

Institutional Ties, Transaction Costs, and External Service Production

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Analyses of local government contracting increasingly focus on understanding how the transaction costs created by service attributes limit opportunities for external service production. However, the institutional collective action framework suggests that networks among local government actors help to offset these costs for intergovernmental contracting decisions. We use data describing service production arrangements of cities in Michigan to examine the proposition that service production decisions are conditioned by the communication networks created through institutional linkages in addition to the transaction characteristics of services. We examine three different production options: (1) internal production, (2) joint or complete contracting with another government, and (3) production by a private or nonprofit organization, and find strong support for the expected role of transaction costs in these production choices. We also find that some types of networks created by institutions increase the likelihood that local governments will rely on intergovernmental service arrangements.

Keywords: *transaction costs; institutional collective action; contracting; municipal governments; social network; administrative conjunction; intergovernmental; multinomial logit*

In political science scholarship, a classic distinction has existed between rational choice theories and institutional approaches. However, in the context of studying local government service delivery, Brown and Potoski

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(2003, 465) see these two theoretical approaches as providing complementary explanations for service production decisions, declaring, "Institutional theory serves as a compelling and useful complement to transaction cost theory. A framework based entirely on purposive rationality, even bounded rationality, is incomplete without complements drawn from institutional theory." Their work, published in a series of articles (Brown and Potoski 2003, 2004, 2005; Brown, Potoski, and Van Slyke 2006), significantly advanced our understanding of how local government officials balance the expected benefits of services contracting against the transaction costs of different production arrangements.

We believe the institutional collective action (ICA) framework offers an opportunity to further advance our understanding of service production decisions by providing a theoretical framework for bridging rational choice and institutional approaches (Feiock and Scholz forthcoming). Within this framework, networks of local government officials play an important role in reducing transaction costs and in encouraging voluntary cooperative service arrangements to develop. Moreover, some types of network participation may help to offset risks created by service transactions with highly specific assets and measurement difficulty. 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 (Granovetter 1985). Local government officials may be linked through personal relationships, professional associations, regional councils, and other forms of networks that present opportunities for information sharing that may increase the likelihood of interlocal service cooperation.

ICA combines institutional, transaction-cost, and social-network explanations for local government service production decisions. In using 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. While a single-state analysis has limitations in generalizability, it is also advantageous in several 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 (Joassart-Marcelli and Musso 2005). Moreover, it provides the opportunity for in-depth study of phenomena such as the professional networks of local government officials that are difficult to capture across states.

In the next section, we discuss the theory and empirical research on networks and examine their links to the ICA framework, followed by a brief survey of the literature on transaction characteristics of services. Subsequent

sections present our analysis and discussion of external production decisions for 43 services in 109 cities in Michigan. Our data measure service arrangements in these cities as of 2005. Our analysis investigates the effects of transaction costs, network participation, and several measures of city characteristics on choices among direct provision, intergovernmental contracting, and private or nonprofit providers. We find strong support for the expected effects of transaction costs and modest support for the influence of professional values on the use of external production arrangements.

Institutional Ties and Interlocal Cooperation

Frederickson and Smith (2003, 71) have argued, "institutional theory has the particularly useful capacity to describe favorably the linkages, networks, and couplings of institutions coping with fragmentation." Networks are of critical importance to our study, because they are believed to be both a precondition to institutional collective action (Feiock 2004, 2007; Frederickson and Smith 2003; Cigler 1999) and to arise from it (Feiock, Steinacker, and Park 2008; Frederickson and Smith 2003; Thurmaier and Wood 2002; Frederickson 1999). Some types of networks arising from institutions help to mitigate transactions costs by fostering increased trust and reciprocity among local government actors, while other types of institutional linkages are created when local government actors are bound by common knowledge, share a common information source, or are united by shared professional norms, values, and practices.

Opportunities for repeated face-to-face interactions among institutional actors may be especially important for norms of trust and reciprocity to develop at levels required for cooperative agreements to form (Axelrod 1984). Councils of government may serve as important organizational vehicles for these types of social interactions to occur. The social ties created through these interactions may be sufficient to reduce transaction costs and permit voluntary cooperative service arrangements to emerge.

For example, Lubell, Schneider, Scholz, and Mete (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, Freshwater, and Rupasingha (2002) found that when a neutral facilitator is involved in facilitating or brokering the cooperative arrangements (such as a council of governments [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.

Other forms of institutional linkages do not provide the same types of opportunities for routine personal contact that membership in a local or regional institution offers, yet they unite members in a collective system of beliefs and values that result in similar behavior patterns. Disciplines and professions both 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 master of public administration (MPA) degree that may make them more inclined toward collective problem solving.

Academic disciplines represent normative learning institutions, or a type of institutional linkage through which members are socialized into a common set of professional norms, values, and beliefs. Frederickson argued that disciplines function as institutions, imparting a shared system of norms and values among members (Frederickson 1999). He suggests that in the absence of coercive governmental mandates, "administrative conjunctions" and "epistemic communities" serve as mechanisms through which cities might cope with the problems of jurisdictional fragmentation. Acknowledging the work of Ernst B. Haas (1964) and his son Peter Haas (1990, 1992), Frederickson described how one facet of the administrative-conjunction theory of metropolitan governance theory is built upon the notion of "epistemic communities," which Hass (1992, 3) describes as "a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy relevant knowledge within that domain or issue-area." Frederickson (1999, 707) explains that professionals who operate "within epistemic communities have a shared set of normative beliefs, causal beliefs, notions of validity and 'truth,' and a common set of practices." Frederickson's contention is "the power to carry out interagency conjunction is based on the professional's authoritative claim to knowledge, not on formal authority" (1999, 708).

Thus, professional associations represent another type of network, or institutional linkage, that may help to promote interjurisdictional cooperation. Local government administrators who share an affiliation as members of a professional association are more likely to arrive at consensus related to "best practices" and to see the value of increased cooperation. Citing the example of the International City County Management Association, Brown and Potoski

(2003) suggested that professional associations provide a central mechanism for the diffusion of information and for the adoption of common rules and practices among members of the city management profession. Furthermore, professional associations, such as the International City County Management Association (ICMA), provide a central mechanism for the diffusion and instillation of common norms, values, rules, and practices. Thus, city administrators who are members of professional associations and who hold a professional public administration degree may be more likely to use interlocal agreements, based on common information about best practices and on common socialization toward values of efficiency and effectiveness.

Service-Specific Attributes, Transaction Costs, and Production Decisions

Local governance scholars have long noted the potential of voluntary self-governing arrangements, such as interlocal service agreements, for coping with problems arising from political fragmentation (Feiock 2004, 2007; Krueger and McGuire 2005; Oakerson 1999; Oakerson and Parks 1988; Parks and Oakerson 1989, 2000; Post 2004; Savitch and Vogel 2000; Wood 2006). One potential problem inherent in fragmentation is that of inefficient service production. Although public-choice scholars have long argued that jurisdictional fragmentation creates economic efficiencies in the pricing of local public goods (Oakerson 1999), fragmentation may also contribute to inefficiencies in the delivery of some types of services. Independent service provision decisions made by jurisdictions acting alone may hinder the ability of government officials to take advantage of opportunities to reduce the average cost of public services to their residents. Moreover, multiple local providers may result in costly duplication of effort across neighboring jurisdictions. As local public officials search for ways to economize, they may seek out alternatives to direct, in-house production of services through arrangements involving external suppliers.

However, city officials must weigh the anticipated efficiency gains of external service production against the risk the external supplier will fail to fulfill the terms of the agreement and the costs involved in minimizing this risk. Therefore, local officials must choose between producing services in-house, which may result in unnecessarily high production costs, and relying on another unit of government or on a private supplier to produce the service, which carries the risk of uncertainty and high transaction costs. 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 are shaped by service characteristics that generate transaction costs and by the risks these costs present to decision makers (Brierly 2004; Brown and Potoski 2003; Shrestha and Feiock 2004; Williamson 1981, 1991).

Transaction costs are essentially the management costs (planning, adapting, monitoring, etc.) of providing a public service. These management costs exist whether the service is produced entirely in-house or through some manner of external provision, but these costs tend to increase significantly for external provision. External provision involves added costs from deciding among vendors and the activities required to negotiate, monitor, and enforce agreements. This is because of the “limited information, uncertainty about the future, and the prospect that people or organizations behave opportunistically in their interactions with others” (Brown and Potoski 2005, 328).

How much these transaction costs rise when the service is provided completely or jointly with another organization depends upon several factors, including general characteristics of the service itself. Two service-specific characteristics frequently linked to service production decisions in the contracting literature are the use of specialized investments and difficulties in measuring and monitoring service quality (Williamson 1981). The concept of asset specificity refers to whether specialized investments are needed to deliver the good or service. The second dimension, measurement difficulty, indicates the ease to which performance measures can be identified and the extent to which vendors can be expected to meet all their obligations in delivering the service.

Asset Specificity

Highly asset-specific services are difficult to adapt to other uses, and therefore, only a few vendors will likely be willing to provide the service in the local market. Sellers of these services make specialized investments and cannot easily use them to provide other services. Brown and Potoski (2005, 329) suggest the following examples of specialized investments:

- the use of a specific location that is only moveable at great cost;
- the use of highly specialized human skills that cannot be put to work for other purposes;
- the use of specialized tools or a complex system designed for a single purpose; and
- the requirement that the service reach the user within a relatively limited period of time or the quality of the service greatly diminishes.

Why do high levels of asset specificity increase the costs of managing service arrangements with external providers? Asset specificity creates significant risks for both buyers and sellers and works against the creation of a competitive market in the service. Sellers are vulnerable to decreases in demand for the service because they must make investments in assets that are not easily deployable to other uses. The risk to the supplier of losing customers is great, and as a practical matter, only a few suppliers can survive in the same market. This reality makes buyers vulnerable too, because few sellers are willing to provide the service in the face of this risk. Thus, the specialized investments necessary to provide the service help to create monopolistic conditions that limit viable competitors and put buyers at risk of opportunistic behavior by sellers. This has two direct implications for the cost savings that can be expected from intergovernmental cooperation on highly asset-specific services. First, weakly competitive markets may not produce the production costs savings expected.¹ Vendors can be expected to behave opportunistically by raising prices or reducing service quality because the risk of penalty is minimal. Second, ensuring the contractor does not exploit the opportunity to behave opportunistically requires significant investments in contract management. These activities may include frequent communication with the vendor, regular and extensive monitoring of vendor performance, and the periodic enforcement of contractual penalties (Brown, Potoski, and Van Slyke 2006; LeRoux 2007). These added costs reduce—and may completely offset—any production cost savings gained through intergovernmental cooperation.²

This suggests that local government officials will opt for in-house production of services that are highly asset specific. However, highly asset-specific services also provide incentives for external production because these services often require large initial capital investments and have substantial fixed operating costs. For services with these cost characteristics, the savings from reducing production costs may easily exceed the added transaction costs because of the problems of asset specificity.³ Previous work has confirmed the proposition that government officials are more likely to rely on external production for services that are highly asset specific (Brown and Potoski 2003; Shrestha and Feiock 2004).

Measurement Difficulty

The concept of measurement difficulty refers to the ability of the contracting organization to evaluate vendor performance or to effectively monitor how the vendor delivers the service. A service is difficult to measure when

neither the outcomes to be achieved nor the activities to be performed in delivering the service are easily identifiable. Easily measured services have readily identifiable performance metrics that accurately represent the outputs and/or outcomes of service quantity and quality (Brown and Potoski 2005). For other services, however, it is necessary to create mechanisms that can be used to effectively measure, monitor, and manage what the vendor does. It is far less costly, for example, to measure the quality of trash collection than it is to assess the delivery of mental health care services. Developing a contract for the latter services is more costly because expected levels of output often cannot be established in advance, and performance of these types of functions requires substantial discretion, making it difficult to clearly specify performance expectations in contract language (LeRoux 2007).

How does measurement difficulty increase the costs of providing public services with another organization? Services that are difficult to measure generate serious information asymmetries between contracting organizations and vendors. These asymmetries mean the governments cannot easily assess the quality of services they are receiving. Effective monitoring may require the development of expensive evaluation systems and the use of complex—and costly—contracts. In these instances, it is more costly to deliver these services with external providers. These added costs reduce and may even completely offset any savings in production costs gained using an external provider. Some analysts suggest the risks from measurement difficulty can be reduced if other governments or nonprofit providers are used instead of for-profit contractors (Jang 2006; Jang and Feiock forthcoming). These organizations are expected to have cultures more closely in line with the government and be less likely to behave opportunistically than for-profit organizations.

When the measurement difficulty of a service is low, external production is more likely. The savings in production costs from external production are likely greater than the cost of monitoring these suppliers. Government officials are likely to rely on private and nonprofit contractors when measurement difficulty is relatively low (Clinger-mayer and Feiock 1997; Brown and Potoski 2003, 2005). This strategy is attributed to the fact that non-governmental producers usually operate in more competitive markets than governmental suppliers, increasing the likelihood of greater cost savings than when governments are used. However, as measurement difficulty increases, the cost of monitoring of these providers increases relative to the gains achieved from a competitive market. When measuring service quality

is more difficult, cities will turn to their governmental counterparts because monitoring and enforcement costs will be lower as a result of the expectation of less opportunistic behavior by another government in comparison to a private provider (Brown and Potoski 2003; Lamothe, Lamothe, and Feiock 2008). When measurement difficulty becomes very high, city officials are expected to opt for direct production rather than spend scarce resources for costly monitoring and enforcement of a contracting agreement. Internal management can significantly reduce negotiation, monitoring, or enforcement costs, as these become intraorganizational rather than interorganizational issues.

Analysis

We examine the effects of network participation and transaction costs on service production decisions in 109 city governments in Michigan in 2005.⁴ Our dependent variable is a trichotomous measure capturing in-house production, intergovernmental arrangements (complete or partial production of the service with or by another government), and nongovernmental production (service performed by a private for-profit or nonprofit organization). Table 1 displays the full distribution of provision and production choices for each of the 43 services examined.⁵ The unit of analysis in this study is not the city but the individual services for which provision and production choices must be made. Our sample yields 4,687 services (109 cities by 43 services) for which these choices were made. These cities opted not to provide or contract for 922 of these services; our analysis focuses on the production choices made for the 3,765 services they do provide.

Studies of contracting in the United States have shown that municipalities typically provide services in-house (Brown and Potoski 2003; Lamothe, Lamothe, and Feiock forthcoming), and Table 1 confirms that this pattern holds for these 43 services in Michigan's city governments. Direct provision is the dominant mode of production, with 67% of the services examined provided in-house. The external modes are used far less frequently; nongovernmental providers are used for 14% of the services, and other governments for 19%.

Explanatory Variables

Following the ICA framework, we propose that participation in networks, the transaction characteristics of services, the demographic and institutional

Table 1
Provision and Production Choices for Services Examined

Service	Provision	Production Decision		
	Not Provided or Contracted	Direct Provision	Another Government	Nongovernmental Provider
Airports	77 (71%)	7 (6%)	25 (23%)	0 (0%)
Ambulance/emergency medical services	7 (6%)	56 (51%)	21 (19%)	25 (23%)
Animal control	8 (7%)	45 (41%)	51 (47%)	5 (5%)
Attorney/legal services	6 (6%)	33 (30%)	0 (0%)	70 (64%)
Beautification of sidewalks/medians	4 (4%)	100 (92%)	5 (5%)	0 (0%)
Building inspection	0 (0%)	88 (81%)	7 (6%)	14 (13%)
Building security	23 (21%)	81 (74%)	2 (2%)	3 (3%)
Cemetery services	53 (49%)	51 (47%)	2 (2%)	3 (3%)
Code enforcement	0 (0%)	102 (94%)	3 (3%)	4 (4%)
Community/recreation center	33 (30%)	64 (59%)	11 (10%)	1 (1%)
Electric utility	50 (46%)	8 (7%)	3 (3%)	48 (44%)
Fire fighting/rescue	0 (0%)	88 (81%)	21 (19%)	0 (0%)
Gas utility	47 (43%)	3 (3%)	2 (2%)	57 (52%)
Hospitals/clinics	77 (71%)	5 (5%)	6 (6%)	21 (19%)
Jails	1 (1%)	106 (97%)	2 (2%)	0 (0%)
Landfill/resource recovery	35 (32%)	9 (8%)	25 (23%)	40 (37%)
Library	18 (17%)	48 (44%)	42 (39%)	1 (1%)
Mosquito/moth/insect control	34 (31%)	48 (44%)	15 (14%)	12 (11%)
Museum/art gallery	61 (56%)	23 (21%)	14 (13%)	11 (10%)
911/radio communications	1 (1%)	53 (49%)	55 (51%)	0 (0%)
Parking lots and structures	32 (29%)	75 (69%)	2 (2%)	0 (0%)
Parking meters	85 (78%)	23 (21%)	0 (0%)	1 (0%)
Payroll/benefits	2 (2%)	103 (95%)	1 (1%)	3 (3%)
Property assessing	1 (1%)	77 (71%)	22 (20%)	9 (8%)
Public bus system	54 (50%)	8 (7%)	43 (39%)	4 (4%)
Records/archives	3 (3%)	106 (97%)	0 (0%)	0 (0%)
Road/bridges maintenance	2 (2%)	102 (94%)	1 (1%)	4 (4%)
Roads/bridges winter maintenance	1 (1%)	104 (96%)	1 (1%)	3 (3%)
Roadside mowing	2 (2%)	96 (88%)	2 (2%)	9 (8%)
Senior center	25 (23%)	52 (48%)	28 (26%)	4 (4%)
Sewer collection	2 (2%)	85 (78%)	21 (19%)	1 (1%)
Sewer treatment	2 (2%)	43 (39%)	62 (57%)	2 (2%)
Solid waste collection (nonresidential)	43 (39%)	11 (10%)	2 (2%)	53 (49%)
Solid waste collection (residential)	15 (14%)	20 (18%)	5 (5%)	69 (73%)
Stadiums and arenas	87 (79%)	12 (11%)	10 (9%)	0 (0%)
Street signs and traffic signals	1 (1%)	89 (82%)	17 (16%)	2 (2%)
Street patrol/ emergency response	12 (11%)	19 (17%)	78 (72%)	0 (0%)
Tax collection	1 (1%)	104 (95%)	2 (2%)	2 (2%)
Training/professional development	7 (6%)	42 (39%)	22 (20%)	38 (35%)
Water distribution	1 (1%)	90 (83%)	18 (17%)	0 (0%)
Water meter/billing	5 (5%)	96 (88%)	7 (6%)	1 (1%)
Water treatment	4 (4%)	48 (44%)	55 (51%)	2 (2%)
Vehicle (fleet) maintenance	0 (0%)	101 (93%)	0 (0%)	8 (7%)
Total: Production & provision (<i>N</i> = 4,687)	922 (20%)	2,524 (54%)	704 (15%)	537 (12%)
Total: Production modes only (<i>N</i> = 3,815)	—	2,524 (67%)	704 (19%)	537 (12%)

Table 2
Measures and Descriptive Statistics for Independent Variables

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
City is COG member (1 = Yes)	4,687	0.7890	0.910	0.000	1.000
Professional network index (1–3; 3 = <i>Strong</i>)	4,687	1.230	1.046	0.000	3.000
Asset specificity (1–5; 5 = <i>High</i>)	4,687	3.163	0.655	2.140	4.190
Asset specificity squared	4,687	10.435	4.193	4.580	17.556
Measurement difficulty (1–5; 5 = <i>Difficult</i>)	4,687	2.587	0.468	1.530	3.600
Measurement difficulty squared	4,687	6.912	2.509	2.341	12.960
City has council-manager form (1 = Yes)	4,687	0.651	0.477	0.000	1.000
City population (log)	4,687	9.377	1.344	5.787	13.766
City population growth (% change, 1990–2000)	4,687	7.000	39.894	–12.348	387.245
Total city tax revenues (log)	4,687	15.158	1.491	9.830	19.262

Note: COG = council of governments.

characteristics of the cities themselves, and features of the local public-goods market influence production decisions. The ICA framework also includes state-level factors (e.g., laws establishing tax limits, mandated services and minimum service levels, procedures for government formation and boundary change, restrictions on interlocal contracting, etc.), but we hold these factors constant in this study by limiting our analysis to service arrangements in a single state and within a single type (city) of municipal government. In the discussion that follows, we presume that city officials prefer in-house production of services but that the aforementioned factors strongly affect the likelihood of external provision. Table 2 presents the measures and descriptive statistics for the primary independent variables.

Networks Arising from Institutional Ties

The key independent variables in this analysis are the measures of participation by city officials in two networks arising from institutional linkages. As Frederickson and Smith have stated, “institutionalism assumes that policy preferences are neither exogenous nor stable, but are molded through collective experiences, institutions, education, and particularly, professions” (2003, 71). The strength of similar educational backgrounds and membership in the same professional associations is measured through a simple additive index comprising three dichotomous measures: (1) whether or not the city’s manager has an MPA degree, (2) whether or not the city manager is a member of the ICMA, and (3) whether or not two or more city

employees are ICMA members. Affirmative responses are coded 1, and the three component measures are summed to create a measure of professional network strength. We also include a measure capturing the city's participation in an important local policy network, membership in the local COG. Participation by local government officials in these two different types of networks is expected increase reliance on intergovernmental contracting but to have no effect on the use of nongovernmental providers.

Transaction Characteristics of Public Services

The second set of explanatory variables examines two transaction characteristics expected to affect the willingness of city officials to rely on external providers. We use the indicators of asset specificity and measurement difficulty developed by Brown and Potoski for their 2003 study of local government contracting. The two characteristics are measured on a scale of 1 to 5, with 5 indicating substantial risk to the contracting government in external production because of the service's requirements for costly and nondeployable investments in infrastructure, equipment, or staff or from significant difficulties in measuring and monitoring contractor performance.⁶

The work of Brown and Potoski (2003) and Shrestha (2008) provides the basis for our expectations about how these two service attributes affect production decisions. We expect that city officials will be more likely to use external provision when asset specificity is low and turn to internal provision as asset specificity increases. Brown and Potoski conclude that governments rely on external contractors for delivery of services with high asset specificity because of the capital-intensive cost structures typical of these services. However, Shrestha (2008) offers an alternative hypothesis; he posits that the relationship between asset specificity and intergovernmental production is an inverse U shape. Local actors will be most likely to rely on other governments at an intermediate level of asset specificity because in-house production will be used for transactions with highly specific assets to reduce risk and private markets will be used for transactions with low asset specificity to maximize efficiency. Thus, Shrestha predicts that private production will be negatively related to very high levels of asset specificity. Empirical support for this relationship is found in studies of interlocal fiscal transfers among cities in Georgia (Shrestha and Feiock 2004) and the United States (Shrestha 2008). We include the square of asset specificity to assess these rival hypotheses about the nonlinear relationship between asset specificity and the use of external production.

We expect that when vendor performance can be easily measured, these services will be provided through external production mechanisms. However, city officials have a strong incentive to decrease their reliance on both modes of external production as measurement difficulty increases. Local officials turn increasingly to joint contracting arrangements for services that are somewhat difficult to measure and monitor contractor performance. When the government retains involvement in producing part of the service, it has better information about production costs and outcomes and is better positioned to monitor contractor performance (Lamothe, Lamothe, and Feiock 2008). Finally, we expect that those services that are extremely difficult to measure will be provided internally. Again, we include a squared term to assess the relationship between serious measurement difficulty and the likelihood of external production.

Our expectations for the implications of these two service attributes are discussed in terms of their influence on the choice between internal and external production modes. Goal congruence among governments means that intergovernmental contracting carries lower risks than using nongovernmental providers (Shrestha 2008; Brown and Potoski 2003) when city officials believe that nongovernmental providers are likely to act more opportunistically. We share this expectation but note an important limitation in the way our dependent variable measures the use of nongovernmental providers. The data used for this analysis combine private and nonprofit suppliers into a single category, preventing the examination of hypotheses predicting differences in reliance on these two types of nongovernmental organizations.

City Characteristics

The third set of explanatory variables measures several city characteristics that are expected to influence production choices. The first measure is the city's form of government. Council-manager cities are expected to be more open to the use of external service arrangements, whether with other governments or nongovernmental organizations (Clingermayer and Feiock 1997; Krueger and McGuire 2005). This expectation is based on the contention that professional city management emphasizes efficiency and innovation in service delivery (Carr and Karrupusamy 2008a, forthcoming; Frederickson, Johnson, and Wood 2004) and that public managers are more likely to engage in the conjunctive activities described by Frederickson (1999) than are elected officials.

Differences in the size, growth, and fiscal resources of cities are also expected to affect production decisions (LeRoux and Carr 2007; Morgan

and Hirlinger 1991). City officials are assumed to prefer in-house production but opt for external production because of fiscal pressures created by inadequate tax resources, a population insufficient for the cost-effective provision of services with high fixed costs, or budget deficits stemming from low population growth or outright decline. To this end, we include measures of city population, population growth from 1990 through 2000, and the level of tax revenues received by the city.

County Control Variables

Finally, we include a set of dichotomous measures to control for the city's home county. These measures control for variations in the local public services market in the 23 different counties included in the analysis because of factors such as the number of producers (governmental and non-governmental); historical patterns of service arrangements in the area, particularly the county's role as service provider; and the demand for public services because of population and economic growth in the region. Studies of contracting often include a measure of metropolitan area status to capture the market for local public goods; however, we contend that the county is a far better indicator of this market in most instances. We include these measures to serve as controls in the analysis and do not outline hypotheses for the differences across these counties, nor do we discuss the findings for these variables in the next section.

Findings and Discussion

The production choices are examined using multinomial logistic regression, and the findings are presented in Table 3.⁷ The analysis clusters standard errors by city because production-mode decisions are assumed to be independent across cities but not within them. The decision regarding the production mode used for a particular service is affected by the production-mode decisions made for other services provided by the city. The findings in Table 3 indicate that the change in likelihood of city officials' choosing the two external modes over the base category, in-house production, is related to this set of independent variables. The model explains 13.2% of the variation in the production modes and correctly predicts the mode selected for the service in 69% of the cases examined.

The relative risk ratio and marginal effect of the primary independent variables are presented in Table 4. The marginal effect calculations permit

Table 3
Likelihood of Michigan Cities' Relying on Outside Service Providers
Instead of Direct Provision

Independent Variable	Internal Production Versus	
	Provision with/by Other Government	Nongovernmental Provider
	Coefficient (RSE)	Coefficient (RSE)
City is COG member	0.037 (0.174)	-0.017 (0.148)
Professional network index	0.139 (0.062)**	0.071 (0.061)
Asset specificity	2.691 (0.852)***	6.382 (1.102)***
Asset specificity squared	-0.204 (0.131)	-0.830 (0.163)***
Measurement difficulty	9.543 (1.430)***	-5.390 (0.724)***
Measurement difficulty squared	-1.661 (0.243)***	1.023 (0.122)***
City has council-manager government	0.061 (0.167)	0.114 (0.155)
City population	-0.353 (0.123)***	-0.083 (0.084)
City population growth	-0.003 (0.001)***	0.002 (0.002)
Total city tax revenues	-0.028 (0.136)	-0.189 (0.075)**
City's county		
Constant	-17.764 (2.799)***	-2.573 (1.649)
Pseudo R^2	0.132	
Log pseudo likelihood	-2,808.120	
Wald Chi-square (df)	854.918 (51)***	
Percentage correctly predicted	68.8%	
Observations (services)	3,765	
Clusters (cities)	109	

Note: Multinomial logit with direct provision as the base category. Coefficients and robust standard errors for 22 county dummy variables are omitted from the table. COG = council of governments.

* $p < .01$; ** $p < .05$; *** $p < .001$; two-tailed test.

us to assess the strength of changes in these independent variables on the probability that a particular production mode will be used. Changes in the predicted probability of using each external mode are examined in terms of (1) a change in the independent variable from its minimum to maximum value and (2) a one-unit change from its mean value, while all other independent variables are set at their mean. Marginal effects are reported only for those independent variables statistically related to the production-mode choice in Table 3.

Table 4
Relative Risk Ratio Values and Marginal Effects of Key Variables on
Probability That Michigan Cities Rely on Outside Service Providers

	Internal Production versus Provision with/by other Government		Internal Production versus Nongovernmental Provider	
	Percentage Change in Predicted Probabilities		Percentage Change in Predicted Probabilities	
	Relative Risk Ratio	Min. to Max. Values	Relative Risk Ratio	Min. to Max. Values
Policy and professional networks				
City is COG member	1.039		0.983	
Professional network index	1.149**	4.6%	1.073	
Service attributes				
Asset specificity	14.746***	0.7%	591.398***	97.4%
Asset specificity squared	0.815		0.456***	-92.2%
Measurement difficulty	13.946.79***	99.9%	0.005***	-98.9%
Measurement difficulty squared	0.190***	-99.7%	2.783***	99.9%
City characteristics				
City has council-manager government	1.063		1.121	
City population (log)	0.703***	-31.7%	0.921	
City population growth (% change)	0.997***	-10.0%	1.00	
Total city tax revenues (log)	0.972		0.828**	-22.3%
				-0.021

Note: Multinomial logit with direct provision as the base category. Relative risk ratio and marginal effects of changes in county dummy variables are omitted from the table. The predicted probability of each production mode is as follows: direct provision (73.1%), intergovernmental provision (13.7%), and nongovernmental provision (13.2%). All independent variables are set to their mean value. Marginal effects indicate the change in the predicted probability of a city's choosing the external mode over direct provision following from a change in the independent variable from (1) its minimum to maximum value and (2) a one-unit change from its mean value, while all other variables are set to their mean value. COG = council of governments.
 * $p < .01$; ** $p < .05$; *** $p < .001$; two-tailed test.

City and Service Characteristics and Production Modes

We begin with the variables examined in previous studies. With respect to city characteristics, the form of government in the city is not related to the use of either mode of external service delivery; however, the population measures are related to the likelihood of using governmental providers.⁸ Larger and faster growing cities are statistically less likely to rely on other governments for service provision. Neither population measure is related to the decision between direct provision and nongovernmental providers. The level of fiscal resources available to the city government is significantly related to the likelihood that the city will opt for nongovernmental providers over direct provision. Larger tax revenues indicate a greater ability to produce services internally and less incentive to rely on private and nonprofit providers.

The results for measurement are consistent with Brown and Potoski's (2003) findings. As measurement difficulty increases, reliance on production with or by other governments is more likely. However, a similar increase in measuring difficulty makes the use of nongovernmental providers less likely. The squared terms show the expected quadratic relationship for the two external modes. At very high levels of measurement difficulty, cities are less likely to use intergovernmental providers and more likely to turn to nongovernmental providers.

In contrast, the results for asset specificity conflict with Brown and Potoski's findings for asset specificity.⁹ The findings in Table 3 show that increases in asset specificity make reliance on both external modes more likely. The squared term indicates that at very high levels of asset specificity, nongovernmental provision is less likely. This finding is consistent with Shrestha's prediction that at high levels of asset specificity, the likelihood of external production relying on nongovernmental suppliers is reduced. Although the squared term is also negative for governmental production, the coefficient does not achieve statistical significance.

The marginal effect calculations provide additional insights about the nature of these relationships. Not surprisingly, changes in the two transactional attributes of public services have the strongest effects of all the variables on the probability that city officials will opt for external production over in-house production. The findings also reveal that measurement difficulty has the larger effect of the two transaction-cost measures on the choice of production mode. In particular, the marginal effect of increased asset specificity on the probability that local officials will

choose intergovernmental provision over in-house production is modest compared to the effects seen for increased measurement difficulty.

Social Networks and Intergovernmental Cooperation

The two social-network measures are the key variables in this analysis. We find that COG membership is not statistically related to either external mode. However, the indicator of social relations measured by the index of local officials' participation in professional networks is statistically related to cooperation with other governments. This confirms the social-embeddedness hypothesis suggesting that social relations promote exchange of information and build trust among partners (Feiock and Scholz forthcoming), resulting in increased outsourcing with other governments. However, the increased probability of using other governments from changes in this measure is rather modest. Moving from a zero value on this measure to its maximum value of three increases the probability of intergovernmental provision by less than 5%. Thus, the influence of the norms and values instilled by professions and disciplines is meaningful but substantively less influential than factors such as measurement difficulty, city size, and population growth.

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 positing that norms and values instilled by professions and disciplines both contribute to local government service production choices. Specifically, we sought to build on the existing literature by examining the effects of professional networks and regional policy networks on cities' service production choices while controlling for other explanations.

We find support for our ICA-derived hypothesis that networks linking local government institutions and the actors who govern them are an important part of the explanation for local governments' service production choices. Theories of cooperation, networks, and institutions suggest that professions and the associational networks that form around them play a critical role in local government decisions to engage in joint service delivery with each other. Our findings largely confirm the arguments embedded in these theories.

This analysis builds on the existing literature by accounting for the influence both of networks and of service-transaction characteristics in providing an explanation for local governments' service delivery decisions. During the past decade, scholars of local government service delivery have provided consistent empirical evidence to support propositions derived from transaction-cost economics. This work has provided important insights regarding asset specificity and measurement difficulty and their influence on the choice between internal and external production of local government services. This article builds upon and augments these scholars' work by identifying the role of networks in service production decision making. We confirm that transaction costs shape the external production choices made by city officials and use the ICA framework to extend the logic of transaction-cost theories by treating contractual relations as embedded in network relations. Our empirical analysis demonstrates how some types of networks also help to determine whether local government managers rely on a private or a governmental supplier when seeking an external service producer.

The finding that professional networks of public managers increase the likelihood that the city will cooperate with another jurisdiction has important theoretical implications and advances our understanding of external service production choices. However, future studies would greatly benefit from improved indicators of networks and networking. While COG membership captures only the presence or absence of ties among cities, and therefore, may be too simple a measure of social interactions, our measure of professional networks captures the degree of normative isomorphism between transacting cities. There are likely many other examples of networks that institutional actors engage in that may help to explain service-production choices. We encourage others to build upon our initial effort to examine the effects of social exchange on local government service-production choices.

Appendix

List of 43 Services Used in Analysis

Citizen's Research Council (CRC) (2005)	Brown and Potoski (2003)
1. Animal control	Animal control
2. Ambulance/EMS (fire)	Ambulance, EMS (scores combined)
3. Building security	Building security
4. Street (patrol/emergency response)	Crime prevention/patrol
5. Nonresidential (solid waste collection)	Commercial solid waste collection
6. Vehicle maintenance (fleet services)	Heavy equipment vehicle fleet maintenance
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 maintenance 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 convention centers and auditoriums
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 (human resources)	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/maintenance
27. Gas (utility)	Gas utility operation and management
28. Electric (utility)	Electricity utility management
29. Signs and signals (roads and bridges)	Traffic signal installation, maintenance
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. Road/bridge 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 and treatment
41. Sewage treatment	Sewage collection and treatment
42. Senior center	Programs for the elderly
43. Road/bridge winter maintenance	Snowplowing/sanding

Note: We matched the services from the CRC survey to services for which Trevor Brown and Matthew Potoski calculated asset specificity and service measurability scores in their 2003 article. In a few instances, the Brown and Potoski scores were for services that are reported as separate services in 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 (item 2), the CRC survey combines two services that are reported separately by Brown and Potoski. In this case, we combined the scores reported by Brown and Potoski to create a single average score for ambulance/emergency medical services (EMS). ROW = right of way.

Notes

1. There is an extensive research literature demonstrating the importance of competitive markets of contractors for reducing service costs. Brown and Potoski (2005) provide a good overview of this literature.

2. Brierly (2004, 59) observes that transaction costs act as a limiting factor on the cost savings derived from economies of scale, whether the cost reductions are sought through contracting arrangements or through governmental consolidation. He writes, "There is a trade-off between scale and transaction effects. The logic is simply that a decreasing cost of provision is related to increasing transaction costs."

3. Another factor encouraging external production is that the startup costs for some services may be too large for a single government to raise on its own. In these instances, the contracting government can be expected to join with other producers despite the risks posed by high asset specificity. Shrestha and Feiock (2004) propose that the external provider used in these situations is likely to be a county government or multijurisdictional special-district government.

4. The Citizens Research Council of Michigan (CRC) collected the data on service production arrangements 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 24 Michigan counties. These 670 units of government represent 36% of the 1,859 general-purpose local governments in Michigan and contain 78% of the state's population. Responses were received from 464 of the 670 governments surveyed, for a response rate of 69%. For this analysis, we extracted the data for the 109 city governments responding to the survey. For additional information on the survey, see CRC (2005) (www.crcmich.org).

5. The CRC survey includes provision and production information for 116 services. In this analysis, we examined 43 services from the CRC survey that match service areas for which Brown and Potoski (2003) calculated measures of asset specificity and measurement difficulty. Their study examined production choices for 64 services, but we were unable to match the remaining 21 services to the services covered by the CRC survey. Difference-of-means tests on the two transaction-costs measures for all 64 services indicate that the services included in the analysis are not statistically different from those excluded in terms of the asset-specificity and measurement-difficulty scores. See the appendix for the list of 43 matched services used in this analysis.

6. These two measures are based on the perception ratings of 36 randomly selected city managers and mayors. Brown and Potoski (2003, 450) describe the process of measuring these two variables this way: "The survey instrument provided a half-page description of the two service-specific transaction costs risk factors—asset specificity and service measurability. . . . The instrument then asked respondents to rate each of the sixty-four services included in the ICMA survey on two scales of 1 to 5; one scale for asset specificity and one scale for service measurability. We then averaged these ratings across respondents to create the service characteristic independent variables *asset specificity* and *service measurability*. Higher values indicate the service is more asset specific or more difficult to measure."

7. The multinomial logit model assumes the dependent variable includes no irrelevant alternatives (ILA). We tested this assumption using conventional statistical tests and received

conflicting guidance about how confident we can be that the categories captured by the dependent variable are independent. The Hausman test did not confirm the ILA assumption, but two of three Small-Hsiao tests indicate the assumption is met in this model. Long and Freese (2006) contend that inconsistent findings are typical for these tests, and they question their utility for verifying this assumption is met. Instead, they propose that analysts use multinomial logit when a strong case can be made that the alternatives captured by the categories are distinct options and weighed independently in the eyes of decision makers. In this case, we are extremely confident that local government officials find the distinction of production mode meaningful and see important differences among the choice of direct provision of services, the use of intergovernmental arrangements, and reliance on nongovernmental providers.

8. This finding challenges the conventional wisdom that form of government shapes contracting choices and suggests a need to more accurately capture the influence of city managers on service production choices. Studies of interlocal cooperation and service production decisions have consistently relied on the council-manager form of government to proxy the norms and values associated with the field of professional public management (Ferris and Graddy 1986; Krueger and McGuire 2005; LeRoux and Carr 2007; Morgan and Hirlinger 1991; Thurmaier and Wood 2002). Yet, as Carr and Karrupusamy (2008a, forthcoming) have demonstrated, municipal governments in practice have become too hybridized for these simple dichotomies to capture key differences among these governments, let alone more subtle concepts such as the use of professional public-management practices.

9. Brown and Potoski's (2003) study found that increases in asset specificity decreased the likelihood that local governments would contract with other governments, for-profit firms, and nonprofit organizations. Their analysis also showed that at very high levels of asset specificity (AS^3), reliance on these three different types of producers increased. Brown and Potoski attributed this latter finding to the effects of high fixed costs and large capital investments, making contracting feasible despite the high transaction costs from asset specificity. Our findings for asset specificity differ from these conclusions. We note that this study differs in several important ways from Brown and Potoski's work, including the number of public services examined, the range of production choices analyzed, and the model specification. Brown and Potoski included several measures to capture variations in state fiscal limitations and boundary rules that were unnecessary in our study, given that our analysis was limited to municipalities in a single state. Brown and Potoski also included measures of economic differences and variations in metropolitan populations that we did not. We also note the practical difficulty in developing measures of asset specificity that are able to distinguish this concept from production characteristics. Given that scale economies and asset specificity are thought to create opposing incentives in contracting decisions, this limitation is very important. In his seminal article explaining the role of transaction costs in the decision between markets and hierarchy, Oliver Williamson (1981, 555) writes the following about asset specificity. "The issue is less whether there are large fixed investments, though this is important, than whether such investments are specialized to a particular transaction." However, while this distinction is easily made in theory, it is much harder to maintain in practice. In most instances, public services that have high levels of asset specificity will almost always also have large fixed costs, require significant capital investments, and therefore have significant potential to achieve savings when production costs are spread over a large population or area served.

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