charter operates as a constitutional contract." The reform structures of the city manager form of government, at-large district representation, and non-partisan elections potentially have interesting and non-obvious impacts on collaboration decisions.

It is useful to consider how each institution may aid city governments in reducing the transaction costs normally associated with collaborative policy implementation. First, interlocal collaboration represents more inclusive methods for deciding the details of producing and delivering public goods and services. This more inclusive mode potentially provides an opportunity for rent-seeking behavior on the part collaborative partners. City managers, who have established norms of professional conduct and careers that are less directly tied to the outcomes of any given election, can make credible commitments to block such behaviors in a pluralistic setting (Feiock, Jeong, and Kim 2003, Feiock and Kim 2000). Mayors acting as chief executives and city council members, who rely on the financial and electoral support of various interests, can less successfully commit to resisting such rent-seeking behavior. Thus, the city

manager form, suited as it is to balancing and filtering numerous interests, can reduce the transaction costs of rent-seeking that potentially exist in networks of collaborators.

Second, single-member districts motivate politicians to focus on narrow interests (Kettl 2002). At-large districts, alternatively, curb parochialism by creating an incentive structure that motivates politicians to focus on services to the majority. Cities organized to support the more pluralistic method of policymaking associated with single-member districts must institutionalize mechanisms for negotiation and deal-making in the policy making and implementation process. Such mechanisms would reduce the transaction costs associated with collaboration in a pluralistic network structure.

Third, in non-partisan elections, a transaction cost approach suggests that they have little impact on the choice to collaborate. Parties help reduce the transaction costs associated with voters gathering information on candidate policy positions. Non-partisan elections, then, make such information gathering more costly. However, this information costs explanation has no implications for how motivations to collaborate might be altered under partisan or non-partisan institutional arrangements.

The institutional arrangements associated with city government structure represent the *ex ante* variation in political transaction costs. But *ex post* costs also must be considered. One of the most important costs of managing an agreement or transaction is monitoring. Any agreement must be monitored in some way to ensure ongoing compliance with the terms of the agreement. This monitoring can be done informally by administrators who are working on the project or it can be done formally through a program audit process. Because monitoring can be costly and because that cost is not a part of the production cost of the agreement, it represents a transaction cost.

Monitoring requires resources in the form of personnel – accountants, lawyers, and other staff – but ultimately, it requires information on the compliance of the collaborators. Gathering information on compliance can often require reviews not only of operational functions, but detailed analyses of financial records. And when disputes arise between collaborators, negotiations must be organized to settle them. All of which, of course, drives up the cost of acquiring and using information. As North (1990, 27) suggests: "The costliness of information is the key to the costs of transacting, which consist of the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements."

Thus, a transaction costs theory of collaboration must utilize both ex ante and ex post forms of costs to sufficiently evaluate how behavior is biased by different institutional arrangements.

## INTERLOCAL COMPETITION AND LOCATIONAL FACTORS

Researchers have found that "locational factors" – whether a city is a central city, a suburban city located in a metropolitan area, or a city located outside of a metropolitan area – affect collaborative behavior (Agranoff and McGuire 1998, Agranoff and McGuire 2003). Some suggest that central cities and non-metropolitan cities are most likely to participate in collaboration. Others believe that proximity breeds closer ties.

But while the findings are intriguing, little theory has been brought to the question. The work of Tiebout and colleagues (Ostrom, Tiebout, and Warren 1961, Tiebout 1956) could be utilized for this purpose. Tiebout (1956) argues that cities compete in a market-like way to provide an optimal mix of goods and services at the lowest overall tax rate. They do this because

they are in competition for residents and employers who are – at least at the margins – discriminating consumers of government service packages.

This competition creates countervailing motivations for cities. On the one hand, cities are motivated by competition to reduce costs to either provide additional services or reduce tax rates. One of the ways cities can attempt to accomplish this goal is through the generation of slack resources made available by jointly implementing a service with another city. On the other hand, cities will avoid agreements that disproportionately favor their collaboration partner. Why? Because any relative gain to the collaboration partner can be used for greater enhancement of services or reduction of tax rates, all of which attract residents and businesses from one jurisdiction to another.

Cities that provide a very similar basket of goods at similar prices (overall tax rates) and are in close proximity will be the most competitive. In such cases, the total gains that each might receive through collaboration is less important than the relative gains one achieves more or less than the collaboration partner. If one city in a collaboration can achieve more slack resources, it can use those resources in any number of ways to gain a comparative advantage against its collaborator in their competition for residents and employers. Competition, then, creates a zero-sum game for collaborators.

When cities provide a different basket of goods and services and consequently serve different publics, the degree of competition is lower. Lower competition for proximate cities creates incentives to focus on absolute gains. Both cities gain from collaboration, and unequal gains are tolerated because they do not mean a potential loss of residents and employers to their collaboration partner. In these situations, the game is transformed from a zero-sum game to a positive-sum game.

Cities outside of metropolitan areas present a difficult case. On the one hand, they are less concerned about competition because fewer direct competitors are nearby. But, few potential collaborators are nearby. Such cities should be interested in collaboration more often, but the opportunities may be rarer.

The focus on absolute and relative gains implies an interest in the *degree* of collaboration. Competition, in this respect, is different than the institutional arrangements discussed above. The transaction costs of varying institutional arrangements affect the decision calculus of joining a collaborative arrangement (i.e., can a deal be struck). Competition focuses on the degree or depth of the collaborative arrangement. Competitive cities are no more or less interested in collaboration than other cities, but deep collaboration is difficult because unequal gains from collaboration cannot be sustained between cities focused on relative gains issues.

This discussion suggests a model of the environmental and institutional constraints on collaborative behavior depicted in Table 1. The columns represent environments of low and high competition, while the rows represent generally high or low transaction costs of reaching a collaborative agreement.

Table 1 about here

Transaction costs affect the propensity to enter into collaborative agreements. Low transaction costs allow for easier agreement when the underlying motivations exist to pursue such agreements. High transaction costs make such agreements more difficult, and we thus expect to find fewer agreements when transaction costs are high.

High competition creates a focus on the relative gains from collaboration. Low competition allows cities to focus on the absolute gains from collaboration. Because the focus is on the gains from collaboration, we argue that the degree of competition affects the depth of the collaborative agreement.

This two-by-two matrix shows how simplified combinations of transaction costs and competition suggest different outcomes for collaboration. When transaction costs are low and competition is low, we expect many transactions and deeper collaborative arrangements. On the other end of the spectrum, when transaction costs are high and competition is high, cities will be less likely to collaborate and will be less likely to pursue deep collaboration because of concerns about relative gains.

On the other diagonal, the institutional and competition signals are mixed and the results are more intriguing. When transaction costs are high but competition is low, we expect that cities will want to pursue deep collaboration, but will have a difficult time doing so because the costs of reaching an agreement are high. In this scenario, we would expect to find fewer transactions, but the ones that occur should be deep. Alternatively, when transaction costs are low but competition is higher, we expect that cities will act opportunistically. Because transaction costs are low, it is easy to forge an agreement. However, a greater focus on relative gains makes deep collaborations problematic. Rationally acting cities are expected to pursue collaborative arrangements on the chance that they may be able to gain more slack than their collaboration partner and thereby create a price or service-level differential between it and its competitor, but the collaborative arrangements will rarely be deep because the relative loser in the zero-sum game does not have an incentive to give up those unequal gains to its competitor.

## UNDERLYING MOTIVATION TO GENERATE SLACK RESOURCES

Underlying the environmental impact of varying levels of competition and the institutional structures that frame city decision-making is one critical motivation: the desire to generate slack resources. Research on collaboration focuses primarily on resource constraints as an underlying motivation. Cities that lack sufficient resources to adequately fund the implementation of a program will seek out partners to share the costs. In some circumstances, additional resources may mean the difference between having and not having a program at all. In other circumstances, additional resources may make a substantial difference in program effectiveness. In still other circumstances, the program may require community-wide participation, as is the case with federal grants programs.

Another underlying motivation is suggested by the traditional urban policy and management literature. From the early work predicting city structure (see, for example, Dye and Macmanus 1976, Lineberry and Fowler 1967) to work on interlocal agreements (Morgan and Hirlinger 1991), economic development policy (Feiock, Jeong, and Kim 2003, Feiock and Kim 2000), the rise of local government political entrepreneurs (Schneider and Teske 1992), and local government outsourcing (Ferris and Graddy 1986, Ferris 1987), researchers have suggested that any number of socio-demographic characteristics of the population of a city matter in a wide variety of contexts. Cities that have more severe needs are especially motivated to generate slack resources. Those resources can be utilized for additional programs to at least alleviate problems associated with poverty.

## RESEARCH HYPOTHESES

### The Political Transaction Costs of Collaboration

As suggested earlier, the city manager function can be viewed as a mechanism for reducing information costs associated with policy making in a complex environment. The administrative professional with less of an interest in a particular policy than with efficient implementation is well-suited to gather diverse opinions from a variety of stakeholders, assimilate that information, and provide useful policy recommendations to part-time, less knowledgeable (but ultimately more democratically accountable) policymakers. The city manager in such a scenario would find it in his or her career interest to help policymakers find ways to balance competing claims and goals (Feiock, Jeong, and Kim 2003, Feiock and Kim 2000). Thus, the city manager can reduce the transaction costs associated with collaboration and make the option more viable for cities that are motivated to collaborate.

Although one can argue that the single-member district form of representation in cities encourages policymakers to be narrowly interested in the affairs of their specific district, rather than the city overall, policymakers elected to single-member districts learn quickly the art of political compromise and deal-making. The city organization, focused on this need to create consensus, becomes adept at facilitating it. Collaboration between cities requires many of the same sets of compromise and deal-making skills. The organization's ability to facilitate compromise in one sphere is institutionalized and carries over to other areas. Thus, the institution of single-member districts in a city should reduce the transaction costs associated with reaching a collaboration agreement.

Finally, the impact of non-partisan elections is indeterminate from the institutionalist perspective. Are policymakers elected in a non-partisan election more likely to be supportive of

collaboration? It is difficult to see why this might be the case. Running for city council on a party ticket or in a non-partisan election makes little difference in helping the city reduce the costs of collaborating. Thus, an institutionalist interpretation of the impact of the institution of non-partisan elections is that they have no effect on transaction costs associated with collaboration.

The following institutional hypotheses are proposed:

*H1: Cities with the city manager form of government are more likely to choose to collaborate than cities with a strong or weak mayoral form.*

*H2: Cities with a higher proportion of single-member districts are more likely to choose to collaborate than cities with a higher proportion of at-large districts.*

*H3: Cities with non-partisan elections are no more likely to choose to collaborate than cities with partisan elections.*

### *Ex Post* Contract-Monitoring Sophistication

Crucial to understanding how costly transactions can occur is the idea of *ex post* transaction costs. All agreements require monitoring after a deal is struck. Instrumentally rational actors take the cost of monitoring into account when they consider collaboration, and different institutional arrangements can decrease this cost for collaborators.

While some institutional arrangements – such as the city manager form – can improve contract monitoring through the facilitation of information exchange between collaborators, we also must consider the impact of a city's sheer ability to monitor. With simple agreements, monitoring may be relatively simple and front-line administrative staff may be capable of handling this duty in addition to their regular functions. However, as agreements increase in

complexity and number, the degree of sophistication required to monitor collaborative agreements increases. Thus, cities that have more sophisticated mechanisms for monitoring contract compliance will be more likely to enter into collaborative transactions.

Certainly cities with larger staffs will be better able to accommodate a marginal increase in workload associated with a new agreement. But a large staff may merely reflect community preferences for an activist government and high levels of public goods provision. City size, on the other hand, can provide a rough clue about the degree of sophistication of the city's governmental organization. Regardless of the degree of activism required of a particular municipal government, cities with a larger population necessarily have larger city structures than cities with a smaller population. As a rough proxy for government sophistication, population size can be representative of the city's ability to effectively monitor collaborative agreements. This discussion suggests the following hypothesis.

*H4: Cities with a larger population can more effectively reduce the transaction costs associated with contract monitors and choose to collaborate more than small cities with a concomitantly less effective contract-compliance ability.*

**Competition and Locational Factors**

Ostrom, Tiebout, and Warren (1961) argue that competition between cities biases behavior. Cities that offer a similar set of alternatives find themselves in competition with one another for residents and employers, which translate – through a variety of mechanisms – into governmental resources. Tiebout's (1956) central argument is that this competition drives local governments to provide public goods efficiently. Such competition also makes interlocal collaboration very difficult. The reason is that cities that are in direct competition worry that the

gains to be had from collaboration will provide slack resources unequally. This slack can then be used to enhance services or reduce taxes in the city that gains more from the collaboration. Thus, for cities that are in competition, the relative gains that each city enjoys from the collaboration are far more important than the absolute gains that both may receive.

Unlike transaction costs, however, competition influences collaborative behavior not at the choice stage but in the second stage, when cities consider the depth of the collaboration. The reason is that competition creates incentives for cities to act opportunistically. So, when transaction costs are low, cities may attempt to collaborate in an effort to create more slack resources than its collaborator, thereby giving it an advantage in courting residents and employers. We expect that competitive cities are just as likely to try to collaborate as non-competitive ones, but the degree of collaboration will fall short in competitive situations because of the rareness of equal gains.

The Tiebout Model implies that it is cities that are most alike – in terms of goods and services provided and tax rates – that will be most competitive. By measuring the degree of overall homogeneity in the "market," we can get a sense of the degree of competition in that "market." But what is the relevant "market" when considering the competition between cities? Ostrom, Tiebout and Warren (1961) evaluate local government interactions in the metropolitan area, or what they term a "polycentric political system" (Ostrom, Tiebout, and Warren 1961, 831), because of the distributed nature of political authority in a metropolitan area (see Park 1997 for a similar use of metopolitan areas). The metropolitan area is a useful approximation of the marketplace for cities.

Another way to characterize this marketplace is to say that metropolitan areas with smaller population dispersions are more homogenous, while metropolitan areas with higher

dispersions are more heterogeneous. As Ostrom and Keohane (1995) point out, the study of common pool resources and international political institutions are split over the impact of heterogeneity of actors and its effect on successful collective action. This study joins that debate and suggests a hypothesis that is similar to ones found in the international institutions literature that heterogeneity reduces competition, which reduces concern about relative gains, which in turn improves the potential for deeper collaboration.

*H5: The greater the level of competition among cities, the lower the level of collaboration.*

One can easily imagine that size is only one of many attributes of cities that provide an indication of homogeneity as it impacts competition. Competition also coincides with locational factors often identified in various studies of municipal governance. Thus, it is appropriate to include location variables as a check against the competition hypothesis and for consistency with previous studies.

Different studies have tested alternate hypotheses about the impact of city location. Some suggest that it is a city's inclusion in a metropolitan area that matters most, while others have suggested that central cities have unique characteristics that make them more motivated to participate in collaborative agreements. This suggests that:

*H6a: Central cities and cities outside of metropolitan areas are more likely to choose to collaborate.*

*H6b: Central cities and cities outside of metropolitan areas choose to collaborate to a greater degree.*

**Generating Slack: Resource Constraints**

Whether one is inclined to favor a more equitable view of resource exchange relations or a potentially more nefarious one involving dependency between the collaborators, it safe to assume that cities attempt interlocal collaboration because they hope to achieve some gain from the interaction. If transaction costs economics provides us with a method for understanding the varying impact of institutions on collaboration, then resource theories provide the governance equivalent of neoclassical economics. And whether a city may be interested in relative or absolute gains from this exchange, the fact remains that there are some gains to be had. We must, therefore, be interested in the underlying motives for collaboration, as well as the environmental variables that constrain that behavior. A thorough analysis of each collaborative agreement would reveal what those gains are, but what broad measures exist to suggest when cities will, in general, be interested in gains from collaborative resource exchange?

Existing scholarship suggests at least three factors. First, cities that have a more proactive policy agenda may be more interested in collaboration. The slack that is potentially generated from collaborative arrangements can be utilized for other purposes. Cities that have a more aggressive agenda for the provision of goods and services to its residents would be even more interested in generating slack resources than other cities.

Second, cities that have an already high tax burden would be more interested in generating slack that can be used to reduce the tax burden on its residents and compete more effectively in its "marketplace." Cities in otherwise comparable situations may have dramatically different tax burdens due to any number of reasons, including past decisions on the long-term financing of capital purchases, environmental or demographic particularities of the city, or unusually high costs of goods and services production.

Third, cities that receive federal funding for a variety of programs often are required as a stipulation of the grant that other stakeholders be involved in the administration of that grant. Thus, cities that receive more federal grant funding may be more likely to collaborate with other cities because of federal imperatives to do so. Even when a federal grant does not require it, cities often work together because they know that regional solutions with significant local resources dedicated to the problem are often more appealing to federal grants administrators than solutions that are jurisdiction-bound.

This discussion on the resource motivations that cities have for collaboration suggests the following hypotheses.

*H7a: Cities with a more proactive policy agenda are more likely to choose to collaborate.*

*H7b: The greater the policy agenda in cities, the greater the degree of collaboration.*

*H8a: Cities with a higher tax burden are more likely to choose to collaborate.*

*H8a: The higher the tax burden in cities, the greater the degree of collaboration.*

*H9a: Cities that receive federal grants funding are more likely to choose to collaborate.*

*H9b: The greater the federal grants funding received by cities, the greater the degree of collaboration.*

**Generating Slack: Social and Economic Conditions**

While the motivation to generate slack resources whenever possible is ever present because of the opportunities such resources represent, that motivation may be particularly acute for cities that face more severe social and economic conditions. A higher number of unemployed residents, a higher number of working poor, or a higher proportion of youth are just some of the

many examples of circumstances that may lead cities to more aggressively pursue the receipt of interlocal dollars. If, through collaboration, cities with more severe socio-economic conditions can generate slack resources, they can make use of those resources by providing programs to alleviate social stress. This suggests that:

*H10a: Cities with a population with greater economic needs are more likely to choose to collaborate.*

*H10b: The greater the economic needs in a city, the greater the degree of collaboration.*

**Regional Variation**

Scholars of city politics and management have found regional variations in a host of research domains. Little scholarship exists to provide a rationale for why cities in some regions of the country might choose to collaborate more frequently or to a greater extent than cities in other regions. However, to the extent that the use of differing administrative approaches diffuse from innovative communities to their neighbors, it is reasonable to assert that regional variation in the practice of collaboration may exist.

*H11a: Cities in different regions of the country are more likely to choose to collaborate than others.*

*H11b: Cities in different regions of the country choose to collaborate to varying degrees.*

## METHODOLOGY AND RESULTS

An empirical model of collaborative choice must account for both the choice of participation in a collaborative agreement and the degree of that collaboration. Our model does this by modeling the choice to collaborate as a dichotomous (yes/no) choice in the first stage, and as a continuous variable for depth of collaboration, measured in dollars, at the second stage (for those cities that chose "yes" at the first stage).

Running a simple regression model of the degree of collaboration is insufficient for our purposes for two important reasons. The first is theoretical. The dependent variable in the second stage is the degree to which a city collaborates. In 909 cases – 32 percent of the sample – a city participated in no collaboration, so the value of this dependent variable is $0. The theoretical model suggests that there is the possibility of a non-random selection process at work when cities choose not to participate or to participate at some level. In other words, cities that participate in some amount of resource-sharing for collaborative purposes are theoretically distinct from cities that do not. Without explicitly modeling this selection process, outcomes from a regression analysis of the second stage – the degree of collaboration – would be biased (Greene 2002).

The second is methodological. The data for the degree of collaboration are left-censored. That is, each city that opts not to participate in collaboration has a value of $0 for the degree of collaboration, which is equivalent to having a missing value because we do not observe the city's true preference for the amount of collaboration. Censored data are data for which we have observations of the independent variables but the dependent variable is unobserved or has a value of $0. In such situations, ordinary least squares regression (OLS) is biased because the dependent variable is censored at $0.

For a theoretical model that suggests a two-stage empirical model and censored data, the Heckman procedure is recommended (1976, 1979). The Heckman model has two equations: the first – the selection equation – predicts whether an observation is censored (does a city collaborate or not), and the second – the outcome equation – predicts the value of the dependent variable of interest (degree of collaboration), given the likelihood that an observation is censored or observed. The selection equation provides a measure of the risk that a city chooses to participate in collaboration and thus has a non-zero value in the second stage. The inverse Mills ratio is a calculated value from the selection equation for each case – each city – of this selection risk. It is used in the outcome equation to account for the risk introduced by the selection process modeled in the first equation. See Greene (2002) for a thorough discussion. In this study, both the traditional "two-step" method and the full-information maximum likelihood method (FIML) are utilized. The FIML is consistent and asymptotically efficient, but more sensitive to model specification than the two-step method.

**Data and Measures**

To test this two-stage model, data were collected on cities across the country with a population greater than 2,000. The U.S. Census Bureau collects and makes data available on the population in its decennial Census of the Population and data on local governments in its Census of Governments, which is conducted every five years in intervals that do not coincide with the Census of the Population. The International City/County Management Association (ICMA) conducts annual surveys of its membership in which it periodically asks for details on the form of government utilized in each member city. The three sources have 2,825 cases in common where no data are missing.

The dependent variable in the first stage of the analysis – the selection stage – is dichotomous, representing the choice set of "participate in collaboration" or "do not participate." Operationally, this variable is coded a 1 if any inter-local (city to city) revenues were recorded by each city in 1996 or 0 if no revenues were recorded by the city. In the second stage of the analysis, the dependent variable is the amount of inter-local revenues recorded. To control for the size of the city, the amount is divided by the population size to arrive at a per capita figure and is then logged to approximate a normal distribution for purposes of analysis[1]. Data for the dependent variables are from the 1997 Census of Governments.

Cities collaborate frequently, and the degree of collaboration is substantial. Approximately 68 percent of the cities in this study collaborate with each other, and the average value of that inter-local collaboration is more than $1 million. Cities implement policy jointly in all areas of local services, from education and health and human services to infrastructure and public safety. The U.S. Census Bureau estimates that in 1996, the total value of inter-local collaboration was $3.9 billion (U.S. Census Bureau 1997). That figure represents 3.4 percent of total municipal budgets for all cities that participated in some form of collaboration, and is almost half the size (46.5 percent) of all federal grants to those local governments.

The measures of the institutional variables come from the 1997 ICMA Survey. Data on the form of government for U.S. cities is not as readily available as one might suspect. The definitive source for this information comes from the International City/County Management Association and is gathered annually through a survey the organization submits to its membership (all three portions of the form of government are not asked every year).

[1] The Census of Governments data is provided in thousands of dollars, thus the dependent variable in the second stage of the model is measured in logged thousands of dollars per capita. In the discussion section, the marginal effects of each statistically significant variable are reported after taking the exponent to "unlog" the data and provide a more intuitive description of the impacts.

Fortunately, the 1997 ICMA survey asked cities to provide details on these three institutions (ICMA 1997). Unfortunately, the response rate for the ICMA survey is much lower than the response rate for the Census of Governments. Thus, a significant limiting factor for data availability is the number of ICMA responses to the 1997 survey.

To test Hypothesis 1, a city manager variable is coded as a dichotomous dummy variable with 1 representing cities with the city manager form of government and 0 for cities with some other form (almost all have the mayor-council form of government). To test Hypothesis 2, a variable is constructed that measures the proportion of at-large districts in each city as a percentage of the total number of districts. To test hypothesis 3, a dummy variable is coded 1 if partisan affiliation of the candidate is not reported on the ballot for city elections and 0 if the partisan affiliation is reported.

Of the 2,825 cities in the sample, 1,568 or 56 percent have a city manager as the chief executive officer of the organization. The remaining 1,257 cities have either a strong mayor or a commission form of government. The cities in this sample have an average of 63 percent of the seats on their councils represented by at-large districts and 47 percent represented by single-member or ward districts. The variability of this measure is high, however, with a standard deviation of 43 percent and a range from 0 at-large seats to all at-large seats. Finally, 2,114 or 75 percent of the cities in the sample have non-partisan elections, defined as an election in which the partisan affiliation of the candidates is not presented on the voting ballot. The remaining 711 cities have partisan elections.

In addition to the three charter-level institutions, transaction monitoring sophistication is expected to reduce the transaction costs associated with collaboration. This concept is operationalized in this study simply as the size of the population of each city. Data for this

measure come from the 2000 Census of the Population. The 2,825 cities in this study have an average population of 21,268 and vary significantly in size. The smallest cities in the study have a population of 2,000 while the largest city has a population of 2,895,964.

The measure of market competition in this study is operationalized as the degree of homogeneity of the size of cities in a Metropolitan Statistical Area (MSA). The data come from the 2000 Census of the Population. To measure the degree of competition that characterizes each market, the standard deviation of the populations of the cities in that MSA is divided by the total population of the MSA to arrive at a standardized measure of the population dispersion. MSAs with smaller dispersions consist of cities that are more alike in size. MSAs with higher dispersions have cities that are more dissimilar in size.

Thus, except for non-MSA cities, the variable ranges from most likely to be competitive on the low end of the scale (most homogenous markets) to least likely to be competitive on the high end of the scale (most heterogeneous markets). For consistency in coding with the non-MSA cities, an inverse scale of competition is calculated for all cities in MSAs by dividing 1 by the competition scale. This creates a measure of competition that goes from least competitive (0 for non-MSA cities) to most competitive (cities in very homogenous markets). Cities outside of MSAs received a value of 0 for the competition variable. Since it is assumed that non-MSA cities face the least competition, the calculated competition measure for MSA cities was inverted to create a variable that moves monotonically from 0 for the least competition to 64.1 for the most amount of competition.

Locational variables are included in the model as controls and alternative explanations to the market competition variable. Cities are coded as being either a central city, a suburb within an MSA (the control group in this study), and cities not included in an MSA. In the sample of

2,835 cities in this study, 214 or 7 percent of them are categorized as central cities. Non-MSA cities number 1,149 and represent 41 percent of the sample. Finally, suburban cities located within an MSA number 1,462 and represent 52 percent of the sample.

To test Hypotheses 6a and 6b, a dummy variable for central cities was coded as a 0 for all cities except central cities, which were coded as a 1. A dummy variable for cities outside of an MSA was coded 0 for all cities except those located outside of an MSA, which were coded with a 1. The third category – non-central cities within an MSA – is the control group against which the other two are measured. Data on the status of a city is available from the ICMA.

The three variables for city expenditures, tax revenues, and federal grants come from the Census of Governments dataset. Each measure is provided in thousands of 1996 dollars and is divided by the population to control for the size of the city and arrive at a per capita figure. The expenditures variable, measured in $1,000s per capita, has a mean of .86, or the equivalent of $860 per capita. It ranges from as little as $20 per person to a high of $26,860. The tax revenues variable – which measures only revenue collected from the imposition of taxes, but not fees, fines or other miscellaneous sources of municipal revenue – has a mean of .34, or the equivalent of $340 per capita. It ranges from $0 tax dollars in revenue to $4,610 per capita. The federal grants variable has a much smaller mean value at .02 per capita, or the equivalent of $20 per capita. It ranges from $0 for some cities to a maximum of $2,990 per capita.

Eight variables are included in the analysis to measure the hypothesis that cities with greater socio-economic need will pursue collaboration in an effort to generate slack resources to address those needs. Four of the variables can be characterized as demographic in nature: proportion of Anglos in the population, the proportion of the adult population with a college education, the proportion of the population under the age of 19, and the proportion of the

population that is 65 or older. The other four variables measure different aspects of economic well-being in the community: median home value, per capita income, the proportion of the population living below the poverty line, and the proportion of the working-age population that is unemployed. The data come from the 2000 Census of the Population.

As another control variable, potential regional variation in collaborative behavior is modeled in this study with a series of dummy variables. The data come from regions coded by the ICMA in its survey of cities, and breaks out cities into the following categories: Northeast (including New England and the Mid-Atlantic geographic areas), North Central (including the East North-Central and West North-Central geographic areas), South (including the South Atlantic, East South-Central, and West South-Central geographic areas), and West (including the Mountain and Pacific Coast geographic areas). The North Central region is the largest in the sample with 1,189 or 42 percent of the cities, and is thus used as the comparison group.

A summary of the variables used in this analysis can be found in Tables 2 and 3.

Tables 2 and 3 about here

**Results**

As shown in Tables 4 and 5, several variables are statistically significant and in the anticipated direction in both stages of the model. In the selection stage of the model – choosing to collaborate – the city manager variable is statistically significant and in the anticipated positive direction for both estimators, while the at-large representation variable is in the anticipated negative direction but only significant in the two-step estimator. As expected, the

variable for partisan elections is not significant in either estimator. The variable measuring monitoring sophistication is positive and significant in both estimators.

Tables 4 and 5 about here

Tax revenue per capita, while statistically significant, is in the negative direction. We anticipated that higher tax revenue would lead cities to explore alternative mechanisms for policy implementation that would reduce costs and allow for reductions in the tax burden on residents. The results of this study, however, demonstrate just the opposite – cities with high tax revenue are least likely to seek interlocal revenues. Surprisingly, the socio-economic variables that most closely align with economic conditions – median home value, unemployment, the poverty rate, and median income – are not statistically significant in the selection stage of the model.

In the second stage, the critical variable – degree of market competition – is statistically significant in the anticipated negative direction, indicating that as competition, measured as the degree of homogeneity in the market, increases, the degree of collaboration decreases. This finding is consistent across both the two-step and FIML estimators. The locational factors are again mostly not statistically significant, although the central city dummy variable is significant in the negative direction in the FIML estimator.

Substantive interpretation of Heckman models presents some special challenges because the relationship between the independent variables and the dependent variable is non-linear. Because some of the independent variables appear in both equations, we must account for the joint effect of a change in the independent has on 1) a change in the probability of selection, and 2) a change in the expected value of the dependent variable in the outcome equation. In addition,

as is often the case with maximum likelihood estimators, the value of a coefficient changes with changes in the value of the independent variable, which is further complicated in Heckman models because the value of the coefficient changes with any change in the value of the inverse Mills ratio in the first equation (selection risk).

To estimate the impact of continuous variables, all other variables are held at their means while the model is re-estimated at substantively useful deviation from its mean. For dummy variables, it is simply a matter of predicting the model with a value of 0 for the dummy variable, and then predicting it again with a value of 1 for the dummy variable. A summary of the marginal effects of the statistically significant variables is presented in Table 6.

Table 6 about here

A major proposal of this study is that different institutional arrangements in cities impact the relative interest in participating in collaborative arrangements. We hypothesized that the city manager form of government would be more likely to lead to collaborative behavior because city managers are more likely to limit the impact of rent seekers and find common ground among competitors in interlocal collaboration. The empirical tests find relatively strong support for this. A city with a city manager is 5.3 percent more likely to participate in collaboration than a city that utilizes a different form of government. This suggests that the presence of a city manager reduces the transaction costs associated with collaborative agreements.

The proportion of at-large districts to total districts in a city, on the other hand, has a marginally negative effect on the choice to collaborate. We argued that cities with a larger proportion of single-member districts are more adept at balancing the competing interests of

more narrowly focused interests endemic in such a system. Such cities should have a better understanding of how to facilitate sophisticated political logrolls, and the organization's ability to foster consensus on the city council can be transferred to the arena of collaborative networks. The results of this analysis lend equivocal support for this argument. The variable is significant in the two-step estimation, but not in the more robust FIML estimate. Based on results of the two-step estimate, a 10 percent increase from the mean of 63 percent in the proportion of at-large districts leads to a 3 percent decrease in the probability of a city choosing to collaborate.

The robustness in this result is challenging to evaluate. It may be that a "cut point" exists that sorts cities into primarily district or ward representation versus at-large representation. If this cut point could be identified and a dummy variable created, perhaps a more robust finding would result. However, exploration of this issue during initial phases of the analysis produced no intuitively obvious cut point that provided stronger results. More work is needed to more adequately specify the relationship between organizational facilitation of political deal-making and the organization's choice to collaborate in implementation networks.

The third critical city charter-level institution investigated is the impact of non-partisan elections. This analysis includes a dummy variable for the presence or absence of partisan identification in city elections because non-partisan elections are central to the reform movement and a critical charter-level institution. But we anticipated that we would fail to reject the null of no effect from this variable in the empirical analysis. And in fact, we were not able to reject the null hypothesis in either the two-step or FIML estimates. Thus, we find that the presence or absence of partisan labels on election ballots has no impact on the probability of a city choosing to collaborate.

We also hypothesized that monitoring sophistication is an important non-charter institution that potentially can reduce transaction costs for cities considering collaboration. As an initial test of this idea, we suggest that the total population size of a city is a fair proxy measure for a host of issues that lead a city to be characterized as "more sophisticated," including larger, more well-trained, and experienced legal, financial, and audit staffs. We anticipated that monitoring – while always creating a transaction cost – is relatively less costly for large organizations. This lower relative cost should make large cities more interested in entering into collaborative agreements. We find that in the FIML estimate, an increase in the population of 10,000 above the estimate average of 21,268 will lead to 1.3 percent increase in the probability of choosing to collaborate. This is a particularly strong result considering that the cities in the analysis range in population from 2,000 to almost 2.9 million.

The second key proposition in this study suggests that the depth of collaborative transactions is a function of, among other things, the degree of competition that cities face. Whereas the institutions of city government affect the choice of whether or not to collaborate presumably by altering the costs of reaching an agreement on a transaction, competition is hypothesized to impact the second stage of the decision process – the depth of the transaction. The analysis supports this hypothesis. An increase of one standard deviation in the variable from its mean reduces collaboration levels by $127 per capita, which is equivalent to a $1.27 million reduction for a city with a population of 10,000.

We suggest that the competition variable – focused as it is on inclusion in metropolitan areas – might be a theoretical foundation for previous findings that location affects collaboration. Generally, this argument is supported by the analysis. In the two-step estimates, neither variable is statistically significant in either in the first or second stage. However, in the first-stage FIML

estimate, the dummy variable for non-MSA cities is significant in the positive direction, indicating that non-MSA cities participate in collaboration more than suburban MSA cities. In the FIML estimate of the second stage, the central city dummy variable is significant in the negative direction, suggesting that central cities participate in less deep collaboration, ceteris paribus.

We anticipated that suburban cities would be the least likely to collaborate because they are the most homogenous – not only in size, but often in the mix of public goods provided – and are thus the most likely to be in competition with each other and most concerned about relative gains. The result of the non-MSA dummy variable is consistent with this proposition, although it is significant only in the first stage, not the second. However, the negative sign on the central city variable in the second stage is interesting and more difficult to interpret. For example, many of the other significant variables – such as federal grants per capita and proportion of Anglos in the population – may be explaining higher collaboration rates among central cities, while the dummy variable is picking up residual, unmeasured factors in central cities that are unrelated to underlying motivations.

Unlike OLS, maximum likelihood methods have no clear measure of explained variance like the $R^2$. A Wald test of the joint significance of the independent variables in both stages of the model has a $\chi^2$ value of 146.56, which is statistically significant. An optional, but weak, method for evaluating the overall fit of a maximum likelihood model is the pseudo $R^2$. The pseudo $R^2$ for the joint model is 0.025. While this indicates a weak model overall, its value is difficult to assess because it is a measure of the joint log likelihood of both stages of the model. Another method of estimating the goodness of fit is to deconstruct the stages of the model and estimate each separately. Utilizing this method, the pseudo $R^2$ in the probit model is 0.045,

while the $R^2$ in the OLS model is 0.067. Clearly a model with higher goodness of fit measures would have been preferred. However, such measures are problematic in this context. As Long (1997, 102) points out, there is little "convincing evidence that selecting a model that maximizes the value of a given measure of fit results in a model that is optimal in any sense other than the model having a larger value of that measure." In other words, there is no benchmark against which to compare measures of fit from this model, and in such circumstances, the most critical issue is to evaluate the relevance of the independent variables and their impact on variation of the dependent variables.

## CONCLUSION

This study begins with the premise that implementing policy collaboratively is vastly more complicated and political than implementing policy in a traditional bureaucratic setting. Collaboration is political in the sense that, because there is no formal hierarchy among the participants, decisions about the details of how implementation will proceed are made collectively. And collective choice is difficult. It requires discussion, information gathering, and compromise. Despite the costs associated with this process, cities participate in such collaboration at a high rate.

We tested the effect of 20 independent variables on the probability that a city will opt to participate in such collaboration. Consistent with a collective choice interpretation of the municipal institutions literature, we found that cities with the city manager form of government and with a lower proportion of at-large districts are more likely to participate in collaboration. Monitoring sophistication – as measured by the size of the city – is also an important indicator of a city's propensity to join collaborative agreements.

Competition affects the degree of collaboration. Cities in more heterogeneous markets – markets in which cities are relatively more alike –collaborate less deeply than cities in more heterogeneous markets. This study contains two theoretically interesting aspects relative to competition. First, utilization of the Tiebout model as a foundation for understanding the conditions under which governments will be more or less sensitive to relative or absolute gains is uncommon. The majority of work spawned by the Tiebout model has focused on the degree to which cities actually compete or that resident-consumers act in ways consistent with the model. Less work has been done to explore the ramifications of Tiebout's work if the model is correct. This study offers such an effort, and it finds support for the Tiebout model in the collaborative behavior of cities. Second, the discussion of homogeneity and heterogeneity of markets situates this study in an interesting theoretical discussion between those who argue that cooperation in solving common pool resource problems at the local level is significantly enhanced by homogeneous actors and those who argue that cooperation at the international level to provide public goods is enhanced by heterogeneous actors (Keohane and Ostrom 1995).

This study also has limitations. The first challenge lies in the study's definition of collaboration. In this study, collaboration is determined by whether or not, and the degree to which, financial resources are received. Thus, we focus on one particular type of collaboration – financial exchange. But the literature on collaboration demonstrates that collaboration can take many forms, from information exchange to joint outsourcing. The value of this more limited approach is that by studying collaboration involving resource exchange, we set a high standard for what constitutes collaboration and in so doing, eliminate cooperative efforts that do not require joint decision making. Future work expanding the scope of collaborative efforts for a similarly large sample of collaborators would be most helpful. While we might plausibly expect

that the institutional arrangements of cities would have a similar effect across different types of collaboration, the impact of competition may change. Thus, it may be that the impact of competition is the most acute when collaboration involves resource exchange.

A second challenge is the limitation imposed by the unit of analysis. Collaboration in this study is limited to the study of cities only. In reality, collaborative arrangements involve myriad actors from the governmental, non-profit, and for-profit sectors of the economy. They form complex webs of relationships that facilitate information exchange, build coalitions, share resources, and implement policy. This limitation is useful because cities are autonomous entities, and we can have some assurance that any observed joint action is truly voluntary. And as a practical matter, data on non-governmental entities are rarely available. The only data currently available on the collaborative efforts of non-profit and for-profit organizations comes in the form of case studies.

But the limitation also has costs. For example, our ability to generalize the findings of this study is limited. The institutional arrangements in this study are specific to cities. They may have little relevance to a non-profit organization considering collaboration, for example. And competition between cities is rather unique in its form and degree. One might anticipate that other organizations may have countervailing motivations to collaborate and compete with one another, but perhaps not to the extent that cities have such motivations. Future work that incorporates different types of collaborators into a broad study of the type presented here could significantly broaden our understanding of the conditions under which institutions and competition matter most.

The third challenge is rooted in the choice to study collaboration in isolation. Collaboration is one of many solutions to the general problem of local fragmentation in a

polycentric metropolitan area (Ostrom, Tiebout, and Warren 1961). Other solutions may involve simple voluntary agreements that do not involve resource exchange or they may involve complex solutions that can take any number of forms, from the creation of special districts to state or federal redistribution of income. This study focuses on a complex solution, but one that is ultimately voluntary for the participants. A more complete theoretical model would incorporate an explanation of the choices along this spectrum of solutions to fragmentation.

This study proposed a model of collaborative choice that incorporates transactions costs and competition explanations. To the extent that we have been successful in this attempt, the conclusions we can draw from this study will help build knowledge regarding the complex processes of governance in the modern era.

**TABLE 1 - COLLABORATIVE CHOICE**

| Transaction Costs | Degree of Competition: LOW | Degree of Competition: HIGH |
|---|---|---|
| LOW | **Most**<br>Many transactions<br>Many are deep | **Opportunistic**<br>Many transactions<br>Few are deep |
| HIGH | **Selective**<br>Few transactions<br>Many are deep | **Least**<br>Few transactions<br>Few are deep |

## TABLE 2 - SUMMARY OF DICHOTOMOUS INDEPENDENT VARIABLES

| Simple Dummy Variables | Number | | Proportion | |
|---|---|---|---|---|
| | No 0 | Yes 1 | No 0 | Yes 1 |
| Has City Manager form of government | 1,257 | 1,568 | 44% | 56% |
| Has Partisan elections | 2,114 | 711 | 75% | 25% |

| Series Dummy Variables | Number | Proportion |
|---|---|---|
| *Location Relative to an MSA:* | | |
| Is a Central City | 214 | 7.6% |
| Is a Suburban City in an MSA (Analysis Control Group) | 1,462 | 51.8% |
| Is a city outside of an MSA | 1,149 | 40.7% |
| TOTAL | 2,825 | 100% |
| *Location in the United States:* | | |
| Northeast (New England and Mid-Atlantic) | 405 | 14.3% |
| North Central (East North-Central and West North-Central) | 1,189 | 42.1% |
| South (South Atlantic, East South-Central, and West South-Central) | 989 | 35.0% |
| West (Mountain and Pacific Coast) | 242 | 8.6% |
| | 2,825 | 100% |

**TABLE 3 - SUMMARY OF CONTINUOUS INDEPENDENT VARIABLES**

| | No. | Mean | Std Dev | Min | Max |
|---|---|---|---|---|---|
| *Continuous Institutional Variables* | | | | | |
| At-Large District Representation (percent) | 2,825 | 63.38 | 43.57 | 0.00 | 100.00 |
| Monitoring Sophistication (population size) | 2,825 | 21,268 | 72,566 | 2,000 | 2,895,964 |
| *Continuous Competition Variable* | | | | | |
| Degree of Market Competition | 2,825 | 14.51 | 17.69 | 0.00 | 64.10 |
| *Continuous Slack Resource Variables* | | | | | |
| Tax Revenue Per Capita | 2,825 | 0.34 | 0.29 | 0.00 | 4.61 |
| Federal Grants Per Capita | 2,825 | 0.02 | 0.08 | 0.00 | 2.99 |
| Expenditures Per Capita | 2,825 | 0.86 | 0.86 | 0.02 | 26.86 |
| *Continuous Socio-Economic Variables* | | | | | |
| Proportion of Anglos in city population | 2,825 | 83.72 | 17.39 | 0.58 | 100.00 |
| Proportion of population 65 or over | 2,825 | 15.36 | 5.82 | 2.21 | 63.90 |
| Proportion of population under 19 | 2,825 | 26.49 | 4.60 | 2.84 | 45.38 |
| Proportion of adult population with college education | 2,825 | 22.78 | 14.25 | 2.90 | 89.40 |
| Median home value | 2,825 | 116,401 | 95,392 | 21,200 | 1,522,001 |
| Per capita income | 2,825 | 22,495 | 12,645 | 6,576 | 157,814 |
| Proportion of population living below the poverty line | 2,825 | 11.68 | 7.42 | 0.37 | 43.56 |
| Proportion of working age adults who are unemployed | 2,825 | 3.47 | 2.11 | 0.00 | 35.47 |

## TABLE 4 - RESULTS OF FIRST-STAGE ANALYSIS

| | Hypothesized Direction | Two-Step Coef. | Two-Step Std. Error | FIML Coef. | FIML Std. Error |
|---|---|---|---|---|---|
| *Institutional Variables* | | | | | |
| City Manager Form | + | 0.145 ** | 0.053 | 0.163 ** | 0.053 |
| At-Large District Representation | - | -0.001 * | 0.001 | -0.001 | 0.001 |
| Non-Partisan Elections | 0 | -0.004 | 0.069 | -0.004 | 0.068 |
| Monitoring Sophistication (population size) | + | 0.034 ** | 0.011 | 0.040 ** | 0.011 |
| *Slack Resource Variables* | | | | | |
| Tax Revenue Per Capita | + | -0.662 ** | 0.106 | -0.688 ** | 0.107 |
| Federal Grants Per Capita | + | 1.784 ** | 0.531 | 1.730 ** | 0.516 |
| Expenditures Per Capita | + | 0.076 ** | 0.032 | 0.077 ** | 0.031 |
| *Socio-Economic Variables* | | | | | |
| Proportion of Anglos in Population | - | -0.006 ** | 0.002 | -0.006 ** | 0.002 |
| Proportion of Population 65 Years or Older | - | -0.009 | 0.006 | -0.008 | 0.006 |
| Proportion of Population Under 19 | + | -0.044 ** | 0.008 | -0.043 ** | 0.008 |
| Proportion of Adults with College Education | - | 0.006 * | 0.003 | 0.006 * | 0.003 |
| Median Home Value | - | 0.000 | 0.000 | 0.000 | 0.000 |
| Per Capita Income | + | 0.000 | 0.000 | 0.000 | 0.000 |
| Proportion of Population Below Poverty Line | + | -0.002 | 0.006 | -0.002 | 0.006 |
| Proportion of Adults Unemployed | + | -0.017 | 0.015 | -0.017 | 0.015 |
| *Locational and Regional Variables* | | | | | |
| Central City (Yes/No) | 0 | 0.003 | 0.134 | -0.016 | 0.134 |
| Non-MSA City (Yes/No) | 0 | 0.109 | 0.067 | 0.114 * | 0.067 |
| Region 1 | 0 | 0.116 | 0.091 | 0.129 | 0.091 |
| Region 3 | 0 | -0.024 | 0.067 | -0.025 | 0.067 |
| Region 4 | 0 | 0.466 ** | 0.106 | 0.466 ** | 0.106 |
| Constant | | 2.209 ** | 0.378 | 2.174 ** | 0.377 |
| Inverse Mills lambda | | 2.603 ** | 0.816 | 0.560 ** | 0.183 |
| Chi Square test of independent equations | | | | 5.870 ** | |

* Indicates statistical significance at the .05 level
** Indicates statistical significance at the .01 level

## TABLE 5 - RESULTS OF SECOND-STAGE ANALYSIS

| | Hypothesized Direction | Two-Step Coef. | Two-Step Std. Error | FIML Coef. | FIML Std. Error |
|---|---|---|---|---|---|
| *Competition Variable* | | | | | |
| Degree of Market Competition | - | -0.008 ** | 0.003 | -0.009 ** | 0.003 |
| *Slack Resource Variables* | | | | | |
| Tax Revenue Per Capita | + | -1.486 ** | 0.383 | -0.738 ** | 0.189 |
| Federal Grants Per Capita | + | 2.082 ** | 0.859 | 0.828 * | 0.484 |
| Expenditures Per Capita | + | 0.559 ** | 0.085 | 0.478 ** | 0.062 |
| *Socio-Economic Variables* | | | | | |
| Proportion of Anglos in Population | - | -0.022 ** | 0.005 | -0.014 ** | 0.003 |
| Proportion of Population 65 Years or Older | - | -0.010 | 0.013 | 0.000 | 0.009 |
| Proportion of Population Under 19 | + | -0.074 ** | 0.024 | -0.029 ** | 0.012 |
| Proportion of Adults with College Education | - | 0.013 * | 0.006 | 0.007 | 0.004 |
| Median Home Value | - | 0.000 | 0.000 | 0.000 | 0.000 |
| Per Capita Income | + | 0.000 | 0.000 | 0.000 | 0.000 |
| Proportion of Population Below Poverty Line | + | -0.005 | 0.012 | -0.002 | 0.009 |
| Proportion of Adults Unemployed | + | -0.044 | 0.032 | -0.026 | 0.023 |
| *Locational and Regional Variables* | | | | | |
| Central City (Yes/No) | 0 | -0.039 | 0.254 | -0.370 ** | 0.159 |
| Non-MSA City (Yes/No) | 0 | 0.110 | 0.159 | -0.021 | 0.113 |
| Region 1 | 0 | 0.071 | 0.178 | -0.011 | 0.127 |
| Region 3 | 0 | 0.078 | 0.144 | 0.097 | 0.107 |
| Region 4 | 0 | 0.823 ** | 0.282 | 0.352 * | 0.156 |
| Constant | | -1.762 ** | 0.867 | -2.640 ** | 0.586 |
| Inverse Mills lambda | | 2.603 ** | 0.816 | 0.560 ** | 0.183 |
| Chi Square test of independent equations | | | | 5.870 ** | |

* Indicates statistical significance at the .05 level
** Indicates statistical significance at the .01 level

## TABLE 6 - MARGINAL EFFECTS OF INDEPENDENT VARIABLES

| **STAGE ONE**<br>**Dependent Variable:**<br>**0 = Do Not Collaborate**<br>**1 = Collaborate** | **Hypothesized Direction** | **MARGINAL EFFECTS**<br>**A change in X of** | **Leads to a Change In Probability of Collaboration of** |
|---|---|---|---|
| City Manager Form | + | A change from 0 to 1 in value of dummy variable | 5.3% increase in probability |
| Monitoring Sophistication (population size) | + | 10,000 increase in the population | 1.3% increase in probability |
| Tax Revenue Per Capita | + | $100 increase per capita | 2.8% decrease in probability |
| Federal Grants Per Capita | + | $100 increase per capita | 5.4% increase in probability |
| Expenditures Per Capita | + | $100 increase per capita | 0.3% increase in probability |
| Proportion of Anglos in Population | - | A 10 point increase in the percent of the population | 2.7% decrease in probability |
| Proportion of Adults with College Education | + | A 10 point increase in the percent of the population | 1.9% increase in probability |
| Proportion of Population Under 19 | + | A 10 point increase in the percent of the population | 22.4% decrease in probability |
| Cities located outside of MSAs | 0 | A change from 0 to 1 in value of dummy variable | 4.0% increase in probability |
| Located in Western Region (Mountain and Pacific Coast) | 0 | A change from 0 to 1 in value of dummy variable | 14.6% increase in probability |

| **STAGE TWO**<br>**Dependent Variable:**<br>**$ thousands per capita**<br><br>*Per Capita Average: $48.85* | **Hypothesized Direction** | **MARGINAL EFFECTS**<br>**A change in X of** | **Leads to Change in Per Capita Value of Collaboration of** |
|---|---|---|---|
| Degree of Market Competition | - | An increase of one standard deviation from the mean | $127 decrease per capita |
| Tax Revenue Per Capita | + | $100 increase per capita | $41 decrease per capita |
| Federal Grants Per Capita | + | $100 increase per capita | $40 increase per capita |
| Expenditures Per Capita | + | $100 increase per capita | $69 increase per capita |
| Proportion of Anglos in Population | - | A 10 point increase in the percent of the population | $40 decrease per capita |
| Proportion of Population Under 19 | + | A 10 point increase in the percent of the population | $46 decrease per capita |
| Central Cities | 0 | A change from 0 to 1 in value of dummy variable | $5 decrease per capita |
| Located in Western Region (Mountain and Pacific Coast) | 0 | A change from 0 to 1 in value of dummy variable | $4 increase per capita |

Note that the marginal effects are only calculated for variables that are statistically significant in the FIML estimate.

## REFERENCES


Agranoff, Robert, and Michael McGuire. 1998. Multinetwork Management: Collaboration and the Hollow State in Local Economic Policy. *Journal of Public Administration Research and Theory* 8 (1):67-91.

Agranoff, Robert, and Michael McGuire. 2001. American Federalism and the Search for Models of Management. *Public Administration Review* 61 (6):671-681.

Agranoff, Robert, and Michael McGuire. 2003. *Collaborative Public Management: New Strategies for Local Governments*. Washington, D.C.: Georgetown University Press.

Austen-Smith, David, and William H. Riker. 1987. Asymmetric Information and the Coherence of Legislation. *American Political Science Review* 81 (3):897-918.

Baron, David P. 1991. A Spatial Bargaining Theory of Government Formation in Parliamentary Systems. *American Political Science Review* 85 (1):137-164.

Dixit, Avanish K. 1996. *The Making of Economic Policy: A Transaction-Cost Politics Perspective*. Cambridge: The MIT Press.

Dye, Thomas R., and Susan A. Macmanus. 1976. Predicting City Government Structure. *American Journal of Political Science* 20 (2):257-271.

Epstein, David, and Sharyn O'Halloran. 1994. Administrative Procedures, Information, and Agency Discretion. *American Journal of Political Science* 38 (3):697-722.

Epstein, David, and Sharyn O'Halloran. 1999. *Delegating Powers: A Transaction Cost Politics Approach to Policy Making Under Separate Powers*. New York: Cambridge University Press.

Feiock, Richard C., Moon-Gi Jeong, and Jaehoon Kim. 2003. Credible Commitment and Council-Manager Government: Implications for Policy Instrument Choices. *Public Administration Review* 63 (5):616-625.

Feiock, Richard C., and Jaehoon Kim. 2000. Form of Government, Administrative Organization, and Local Economic Development Policy. *Journal of Public Administration Research and Theory* 11 (1):29-49.

Ferris, James, and Elizabeth Graddy. 1986. Contracting Out: For What? For Whom? *Public Administration Review*:332-344.

Ferris, James M. 1987. The Decision to Contract Out: An Empirical Analysis. *Urban Affairs Quarterly* 22 (2):289-311.

Greene, William H. 2002. *Econometric Analysis*. Upper Saddle River, N.J.: Prentice Hall.

Heckman, James J. 1976. The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models. *The Annals of Economic and Social Measurement* 5:475-492.

Heckman, James J. 1979. Sample Selection Bias as a Specification Error. *Econometrica* 47 (1):153-162.

ICMA. 1997. *Municipal Form of Government, 1996: Trends in Structure, Responsibility, and Composition*. Washington, D.C.: International City/County Management Association.

Keohane, Robert O., and Elinor Ostrom. 1995. *Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains*. Thousand Oaks, CA: Sage Publications.

Kettl, Donald F. 2002. *The Transformation of Governance*. Baltimore: Johns Hopkins University Press.

Lineberry, Robert L., and Edmund P. Fowler. 1967. Reformism and Public Policies in American Cities. *American Political Science Review* 61 (3):701-716.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage Publications.

McGuire, Michael. 1999. The "More Means More" Assumption: Congruence Versus Contingency in Local Economic Development Research. *Economic Development Quarterly* 13 (2):157-171.

McGuire, Michael, Barry Rubin, Robert Agranoff, and Craig Richards. 1994. Building Development Capacity in Nonmetropolitan Communities. *Public Administration Review* 54 (5):426-433.

Meier, Kenneth J., and Lawrence J. O'Toole, Jr. 2002. Public Management and Organizational Performance: The Effect of Managerial Quality. *Journal of Policy Analysis and Management* 21 (4).

Milward, H. Brinton, and Keith G. Provan. 1998a. Measuring Network Structure. *Public Administration Review* 76:387-407.

Milward, H. Brinton, and Keith G. Provan. 1998b. Principals for Controlling Agents: The Political Economy of Network Structure. *Journal of Public Administration Research and Theory* 8 (2):203-221.

Milward, H. Brinton, and Keith G. Provan. 1999. How Networks are Governed.1-31.

Milward, H. Brinton, Keith G. Provan, and Barbara A. Else. 1993. What does the Hollow State Look Like? In *Public Policy for Democracy*, edited by H. Ingram and S. R. Smith. Washington, D.C.: Brookings Institution Press.

Morgan, David R., and Michael W. Hirlinger. 1991. Intergovernmental Service Contracts: A Multivariate Explanation. *Urban Affairs Quarterly* 27 (1):128-144.

Niskanen, William. 1971. *Bureaucracy and Representative Government*. Chicago: Aldine.

North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

O'Toole, Lawrence J., Jr., and Kenneth J. Meier. 1999. Modeling the Impact of Public Management: Implications of Structural Context. *Journal of Public Administration Research and Theory* 9 (4):505-526.

O'Toole, Lawrence J., Jr., and Kenneth J. Meier. 2003. Plus ca Change: Public Management, Personnel Stability, and Organizational Performance. *Journal of Public Administration Research and Theory* 13 (1):43-64.

O'Toole, Lawrence J., Jr., Kenneth J. Meier, and Sean Nicholson-Crotty. 2003. Managing Upward, Downward, and Outward: Networks, Hierarchical Relationships and Performance. Paper read at Annual Meeting of the American Political Science Association, August 28-31, 2003, at Philadelphia, PA.

Ostrom, Elinor. 1999. Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework. In *Theories of the Policy Process*, edited by P. A. Sabatier. Boulder, CO: Westview Press.

Ostrom, Vincent, Charles M. Tiebout, and Robert Warren. 1961. The Organization of Government in Metropolitan Areas: A Theoretical Inquiry. *American Political Science Review* 55 (4):831-842.

Park, Keeok. 1997. Friends and Competitors: Policy Interactions between Local Governments in Metropolitan Areas. *Political Research Quarterly* 50 (4):723-750.

Provan, Keith G., and H. Brinton Milward. 1995. A Preliminary Theory of Interorganizational Network Effectiveness: A Comparative Study of Four Community Mental Health Systems. *Administrative Science Quarterly* 40:1-33.

Schneider, Mark, and Paul Teske. 1992. Toward a Theory of the Political Entrepreneur: Evidence from Local Government. *American Political Science Review* 86 (3):737-747.

Shepsle, Kenneth A. 1979. Institutional Arrangements and Equilibrium in Mulit-Dimensional Voting Models. *American Journal of Political Science* 23 (1):27-59.

Shepsle, Kenneth A., and Barry R. Weingast. 1987. The Institutional Foundations of Committee Power. *American Political Science Review* 81 (1):85-104.

Tiebout, Charles M. 1956. A Pure Theory of Local Expenditures. *Journal of Political Economy* 64 (5):416-424.

U.S. Census Bureau. 1997. *1997 U.S. Census of Governments - Finances*. Washington, D.C.: U.S. Department of Commerce.

Williamson, Oliver E. 1989. Transaction Cost Economics. In *Handbook of Industrial Organization, Volume I*, edited by R. Schmalensee and R. Willig. Amsterdam: North-Holland.