

## **Trust, Transaction Costs, and Service Production Decisions: An Institutional Collective Action Explanation**

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## **Abstract**

A basic premise in analyses of local government contracting is that the transaction costs of contracting arrangements limit opportunities for cooperation on local public services. Yet, the Institutional Collective Action framework proposes that network participation will help to mitigate transactions costs inherent in these services characteristics. We use data from service production arrangements for 43 different services from 159 cities in Michigan to examine the propositions of the ICA framework that service production decisions are conditioned by the transaction characteristics of services and the embedded social structure of local government officials. Using multinomial probit, we examine how these factors influence choices among three different production mechanisms: (1) internal production, (2) joint or complete contracting with another government, and (3) nongovernmental (private) provision. We test hypotheses linking contracting decisions to the transaction characteristics of municipal services; to the trust produced by patterns of previous interactions; and to measures of electoral institutions, and local demographic characteristic. We find that the transaction characteristics of services, local fiscal conditions, and political structures affect cities' choice of service production modes.

Local governance scholars have recently noted the potential of interlocal cooperative agreements for coping with problems arising from political fragmentation. (Feiock, 2007; Wood, 2006; Feiock and Park, 2005; Lubell et al, 2002; Savitch and Vogel, 2000; Frederickson, 1999). Jurisdictional fragmentation complicates the management of boundary-spanning public infrastructure, environmental pollution, crime, regional economies, and other problems that spill over the borders of one city into the next. The complexity of these public problems increasingly requires multi-jurisdictional and multi-sector solutions. The transjurisdictional nature of local policy issues creates a need for collective action by fragmented local governments in order to effectively manage regional problems and to minimize negative externalities (Feiock, 2007; 2004).

While public choice scholars have long argued that jurisdictional fragmentation generates economic efficiencies in the pricing of local public services (Ostrom, Tiebout, and Warren, 1961), fragmentation can also produce inefficiencies in service delivery. Independent service provision decisions made by jurisdictions acting alone often results in unnecessary service duplication. Moreover, size constraints often limit the ability of cities to reduce the average cost of service to its residents. Spreading the cost of services over a larger distribution area may lessen diseconomies of scale for some types of service by lowering the cost per unit and minimizing duplication. As local public officials search for ways to economize, they may seek out alternatives to direct, in-house production of services through the purchase of services from an external supplier. City officials must weigh the anticipated efficiency gains of external service production against the risks of relinquishing control and the possibility that the external supplier will fail to fulfill the terms of the agreement. Therefore local officials must choose between producing services

in-house, which may result in unnecessarily high economic costs, or to rely on another unit of government or on a private supplier, which carries the risk of uncertainty.

How do cities choose among these service production alternatives? Each of these options presents a different set of costs for local governments. In choosing among these alternatives, local officials must calculate the risks associated with in-house production and their options for engaging external suppliers. Previous work has demonstrated that these choices may be shaped by the transaction characteristics of the services and the costs they present to decision makers (Brown and Potoski, 2003; Shrestha and Feiock, 2004). Transaction costs are incurred through the processes of information searches required to make decisions, along with those of negotiating, monitoring, and enforcing agreements. Two transactional characteristics of services empirically linked to service production decisions are asset specificity and measurement difficulty (Williamson 1981; Brown and Potoski, 2003; Shrestha and Feiock, 2006). Services have higher asset specificity when they require investments that are largely nondeployable to alternative uses (Williamson 1991). When asset specificity is low, private markets might offer the most efficient means of production. Measurement difficulty is the extent to which the service can be easily monitored or measured. When services are difficult to measure, local governments may avoid contracting with a private supplier to avoid the risk of opportunistic behavior by profit-maximizing firms, seeking instead to contract with another government under the assumption of greater trustworthiness. Unlike private firms, governments do not cite profit as their first objective, and therefore may elicit greater trust from public officials seeking cooperation partners

Yet interlocal service agreements may be a particularly valuable production alternative for local governments, because they provide certain circumstantial advantages to contracting with private firms. For example, when the market of private suppliers is thin, local governments have little to gain by contracting out to a private producer since the lack of competition makes it unlikely the jurisdiction will get a better price than providing in house. Interlocal service agreements may also be especially useful for reducing diseconomies of scale in the production of services that government cannot contact out to the private sector, such as public safety. Finally, as Warner and Hefetz (2004) point out, contracting with another local government results in greater equity and voice for citizens, than contracting with a private sector supplier, which is an important consideration for many types of public services.

The Institutional Collective Action (ICA) framework suggests that trust created through social exchanges among local government officials interacting through various forms of networks may reduce transaction costs and encourage voluntary cooperative service arrangements to develop. Moreover, network participation may help to mitigate transactions costs created by the service characteristics of asset specificity and measurement difficulty, and enhance prospects for interlocal cooperation on some types of services. The concept of structural embeddedness suggests that actors are situated in a larger relational context that shapes the structure of opportunities available to that actor. Local government officials may be linked through personal relationships, professional associations, regional councils, and other forms of social networks that present opportunities for trust-enhancing exchanges that may increase the likelihood of interlocal service cooperation.

In political science scholarship, a classic distinction has existed between rational choice theories and institutional approaches. In the context of studying local government service delivery, Brown and Potoski (2003) argued these two theoretical approaches can provide complementary explanations for service production decisions. Institutional Collective Action provides a theoretical framework for bridging rational choice and institutional approaches, by relying on both transaction cost *and* social network explanations for local government service production decisions. In employing the ICA framework to test several hypotheses, we contribute to the emerging literature on local governance through an analysis of service production arrangements among cities in Michigan. In addition to transaction cost characteristics and social networks, we account for local fiscal capacity, political characteristics, and demographic characteristics of the jurisdiction in our study. In the next section, we offer a brief description of the service delivery environment in Michigan, highlighting aspects of the state's political culture that may be important to understanding service production choices.

### **The Context of Service Production Choices: Opportunities for Institutional Collective Action in Michigan**

For a number of reasons, intergovernmental service agreements may be particularly difficult to forge in the state of Michigan.<sup>1</sup> Michigan is a strong home rule

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<sup>1</sup> At the same time, it should be noted that Michigan has quite permissive enabling legislation regarding interlocal service cooperation. The enabling legislation is provided by three public acts. The Urban Cooperation Act of 1967 authorizes Michigan public agencies to enter into interlocal agreements with other Michigan public agencies, and with public agencies of any other state of the United States or Canada, or with public agencies of the federal government. The Intergovernmental Contracts Between Municipalities Act of 1951 grants authority to Michigan municipal corporations to enter into contracts to own, operate, or perform jointly any property, facility or service which each might own, operate or perform separately. Lastly, the Intergovernmental Transfer of Functions and Responsibilities Act of 1967 authorizes cities, villages and other political subdivisions to enter into contracts transferring functions or responsibilities to one another or any combination thereof (SEMCOG, 2003). In addition, the state is currently struggling to

state, and citizens endorse an ardent preference for local control. Many of the state's municipalities formed at a time in history when few options existed for fulfilling service needs; citizens could vote to legally incorporate a city or risk being annexed by surrounding areas, which established a political culture from the outset that values local autonomy. Also, like many of the other older rustbelt states of the Midwest, many of Michigan's cities bear the residual effects of historical racial conflicts. High levels of racial and economic segregation still exist among most of the state's cities, creating an atmosphere of mistrust that is unfavorable to interlocal cooperation. Finally, Michigan's municipal workforce is highly unionized and politically active. Previous research has demonstrated that public sector labor unions depress the likelihood of interlocal service delivery (Morgan and Hirlinger, 1991).

While studying a single state has limitations, it is also advantageous in some ways. A single state analysis controls for variation in state laws, state political culture, state economies and fiscal capacities, and other nuanced factors that are often difficult to account for in multiple state analyses. Moreover, it provides the opportunity for in-depth study of phenomena such as the social network of local government officials, for data which would be impossible to capture across states.

### **Transaction Costs Characteristics of Public Services**

The Coase theorem (1960) suggests that rational actors achieve Pareto-efficient allocation of resources through voluntary bargaining only in the absence of transaction costs; local governments will thus choose a particular service production mechanism that

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cope with a structural budget deficit, which may create an incentive for cities to cooperate if state revenue sharing is cut.

minimizes transaction costs associated with a contractual exchange (Williamson 1981, 1991). Transaction costs arise through information searches, bargaining and negotiation, and agency costs. These transaction costs may be higher or lower depending on the characteristics of the good or service in exchange. Asset specificity and service measurability are two transactional characteristics of services that generate costs, thus affecting local governments' choice of external production mechanisms. Brown and Potoski (2003) argued that local government officials rely on these criteria of asset specificity and service measurability as general heuristics in their approach to risk minimization when engaging external suppliers. The argument is that these factors affect actors' transaction cost risks and thus determines the cities' choice to produce a service in-house, to contract with another government, or contract with a private firm.

### **Asset Specificity and Transaction Costs**

Asset specificity is the degree to which services require transaction-specific investments that are largely nondeployable to alternative uses (Williamson 1991). Producing these goods or services is often financially burdensome to local governments as they generally have high start up costs, yet can be used only for the specific purpose for which they are manufactured. Thus, the greater the nondeployability of such investments, the greater the degree of asset specificity associated with the service. When asset specific investments required for the service are zero or very low, the service is relatively standard and may be purchased from a variety of suppliers. However as the asset specificity of a service increases, the good or service produced becomes increasingly customized to the specific needs of the parties involved.

The level of asset specificity associated with a service shapes the transaction risks it poses to institutional decision makers. At a low level of asset specificity, transactions are standardized (as opposed to customized) so and the private market could be an efficient means of production. Competitive markets lead to efficient pricing by reflecting the willingness to pay and the willingness to offer. Ex-ante negotiation or ex-post monitoring costs are also lower because private providers will strive to maintain high quality in service production to avoid being replaced by another supplier. As asset specificity increases, transactions become more customized requiring mutual adaptation by the contractor and purchasing agent. In this situation, the market transaction becomes costly and cities will opt for interlocal cooperation with another government. Even though higher levels of asset specificity increase the potential for opportunistic behavior, mutual dependency constrains opportunism and encourages parties to adapt to provisions of agreement in order to safeguard the transaction-specific investment. However, when asset specificity reaches to a very high level, transaction uncertainties due to potential opportunism may also become substantial. Mutual adaptation may be very costly in the time taken to reach consensus. In such a scenario, the parties may move to some unified management such as creation of independent authorities or dependent districts. Although unified management may have inefficiencies of internal agency costs, it can reduce extreme coordination/adaptation costs and behavioral opportunism associated with very high asset specificity reflected in cooperative agreements.

This suggests that both low levels and very high levels of asset specificity, interlocal service cooperation is less advantageous. Cities are likely to adopt cooperative service agreements only at intermediate level of asset specificity. However, once cities

enter into an interlocal cooperative agreement, the amount of investment that they make decreases with an increase in the level of asset specificity. Indeed, previous research has demonstrated that the relationship between interlocal cooperation and asset specificity is nonlinear (Brown and Potoski, 2003; Shrestha and Feiock, 2004). They found that local governments are less likely to contract with neighboring units for production as asset specificity increases, but that when asset specificity reaches very high levels, local governments are substantially more likely to contract with other local units rather than to produce them independently. Based on this evidence, we predict the following relationships between asset specificity and service production choices:

- H1a: Cities rely on in-house production to greater extent for services that have increasing levels of asset specificity.
- H1b: Cities will turn to alternative modes of production (intergovernmental or nongovernmental) for services that have *very* high levels of asset specificity.

Thus, we predict an n-shaped relationship between asset specificity and service production decisions.

### **Service Measurability and Transaction Costs**

Local public services differ in their degree of measurement difficulty. Refuse collection, street sweeping and curb maintenance are easier to measure than services like public safety and senior services. Developing a contract for the latter services may be difficult because expected levels of output cannot be established in advance, and performance of these types of functions requires substantial discretion and so expectations cannot be clearly specified in contract language (LeRoux, 2007; Ferris and

Graddy 1986). When measurement difficulty increases, transaction costs increase. Ambiguity in the expected performance of a contractor, may lead to disputes about fairness in the way benefits and costs are distributed between parties to the contract. Perceptions of unfairness in the distribution of costs and benefits will increase transaction costs because negotiating an agreement requires either longer time or higher monitoring costs ex-post.

When measurement difficulty is low, cities may rely on private providers. The economic gains from market competition may be greater than the cost of monitoring the private supplier. Interlocal service arrangements are unlikely when measurement difficulty is low because cities have more to gain by contracting with a private supplier. However, as measurement difficulty increases, transaction costs also increase. The cost of monitoring of private providers increases relative to the gains achieved through market supply. In this case, as the difficulty of measuring a service rises, cities will turn to their governmental counterparts to minimize transaction costs because monitoring or enforcement costs will be lower. When measurement difficulty becomes very high, transaction risks also become very high. As a result, cities may consider adopting some form of unified (hierarchical) management rather than continued spending for costly monitoring and enforcement of the agreement. Internal management can accommodate ambiguity in performance and can significantly reduce negotiation, monitoring, or enforcement costs as these become intra-organizational, rather than inter-organizational issues. In this scenario too, the likelihood of interlocal cooperation declines as the mode of transaction moves to unified management. Therefore, we test the following propositions with regard to service measurability and municipal production decisions:

H2a: When services are more difficult to measure, local governments will be more likely to contract with another government for those services.

H2b: When the difficulty of measuring services is *very* high, local governments will be more likely to produce those services in-house.

These hypotheses again suggest an n-shaped relationship between service measurability and choice of production mode.

### **Social Networks and Transaction Costs**

Social networks are thought to be both a precondition to institutional collective action (Feiock, 2007; Cigler, 1994) and to arise from it (Feiock, Tao, and Johnson, 2004). Network interactions may help to mitigate transactions costs by fostering norms of trust and reciprocity among institutional actors and may help identify partners where defection is less likely. Moreover, network participation may help to establish an enforcement structure by tying responses in one area to actions in other policy areas. Local government officials may be linked through personal relationships, professional affiliations, and membership in policy networks. Opportunities for repeated face-to-face interactions among institutional actors may be especially important in order for norms of trust and reciprocity to develop at levels required for cooperative agreements to form (Axelrod, 1984). Councils of government and professional associations serve as important organizational vehicles for this type of social interactions to occur. The social ties created through these interactions may be sufficient to reduce the transaction costs and allow voluntary cooperative service arrangements to develop.

For example, Lubell et al (2002) demonstrated that voluntary watershed partnerships emerge on the basis of trust, and these partnerships increase both in number

and scope of activities when social capital is sufficient to overcome the transaction costs that present barriers to collective action. Lackey, et. al. (2002) found that when a neutral facilitator is involved in facilitating or brokering the cooperative arrangements (such as a COG or regional organization), there is an increase the amount of interlocal collaboration that occurs. Similarly, Thurmaier and Wood (2002) found that the metropolitan planning organization in the Kansas City Metro Area functioned as a broker in facilitating interlocal service arrangements among cities in the region by providing forums for interaction among city managers, assistant managers, and department heads.

Frederickson (1999; 2003) has argued that in the absence of authoritative structures, “administrative conjunctions” and “epistemic communities” serve as mechanisms through which cities might cope with the problems of jurisdictional fragmentations. Administrative conjunctions are horizontal relationships among professional public servants that link jurisdictions together in collaborative activity by function. Frederickson argued that disciplines and professions function as institutions, imparting a shared system of norms and values among members (Frederickson, 1999). For example, professional public managers share a common public service ethic and commitment to values of efficiency and equity imparted by their disciplinary training and MPA degree that may make them more inclined toward collective problem solving. Similarly, Brown and Potoski (2003) suggested that professional associations, such as the ICMA, provide a central mechanism for the diffusion and instillation of common norms, values, rules, and practices. City administrators who are members of professional associations or who participate in local government associations on behalf of their jurisdiction should be much more likely to use interlocal agreements, and look for ways

to maximize coordination opportunities with other communities. Therefore, we expect the following patterns to emerge:

H3a: Cities have a greater propensity to produce service through interlocal service arrangements when their managers are members of ICMA.

H3b: Cities are more likely to produce services through interlocal service arrangements when their managers have earned an MPA degree.

H3c: As cities' redundancy of professional network ties increases, its tendency to provide services through interlocal arrangements will increase. Interlocal cooperation increases when cities have increasing numbers of employees who are members of ICMA.

H3d: Cities that are members of councils of government will engage in more interlocal service cooperation.

The next section provides a brief description of the methodology we use to test this series of hypotheses about the role of asset specificity, service meterability, and social network ties in predicting municipal service production choices.

### **Data, Method, and Measures**

Relying on the Michigan Catalog of Local Government Services<sup>2</sup> we created a pooled, cross-sectional dataset of 43 different services provided by cities in Michigan's 24 most populated counties. These data were collected through a mail survey sent to

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<sup>2</sup> The Citizens Research Council of Michigan collected these data in 2005 with funding from the C.S. Mott Foundation, the Earhart Foundation, the Frey Foundation, the Gilmore Foundation, and the Community Foundation for Muskegon County. This larger project sought to catalog the services offered by Michigan local governments and to identify the arrangements used to deliver these services. The data were collected through surveys of the city administrator or mayor, village manager or president, or township supervisor of every local general-purpose government within twenty-four Michigan counties. These 670 units of government represent 36 percent of the 1,859 general-purpose local governments in Michigan and contain 78 percent of the state's population. Responses were received from 464 of the 670 governments surveyed, for a response rate of 69 percent. Given our interest in investigating the effects of professional networks and variations in the structure of local political institutions on service production decisions, we chose to examine only municipalities in this study. For additional information on the survey, see CRC ([www.crcmich.org](http://www.crcmich.org), 2005).

local government officials in Spring 2005, asking respondents to report the service delivery methods used by their jurisdiction for 116 different local public services. Responses were received from 114 of the 160 municipalities surveyed, representing a response rate of 71 percent. We are interested in the service production mode cities choose for 43 different types of municipal services (listed in Appendix 1), therefore the production mode for these 43 *services* are the units of analysis in our study, not the cities themselves. We pooled the responses for each service of city in the sample, each of the 114 cities can be represented up to 43 times in the pool of observations. However, since all cities do not provide all 43 of these services, we ended up with a total of 1,717 observations.

In this study, we are interested in estimating the probability of choosing one production mode over another from a given pool of multiple production choices that cities face. Here, available multiple production modes remain fixed and are mutually exclusive, and cities choose a particular mode of production over another that maximizes its utility. Technically, both multinomial logit (MNL) and multinomial probit (MNP) qualify for modeling cities' multinomial choice behavior as both follow economic theories of utility maximization. However, MNL is theoretically appropriate statistical method for approximating underlying stochastic process that generates observed behavior and for informing theoretical question of interest. Multinomial probit (MNP) is most suitable when the substantive question of interest is to understand the relative substitutability among multiple production choices; that is, how the relative probability of adopting one production mode over another changes when other modes enter or exit the choice process.

The most important distinction between MNL and MNP is the assumption of ‘independence of irrelevant alternatives’ (IIA) for MNL. This means that the error structures of MNL models are independent, identically distributed (iid) with type I extreme value distribution (log Weibull), whereas MNP assumes the errors are distributed multivariate normal with mean 0 and positive covariance (Dow and Endersby, 2004). When statistical tests (most common is Hausman test, suest-based Hausman test, and Small-Haiso tests) of IIA assumption is violated, scholars tend to employ MNP instead of MNL. However, Dow and Endersby (2004) suggest that multinomial model selection should primarily be guided by theoretical motivation and, therefore, selecting one model over another based on IIA criteria is rarely relevant. They argue that the concern over IIA property is most appropriate in situation where production modes enjoy ease of entry and exist of choice process and are seen as close substitutes. Furthermore, one may gain from MNP modeling when one has a sample size of several thousand which is rare in political science literature with a sample of 1500 observations or so among a few fixed choices.

### *Measures*

Our dependent variable is the choice of production mode that city officials opt for in providing municipal services. This variable is measured as a three-category service production choice consisting of direct provision (in-house production), interlocal cooperation with other governments (city has the service provided either partially or in full by another local government), and non-governmental provider (private for-profit or nonprofit). These are the pool of production choices cities face while deciding on the

mode of service delivery modes to their residents. This categorization is different from previous studies of service delivery choices. Earlier studies either used dichotomous ‘make or buy’ choices (Hirsch, 1995; Ferris, 1986), or examined choices of production alternatives separately from in-house production, disregarding the ordinal nature of the hierarchical choices (Joassart-Marcelli and Musso, 2005). By considering cities’ service production choices in the context of the full range of decisions options available, our study is an advancement over previous methods used to analyze service delivery choices.

Cities’ choice of production mode is influenced by service attributes, cities’ own characteristics, institutional actor’s networks with other actors as well as county and state level determinants. State level factors (for example, state enabling laws) are not relevant for this study since we are dealing with only Michigan cities. But other factors could be important for the service delivery choice of cities. Four groups of such independent variables are included in the analysis. They are either continuous or categorical in nature.

The first set of explanatory variables measure the service attributes reflecting transaction characteristics of the service including asset specificity and metering difficulty. *Asset specificity* is the level to which the transaction-specific investments that cities employ for an exchange are non-deployable to alternative uses. *Measurement difficulty* is a degree to which outcome or process of a service in exchange is difficult to measure. We used asset specificity and measurement difficulty scales developed by Brown and Potoski (2003). These scales measure asset specificity and measurement difficulty on a likert scale of 1 to 5 for each service. These scales are based on the perception ratings of city managers and mayors, and higher values in the scale reflect greater asset-specificity and measurement difficulty. *Asset specificity-squared* and *measurement difficulty-squared*

were also included in the analysis to capture the possible quadratic relationship between each of these measures and the likelihood of a particular mode of production.

Another set of independent variables of primary interest reflects the social relationship of cities with other governmental units. Social capital literature suggests that social relations reduce transaction cost of exchange through sharing of information and building social trust among the transaction parties (Granovetter 1985; 2005). Several dichotomous proxy variables are included to test this theoretical prediction. These include whether a city is a member of a council of government (COG), whether the city's manager is a member of the International City County Management Association (ICMA), and whether the manager is has an MPA degree. Among Michigan cities, there is quite a bit of variation among these measures. Since many of Michigan's municipalities formed before the council-manager form diffused, the state has not had as strong a tradition of professional local government management as cities in some other parts of the country. One continuous network variable is included, measuring the total number of employees within the jurisdiction's workforce who are ICMA members. This measure captures the embeddedness of professional norms, values, and networks within the city.

City attributes comprise a third set of explanatory factors, include institutional, socioeconomic and fiscal variables. These variables are the city's form of government (council-manger = 1, mayor-council = 0), the number of local government jurisdictions sharing adjacent borders with the city, the density of local governments in the region measured by the number of sub-county local governments per 100 square miles in the county, the age of a city, the city's population growth, size of the city, per capita income

of the city residents, growth of intergovernmental grants that a city receives, city's taxable capacity, and city's limitation on raising property taxes.

Finally, the city's existing trend of service delivery through each of the three production modes is included in the analysis. These three measures are the proportion of total services provided by the city that are delivered through direct production, intergovernmental delivery, and non-governmental sectors. The expectation is that the more a city uses a particular mode, the more likely it is to display a continued preference for that mode.

## **Results and Discussion**

The distribution of predictor variables associated with different production modes are shown in Tables 1 and 2.

Table 1 and 2 about here

The unweighted distribution of categorical variables indicate that more than fifty percent of sample represent cities that are members of council of government and international city county management association. Similarly, council-manger form of government and city executives with MPA degree also represent more than half of the observations.

The result of the multinomial logit regression is presented in Table 3.<sup>3</sup> The estimates show the likelihood of cities preferring cooperative arrangements with other governments and nongovernmental providers relative to direct provision (base category is direct provision). The overall model is significant with 14 percent of variations in the production modes are explained by the predicted variable. The model correctly predicts

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<sup>3</sup> The multinomial probit results are displayed in Table 5.

about 69 percent of cases. The model also satisfies the Small-Hsiao tests of IIA assumption<sup>4</sup>.

Table 3 about here

On the whole, transaction characteristic of services (measured by asset specificity and measurement difficulty), distance between the cities, density of local government, fiscal limitations, and existing practice of service provision seem to differentiate between production modes. The standard estimates give the log of the ratio of two probabilities associated with one unit change in the variable. Since we cannot interpret the size of the standard coefficient, we will examine the ‘odds ratio’ (relative risk of choosing, for example, cooperation with other governments over direct provision) for the discussion of the findings. Below we discuss the affect of each type of predictor variables of main interests on the likelihood of choosing a particular mode of production. The odds ratio and marginal effect of significant variables are presented in table 4.

Table 4 about here

#### *Transaction cost and production modes*

The results show that the relative risk of choosing cooperation with other governments over direct provision and choosing nongovernmental provision over direct provision are statistically significant with respect to asset specificity and measurement difficulty variables. The quadratic relation of asset specificity is not obvious whereas it was found evident with respect to measurement difficulty as both main and quadratic

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<sup>4</sup> The model fails to satisfy other two IIA tests (Hausman test and Suest-based Hausman test). Due to this contradiction of IIA tests, we also estimated multinomial probit which relaxes the IIA assumption. The results are very consistent with the multinomial logit estimates. We presented the multinomial logit results because our purpose is to understand the discrete production choice behavior of cities which is best represented by discrete choice model like multinomial logit.

terms of the coefficients are statistically significant. There seems to be a tendency that with low level of asset specificity, cities are more likely to follow cooperative provision and nongovernmental provision over direct production; but such a tendency decreases as asset specificity gets higher.

Measurement difficulty, on the other hand, depicted different scenario. While the likelihood of relative risk of choosing cooperative provision over direct provision follow concave relation (decreasing likelihood of cooperative provision with increase in measurement difficulty), the odds ratio of preferring nongovernmental provision over direct provision follow convex relation (increasing likelihood of nongovernmental provision over direct provision with the increase in measurement difficulty). When transaction risks are high with the increase in measurement difficulty, one would generally expect decreasing probability of nongovernmental provision over direct delivery (or concave relationship). But the observation of convex relation between nongovernmental mode of production over direct provision and measurement difficulty may point to a situation where the transaction costs associated with internal production relative to non-governmental provision get higher with the increase in measurement difficulty. As a result, cities' preference for nongovernmental mode over direct provision may be higher with increasing level of measurement difficulty – a phenomenon that needs to be explored for further verification.

#### *Social networks and production modes*

Social relations as measured by cities' membership in council of governments does not seem to affect the likelihood of choosing either outside production mode over

direct provision. Having a city executive with an MPA degree and having a larger number of ICMA members working for the jurisdiction also did not influence the production choice behavior. Finally, the variable measuring social ties through a professional association (manager is an ICMA member) is statistically significant, but counter to our prediction, city with managers who are ICMA members are *less likely*, rather than more likely to engage in interlocal service delivery. Not only does this finding contradict theory, it also contradicts previous evidence (Morgan et al, 2007). We speculate on possible explanations for this unexpected finding in the concluding section of this paper. These findings fail to confirm the general expectation of social embeddedness hypothesis which suggests that social relations promote exchange of information and build trust among partners resulting into increased outsourcing either through cooperative or nongovernmental provision. Although the reasons for such indeterminate effect of network variables are uncertain, it may be possible that these proxy variables did not capture the degree of interaction between transacting cities. Measuring simply the presence or absence of social relations was perhaps not enough to have significant effect on production choices.

#### *Other predictors and production modes*

With respect to city characteristics, cities with council-manager form of government rather than that of mayor-council cities were found to be more likely to choose nongovernmental delivery over direct provision. This is consistent with the idea that council-manger form of governments is considered to be more efficient and, therefore, choose market delivery over internal production. The effect of council-manager

form of government on the relative risk of choosing nongovernmental provision over direct provision is 1.42 holding all other predictors constant at their means. In terms of marginal effect, a move from mayor-council form to council-manager form of government increases the probability of choosing nongovernmental over direct provision by 3 percent.

Turning to the proximity variable, cities bordering other jurisdictions are more likely to seek cooperative service provision over direct provision. Such likelihood is about 1 percent higher for bordering cities relative to non-bordering cities. Density of local governments, on the other hand, increases the probability (although small) of choosing nongovernmental provision over direct production. It may be possible that as the group size gets bigger, the transaction cost of decision making for cooperative provision may become higher (Olson 1965), therefore cities turn toward nongovernmental provision over direct production.

The demand for services reflected by per capita income of residents and growth in population found to have more likelihood of cooperative delivery and nongovernmental provision over direct provision, respectively. While an increase in per capita income (or ability to pay) increases the likelihood of cooperative provision over direct supply, growth in population increases the likelihood of nongovernmental provision over direct production. Such increased probability is about 8 percent for cooperative provision and about 0.05 percent for nongovernmental provision. With increase in per capita income, residents may be more concerned about the quality of services for which they perhaps turn to their peers rather than to private market where transaction cost of contract monitoring is high.

Cities facing fiscal pressure as measured by taxable capacity and extra millage decrease the likelihood of both cooperative provision and nongovernmental supply over direct production. An increase in taxable capacity and extra millage means greater fiscal ability to produce services internally and, therefore, less need for outsourcing either through market or through other governments. Cities are more likely to search for cooperative or nongovernmental forms of service provision when fiscal capacity declines. The likelihood of such a decline in probability associated with a unit increase in taxable capacity ranges from 2 percent to 6 percent. For example, with an increase in taxable capacity, the likelihood of decline in nongovernmental provision over direct supply would be around 6 percent.

Finally, existing practice of service provision also affect the likelihood of cities choosing particular mode of production. Generally, cities are likely to choose the same production mode to that of existing practice. The results show that when cities provide increased percentage of services through direct provision, the likelihood of cooperative supply or non-governmental provision declines. Similarly, when increased percentage of services provided through cooperation with other governments, the likelihood of cooperative provision over direct supply was found to have increased whereas the probability of nongovernmental provision over direct supply decreased. Likewise, increased percentage services provided through private supply lead to increased likelihood of choosing nongovernmental provision over direct production. Such a likelihood is consistent with general expectation although the marginal effect is rather small, ranging from 0.02 percent to 0.04 percent.

## Conclusions

The purpose of our study was to test a model of municipal service production choices, through the analytic frame of Institutional Collective Action. This approach affords us the opportunity to join rational choice theories of transaction costs with institutional theories suggesting that norms, values, and rules instilled by professions, disciplines, and networks, both contribute to local government service production choices.

While our results are preliminary, we find that transaction cost characteristics of asset specificity and service measurability are robust determinants of sector choice when cities opt for alternative service delivery. However, we find less support for the influence of social networks. While there are no obvious explanations for these null findings, one possibility is that our measures are inadequate for capturing dynamic phenomena such as networks and social exchange. As we noted earlier, our measure captures only the presence or absence of social network ties, rather than the degree of interaction between transacting cities, which is perhaps not a robust enough measure to have a significant effect on production choices. What other sorts of networks do institutional actors engage in that may help to explain service production choices? This disconnect between theory, previous research, and our social network findings presents many prospects for future research. Subsequent empirical tests of the effects of social exchange on service production choices might seek to identify and test more refined measures of social network ties.

What is most curious about our findings is that cities with a manager who is a member of ICMA are statistically *less* likely to use interlocal service arrangements than

they are to engage private sector suppliers. There are two possible explanations for this. One is that the administrative values of efficiency outweighs the administrative values of cooperation and long-range planning in city managers' calculus of which type of supplier to engage. City managers may act as public entrepreneurs by championing the cause of contracting with their council in an effort reduce municipal spending. Stein (1990) for example, has suggested that city managers may pursue outcomes of cost-savings or improved service quality through alternative service delivery--outcomes for which they can claim credit and help to facilitate career advancement. Further evidence by Ruhil et al (1999) finds that city managers are the key catalysts in the move to service contracting among cities that have opted to contract out for services.

A second explanation is one of path dependence. Once cities have begun contracting with the private sector, they may simply prefer to stick with their chosen provider rather than face the transaction risk of shifting to a new provider. Work by Joassart-Marcelli and Musso (2005) demonstrates that council-manager cities contracted out more services to the private sector than mayor-council cities, and most did not change service providers over the entire fifteen year period studied by these authors. Indeed, the findings we present here confirm that cities' past trend of sector reliance is a strong predictor in influencing the likelihood of whether they will engage another government or a private supplier in the future. Our findings with regard to form of government also confirm Joassart-Marcelli and Musso's (2005) evidence that council-manager governments are more likely to choose private sector suppliers relative to another government as the supplier. Of course, this may be because cities contract with private firms at higher rates than they do with other governments—18% versus 16%,

respectively (Morgan et al, 2007; Warner and Hefetz, 2004). This finding does not negate the fact that council-manager forms are also more likely to engage in interlocal contracting more than mayor-council cities (Morgan and Hirlinger, 1991; Krueger and McGuire, 2005), it simply means they are more likely to contract with a private supplier *relative to* another government.

Despite our findings, theory and previous empirical work emphasize that trust matters. Theories of institutions, networks, and cooperation suggest that trust plays a critical role in the decision to engage to an external supplier for public services. Moreover, empirical evidence confirms this. A recent survey of local officials conducted by the ICMA indicates that the strongest predictor of outsourcing government services is the level of trust local officials have in the performance and reputation of the contractor (Fernandez and Rainey, 2004). The questions for future research are how to best empirically capture institutional actors' levels of trust in various forms of external suppliers and how trust interacts with other explanations in differentiating local officials' sector choice.

Our findings also comport with previous research demonstrating that local fiscal conditions shape decisions to employ alternative service delivery methods (LeRoux and Carr, 2007; Brown and Potoski, 2003; Ferris and Graddy, 1986; Sonenblum et al, 1977), so it may be important to examine in future work how budget capacity and fiscal characteristics of the city interact with other explanatory variables. Perhaps membership in a council of government makes no difference for choice of service production arrangement when cities are relatively well off, but maybe these networks become more important for finding prospective cooperation partners when the city is experiencing high

levels of fiscal stress. When cities are more fiscally stressed, do they rely on their networks differently than they would in the absence of fiscal stress? This is an empirical question that might be explored in subsequent tests.

Finally, our findings with regard to shared borders and service production choices are quite interesting and point to many questions for further analysis. Previous studies of interlocal cooperation find that local governments situated in metropolitan areas are more likely to contract with one another because they have ready access to large numbers of potential suppliers (Morgan and Hirlinger, 1991). Post (2004) has argued that this logic is incomplete (2004). Instead, she demonstrated that interlocal service cooperation increases in proportion to geographic density (fragmentation) (Post, 2002). Brown and Potoski (2003) also find that location in a metropolitan area increases interlocal service production.

However, we capture both fragmentation as well as access to prospective local government partners, with the assumption that access to market supply (private markets are most competitive in metro areas) and governmental supply (not limited to metro areas) may shape production choices differently. Indeed, we found that fragmentation increases the choice to use private suppliers over another government, but as the number of adjacent borders local governments share with other governments increases, their preference for service production shifts to interlocal contracting with another government versus contracting with a private supplier. This important finding builds on the existing literature and should be explored in future research; particularly in light of arguments that public problems are becoming increasingly transjurisdictional, and more difficult to manage from within the confines of local jurisdictional borders.

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**Table 1:  
Descriptive Statistics of Independent Variables**

<b>Variables</b>	<b>Obs.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
Asset specificity	4687	3.16	0.65	2.14	4.19
Asset specificity^2	4687	10.43	4.19	4.58	17.55
Measuring difficulty	4687	2.58	0.47	1.53	3.6
Measuring difficulty^2	4687	6.91	2.51	2.34	12.96
Council of government member	4687	0.71	0.45	0	1
ICMA member	4687	0.66	0.47	0	1
Number of ICMA member in a jurisdiction	4687	0.93	0.86	0	1
City manager with MPA degree	4687	0.59	0.49	0	1
Council-manager government	4687	0.65	0.47	0	1
Number of bordering jurisdiction in a county	4867	3.06	1.94	0	14
Density of local governments	4687	10.63	3.54	2.08	15.96
City age in years	4687	106.08	42.05	22	205
Population growth	4687	7.99	39.89	-12.35	387.24
Log city size (population)	4687	9.37	1.34	5.78	13.76
Log per capita income	4687	10.05	0.36	9.36	11.56
Growth in intergovernmental grants	4687	34.15	84.37	-97.76	728.08
Total taxable capacity	4687	19.63	1.39	16.37	22.86
Log of total extra votage millage (2004)	4386	1.27	0.92	-1.76	2.99
% of services provided directly	4343	52.63	11.10	23.00	75.22
% of services provided through market	4343	18.61	7.55	0	37.16
% of service provided through other govts	4214	27.25	10.87	7.41	54.21

**Table 2:  
Cross-Tabulation of Production Modes by Categorical Independent Variables**

<b>Categorical variables</b>	<b>Production modes</b>		
	<b>Direct provision</b>	<b>Cooperative provision w/other governments</b>	<b>Nongovernmental provision</b>
City is a member of council of governments	1824 (72.3)	482 (68.5)	367 (68.3)
City is a member of ICMA	1715 (67.9)	455 (64.6)	347 (64.6)
City executive has a MPA degree	1003 (57.5)	297 (64.4)	212 (60.2)
City with council-manager form of government	1633 (64.7)	473 (67.2)	359 (66.8)
Total sample of production modes	2524 (100.0)	704 (100.0)	537 (100.0)

Note: these cases are out of observed cases of 1744 for direct provision, 461 for cooperation with other governments, and 352 for non-governmental provision.

Figures in parentheses are percentage of total sample in each category of production mode.

**Table 3:  
Multinomial logit estimates of production modes for Michigan cities**

Variables	Cooperative provision with other govts.		Nongovernmental provision	
	Coef.	Std. Err	Coef.	Std. Err.
Asset specificity	2.99***	1.27	3.93**	1.98
Asset specificity^2	-0.26	0.20	-0.44	0.29
Measuring difficulty	10.64***	2.06	-5.13***	1.06
Measuring difficulty^2	-1.88***	0.36	1.01***	0.17
Council of government member	0.01	0.14	0.04	0.12
ICMA member	-0.55*	0.30	0.13	0.25
Number of ICMA member in a jurisdiction	0.12	0.10	0.01	0.10
City manager with MPA degree	0.16	0.15	-0.05	0.12
Council-manager government	0.07	0.23	0.35**	0.18
Number of bordering jurisdictions	0.11***	0.04	0.07	0.05
Density of local governments	-0.01	0.03	0.04***	0.02
City age in years	-0.0015	0.002	-0.002	0.002
Population growth	0.0012	0.003	0.005	0.002
Log city size (population)	0.32	0.35	0.54	0.31
Log per capita income	0.81**	0.40	0.55	0.36
Growth in intergovernmental grants	0.00047	0.0003	-0.0006	0.0004
Log of total taxable capacity	-0.54*	0.28	-0.65***	0.26
Log of total extra votage millage (2004)	-0.19	0.12	-0.18**	0.09
% of services provided directly	-0.04***	0.02	-0.04***	0.01
% of services provided through market	0.02	0.01	0.04***	0.01
% of service provided through other govts	0.01*	0.01	-0.02***	0.008
Constant	-21.20***	4.55	0.45	3.23
Pseudo R^2	0.14		0.14	
% correctly predicted	0.69			
Number of observations	1717			
Log pseudolikelihood	-1243.81			

Std. Err. adjusted for city cluster

**Table 4:  
Relative Risk Ratio and Marginal Effect on Probability of Production Choices**

Variables	Cooperative provision with other governments		Nongovernmental provision	
	Relative risk ratio	Marginal effect	Relative risk ratio	Marginal effect
Asset specificity	19.88***	0.27	51.06**	0.38
Asset specificity^2	0.77	-0.02	0.64	-0.04
Measurement difficulty	41989.19***	1.26	0.006***	-0.73
Measurement difficulty^2	0.15***	-0.22	2.75***	0.14
ICMA member	0.57*	-0.08		
Council-manager government			1.42**	0.03
Number of bordering jurisdiction	1.11**	0.01		
Density of local governments			1.04**	0.004
% change in population			1.004*	0.0005
Log per capita income	2.25**	0.08		
Log of total taxable capacity	0.58*	-0.05	0.52**	-0.06
Log of total extra votage millage (2004)			0.83**	-0.02
% of services provided directly	0.95***	-0.004	0.96***	-0.004
% of services provided through market			1.04***	0.004
% of service provided through other govts	1.01*	0.002	0.98***	-0.002

**Table 5:**  
**Multinomial probit estimates of production modes for Michigan cities**

Variable	Cooperative provision with other govts.		Nongovernmental provision	
	Coef.	Std. Err.	Coef.	Std. Err.
Asset specificity	2.29**	0.98	2.38*	1.26
Asset specificity^2	-0.19	0.15	-0.24	0.18
Measuring difficulty	8.02***	1.43	-3.65***	0.73
Measuring difficulty^2	-1.41***	0.25	0.74***	0.12
Council of government member	0.01	0.11	0.02	0.09
ICMA member	-0.45**	0.22	0.10	0.19
Number of ICMA member in a jurisdiction	0.10	0.07	0.01	0.07
City manager with MPA degree	0.11	0.11	-0.02	0.09
Council-manager government	0.10	0.17	0.22	0.13
Number of bordering jurisdictions	0.07**	0.03	0.04	0.03
Density of local governments	-0.009	0.02	0.02**	0.01
City age in years	-0.001	0.001	-0.002	0.001
Population growth	0.0003	0.002	0.004**	0.002
Log city size (population)	0.21	0.26	0.46**	0.24
Log per capita income	0.59**	0.29	0.50**	0.27
Growth in intergovernmental grants	0.0003	0.0002	-0.0004	0.0003
Log of total taxable capacity	-0.38*	0.21	-0.52***	0.19
Log of total extra voted millage (2004)	-0.16*	0.10	-0.12**	0.06
% of services provided directly	-0.03**	0.01	-0.03***	0.01
% of services provided through market	0.01	0.01	0.03***	0.008
% of service provided through other govts	0.01	0.007	-0.01***	0.005
Constant	-16.12***	3.45	0.24	2.46
Pseudo R^2				
% correctly predicted	0.69			
Number of observations	1717			
Log pseudolikelihood	-1240.03			

Std. error adjusted for city cluster

## APPENDIX 1

<b>Service (Citizen's Research Council, 2005)</b>	<b>Service (Brown and Potoski, 2003)</b>
1. Animal Control	Animal Control
2. Ambulance/EMS (Fire)	Amb, EMS (Scores Combined)
3. Building Security	Building Security
4. Street (Patrol/Emergency Response)	Crime Prevention/Patrol
5. Non-Residential (Solid Waste Collection)	Commercial Solid Waste Collection
6. Vehicle Maintenance (Fleet Services)	Heavy Equipmt Vehicle Fleet Maint
7. Mosquito/Moth/Insect Control	Insect/Rodent Control
8. Cemetery Services	Maintenance/Admin of Cemeteries
9. Airports	Operation of Airports
10. Public Bus System	Operation of Bus Transit Systems
11. Hospitals/Clinics	Operation/Management of Hospitals
12. Meters (Parking Services)	Parking Meter Maint and Collection
13. Payroll/Benefits	Payroll
14. 911/Radio Communications (Police)	Police/Fire Communications
15. Jails	Prisons/Jails
16. Museum/Art Gallery	Operation of Museums
17. Library	Operation of Libraries
18. Stadiums and Arenas	Operation of Conv Centers and Auds
19. Residential (Solid Waste Collection)	Residential (Solid Waste Collection)
20. Water Distribution	Water Distribution
21. Water Treatment	Water Treatment
22. Property Assessing	Tax Assessing
23. Training/Professional Development (HR)	Personnel Services
24. Attorney/Legal Services	Legal Services
25. Lots and Structures (Parking Services)	Operation of Parking Lots, Garages
26. Community/Recreation Centers	Recreation Facility Operation/Maint
27. Gas (Utility)	Gas Utility Operation and Mgmnt
28. Electric (Utility)	Electricity Utility Management
29. Signs and Signals (Roads and Bridges)	Traffic Signal Installation, Maint
30. Records/Archives	Title Records/Plat Map Maintenance
31. Tax Collection	Tax Bill Processing
32. Building Inspection	Inspection/Code Enforcement
33. Code Enforcement	Inspection/Code Enforcement
34. Fire Fighting/Rescue	Fire Prevention/Suppression
35. Roads/Bridges Maintenance	Street Repair
36. Roadside Mowing	Tree Trimming/Plantings on ROW
37. Beautification	Tree Trimming/Plantings on ROW
38. Water Meter/Billing	Utility Meter Readings
39. Landfill/Resource Recovery	Solid Waste Disposal
40. Sewage Collection	Sewage Collection & Treatment
41. Sewage Treatment	Sewage Collection & Treatment
42. Senior Center	Programs for the Elderly
43. Roads/Bridges Winter Maintenance	Snowplowing/Sanding

NOTES: We matched the services in our data, the CRC survey to the services that Brown and Potoski calculated asset specificity and service measurability scores in their 2003 JPART article (see table 1). In a few instances, the Brown and Potoski scores combined services that are reported separately in our data, the CRC survey. In these instances, (items 32-33, 36-37, and 40-41), we use the same specificity and measurability scores for both CRC services. For ambulance and EMS services, the CRC survey combines these two services that are reported separately by Brown and Potoski. In this case, we averaged the scores reported by Brown and Potoski for each service.