

CONTRACTING OUT PARKS AND RECREATION SERVICES: CORRECTING FOR
SELECTION BIAS USING A HECKMAN SELECTION MODEL*

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A common rationale for contracting out service production is that it enhances efficiency and thus produces cost savings for government. However, the expected empirical evidence to support claims that contracting out service delivery reduces service costs has not been forthcoming. This research investigates this issue and examines service provision costs across contractor sectors controlling for the choice to contract out a service or not. Decisions about service production may directly or indirectly influence contracting choices and their fiscal consequences.

A central question in the service contracting literature is how decisions to contract out services and choices among service vendors from different sectors affecting local governments are made. The potential cost savings from contracting with governments, nonprofits or private vendors may depend upon the specific conditions under which local governments are more or less likely to choose to contract with a producer from one sector over another. These choices reflect perceptions of the relative efficiency of private for-profit firms, nonprofit organizations or other governmental units. The rationale for relying on external service providers as service delivery agents has a strong grounding in transaction cost theories of organizations, but there has been little in the way of empirical studies to estimate the potential fiscal or service quality benefits that may be derived from contracting with community nonprofit organizations.

This article provides preliminary empirical tests of these theoretical arguments for efficiency gains from contracting out by examining service provision costs across contractor sectors controlling for the choice to contract out a service or not. It is expected

that decisions about service production may directly or indirectly influence contracting choices and their fiscal consequences. Unfortunately, little attention and analysis has been directed toward estimating either the fiscal consequences of contracting out services or the fiscal consequences of the contractor sector assigned to produce public services. Boyne contends that most empirical research on service contracting consists of case studies or multivariate cross sectional analysis, and that these studies were conducted without proper controls for other explanatory variables.(1) Furthermore, most empirical studies on contracting out tend to rely on a truncated and incomplete measure of service costs for only those local governments that contracted out that function, which consequently may lead to biased estimates of the true population parameters. This article corrects this problem using the Heckman Selection model.

Transaction cost theories of local government service contracting are also applied to examine their usefulness for predicting efficiency gains from contracting. Since linking a transaction cost framework to empirical tests on cost efficiency has been neglected in the contracting literature, the effects of choice of sectors including government, private and nonprofit organizations for service production are assessed. This study focuses on park and recreation services for which transaction costs are likely to be significant, based on the tangibility of service outputs and the complexity of service products.

Most of local governments have provided tennis courts, golf courses, lakes, and public parks that are fall into the park and recreation service area. Those services are most place-bound with limited mobility. After built in, park and recreation services are hardly moved

or turned to some other use. It is also expected that the quality of services like maintenance of park and recreation facilities will be hard to specify and measure and thus susceptible to loss of public control in the process of production.

TRANSACTION COST APPROACH OF LOCAL GOVERNMENT SERVICE DELIVERY

The question of whether organizations should produce goods or services internally or contract them out has concerned academics of economic organization and public administrations. Coase recognized that competition is not perfect and information is often lacking.(2) He describes the transaction costs as an information externality problem. The Coasian framework has expanded by Williamson views the “choice of governance” as a rational calculation of tradeoff between cost of internal production and transaction cost of external production.(3) The make or buy decision depends not only upon production technology, but also on the cost of transacting business because market mechanisms entail cost of obtaining relevant information, negotiating, monitoring commitment, and so on. Sector choice for government service provision can be explained by what Williamson called “institutions of governance” that includes contracts and organizations.(4)

As Ferris and Graddy note, contracting out services to external service providers separates the financing decisions from the production decisions.(5) The separation of production and financing decisions has the potential to produce efficiency gains if there are production cost differentials across sectors. In this sense, public choice theorists have

promoted privatization as a mechanism to reduce government involvement in the production and distribution of public goods and services. Stein argues shifting service provision and production to other institutions allow municipal governments to immediately reduce their labor costs, which is the largest and fastest growing components of any local government budget.(6) If contracting out does indeed lead to cost savings, then one might ask why it is not the dominant method of service delivery. This theoretical lacuna is filled with transaction cost theory on sector choice which explains a tradeoff between internal cost of policy production and external costs of transactions.

Transaction cost will be higher, if the service characteristic is highly asset specific, uncertain and complex. That is, transaction cost depends upon the extent of specific assets are involved, the amount of uncertainty about the future and about other parties' actions and the complexity of the trading arrangement and the frequency with which the transaction occurs.

Characteristics of Municipal Service Provision

Asset specificity is an important dimension for describing transactions because it represents specialized investments that are particular to specific transaction. Highly specialized goods are susceptible for many hazards such as mal-adaptation and holdup problems, since buyers cannot easily turn to alternative sources and suppliers.

Accordingly, where asset specificity is great, buyer and seller will make special efforts to design an exchange that has good continuity properties.(7) In applying this idea to

municipal contracting decisions, when asset specificity is great, local governments are likely to internalize the service provision. Otherwise, governments can make special efforts to design an exchange that has good continuity properties such as regulation and monitoring which may impose another transaction cost. Consequently, different attributes of service are associated with different scale economies, available suppliers, and the degree of potential threat to the continuity of service delivery. The optimal mode of production will vary with the attributes of goods and services.

Market Attributes

As noted by Stein, market structure affects policy performance indirectly by altering fundamental relationships between conditions of policy performance and other independent variables.(8) A public service produced by the for-profit sector would be particularly vulnerable to monopolistic exploitation when the region has a few potential external providers to compete for the service contract. This same logic can be applied to the availability of alternative nonprofit providers and other governments as well.

The transaction cost of contracting out depends upon the extent specific assets are involved, the amount of uncertainty about the future and about other parties' actions, and the complexity of the trading arrangement and the frequency with which the transaction occurs. Highly specialized goods are susceptible for many hazards such as mal-adaptation and holdup problems, since buyers cannot easily turn to alternative sources and suppliers.(9) In applying this idea to municipal contracting decisions, the savings from

contracting out are dependent upon the presence of multiple vendors for the production of a particular good or service. The logic here is that the larger the number of potential service providers in market, the greater the competition for the contract of public service production.

The market for service delivery is shaped by the number and the size of enterprises that could supply services. The availability of nonprofit and private organizations may reduce the asset specificity of the public goods.(10) The availability of alternative providers in both nonprofit and private sectors will affect the choice of sector and attainment of efficiency when local governments contract out.

Choice of Sectors

Given the decision to contract with an external organization for the production of a service, there are three options available to the provider: other governments, nonprofits, or profit- seeking firms. Local governments are place-bound, however. This lack of mobility limits the number of potential contracting partners. Local governments generally contract with geographically proximate governments.(11) According to Ferris and Graddy,(12) if a large service area is required to attain scale economies and an available large local government is currently supplying the service, another government is a viable alternative. For other goods that do not have to be delivered on a regional basis to capture scale economies, small governments may enter into service agreement contracts with neighboring jurisdiction, especially where nonprofit and private firms are not available. A

second incentive for contracting with other government is the desire for continuity of services across jurisdictions within a geographic area. It is difficult to impose jurisdictional boundaries on park and recreational services.(13)

Other authors argue that variance in service demands significantly affects the performance of public service delivery.(14) The information costs of government are high when the characteristics of target populations are diverse and are not sufficiently differentiated and satisfied by in-house production. According to Weisbrod,(15) when service needs and citizens' preferences cannot be sufficiently satisfied with government provision, nonprofits are the understandable alternative mechanism for providing social services.(16) So the more heterogeneous a community is--the more diverse citizens' preferences--the greater the need for nonprofit organizations. Cost savings from minimizing information costs are expected by allowing nonprofit service to customize diverse service needs. In other words, when service needs of citizens are homogeneous, contracts are easily assigned to the profit-seeking enterprises that expect profits from the contract. In communities that are relatively homogeneous, service provision by private sector may offer incentives for efficiency.(17)

INSTITUTIONAL CHOICE THEORY AND CONTRACTING

The study of local government contracting has focused exclusively on what Ostrom describes as the operational level of analysis which emphasizes the structure of organizations, sector characteristics, and municipal rules on contracting.(18) The

judgment about the importance of municipal institutional arrangement has been derived from limited conceptualization of the relationship between hierarchical structure of institutions and its policy decision and performances. However institutional theorists argue that it is important to identify and analyze the presence of some rules that govern choice of other rules. Institution theorists assert the expected cost savings to a local government from contracting out depend on complex interactions between various levels of rules and characteristics of the community. Therefore, the extent to which local government is willing to consider the tradeoff of cost savings and loss of control is highly influenced by state institutions, local policy, and local institutional arrangement itself.

Scholars of new institutionalism in economics identify hierarchies of institutions and resulting levels of actions.(19) Brennan and Buchanan and Ostrom's hierarchical classification of institution is used here as an analytic tool.(20) *Constitutional level rules* establish the overall rules of game and lay out a basic system of governance. *Substantive rules* (or *Collective rules*--by Ostrom) deal with a specific policy area. *Operational rules* guide specific decisions and concerns allocating and managing resources.

Operational level rules are the appropriators behavior of concerning "when, where, and how to withdraw resource unit, who should monitor the action of others and how, what information must be exchanged or withheld and what rewards or sanctions will be assigned to different combinations of actions and outcomes."(21) Collective choice rules indirectly affect the choice of operational level rules and its management. Constitutional

level rules affect operational activities by determining who is eligible and determining the specific rules to be used in crafting the set of substantive choices.(22)

Constitutional Institutions on Local Contracting Out

State and local relations are more likely to be hierarchical than federal and state relations. Under Dillon's rule, states are allowed to create, modify or extinguish local governments.(23) State government rules exercise authority to provide incentives for cities to adopt alternative mode of service production to seek financial relief from the state government constraints or state rules are used as penalties to mitigate information asymmetries of policy action problems. State governments have indirectly influenced on the choice of policy adoption and its implementation of sub-state governments.(24)

There are several prominent states' constitutional authorities over municipal alternative strategies with which to provide incentives and constraints to adopt choice of service production strategies. One of the important constitutional rules on the choice of municipalities' service mode is "tax and expenditure limitation laws" (TELS) which aims at limiting the growth in expenditures and/or taxes of municipalities. TELS constrain distribution of resources and formation and implementation of local government service provision and production. Strong constraints may make it necessary for local government to spend their resources more wisely. TELS work as a formal and explicit constraint, because noncompliance of budget rules would entail financial penalties. However the impact of constitutional constrains is not theoretically and empirically clear. As Stein has

found, there are a multitude of state laws providing municipalities with alternative strategies.(25) Also compliance of municipalities is not uniform. Existence of TELs would constrain the choice of production or would encourage municipalities to find the alternative way to arrange their service delivery to save cost.

One of financial sources of local government service provision is intergovernmental aid revenue from state and federal governments. One theory on the impact of the intergovernmental revenue is that the dependency on intergovernmental revenue might lessen a community's incentive to reduce their expenditures on services. An infusion of revenue from the state and federal government reduces the demand for own source municipal revenue to remedy fiscal stress.(26) Thus dependency on intergovernmental aid might attenuate the responsibility of local government in reducing their expenses.

Collective Institutions on Local Contracting Out

According to Lineberry and Fowler's seminal inquiry into urban political institutions, institutional variation results in significantly different policies. Political and organizational structures provide opportunities, incentives, and constraints on the behaviors of actors operating within different governance structures.(27) Following their theory, scholars have systematically explored the effects of institutional arrangements and reinventing local government. Urban political institutions, especially forms of government, shape political leadership and the ability of officials to deal effectively with external service providers.(28) However the impact of various forms of government on

municipal expenditures and revenues is far from clear and it remains an issue of intense empirical debate.(29)

Urban scholars often assume that reformed local government with full time city managers are more receptive to innovative administrative techniques, including service contracts than the municipalities with a mayor council form of government.(30) Under the council-manager form, power is concentrated in the elected council, which hires a professional administrator to implement its policies. The professionalism of city managers can lead appointed local government administrators to pursue a policy that maximizes efficiency in the production and delivery of public goods and services. Appointed officials tenure and career are insulated from “symbolic” politics. Subsequently, the type of policies elected officials adopt need not be particularly popular.

Although, constituencies resist higher taxes from inefficient direct service delivery, citizens may perceive that government has a higher commitment to the service if it produces it in-house.(31) Also local officials may not know the true costs of services. Consequently, elected mayors may not be willing to take political risk of politicization of fiscal issues when the benefits may not be long-term rather than short-term and may present little opportunity for credit claiming. However, the institutional rule of the game in reformed governments provides a different set of incentives for consideration of alternative service production approaches.

EMPIRICAL ANALYSIS

The theoretical emphasis on contracting out has led many researchers to study a truncated and incomplete measure of service costs for only those local governments that contract out that function. Because the sample data (cities that contracted out the service) are a nonrandom subset of local governments providing the service, selection bias is possible. The Ordinary Least Square (OLS) analysis may produce biased estimates of the true population parameters. Thus we test the error term correlation of selection factors and outcome factors with a Heckman selection model.

The two-stage modeling process captures the common structure of models of censoring, sample selection, and truncation. When we have a dependent variable, y , which is completely observed depending upon another variable, z_i , we have a sample selection problem. So we can model the *selection stage* (the probability that the i th observation is included in the selected sample) and the *outcome stage* (the expected value of y_i conditional on having been included in the selected sample).^[32] The Heckman analysis provides us null hypothesis testing that “the selection process and the outcome process are independent of each other.” If we accept the Null, we can use the regression model. The empirical analysis will be conducted in two parts.

The first part investigates the impact of contracting out on per capita expenditures for each selected service area. This stage of the empirical analysis applies simple OLS regression technique which assumes a linear functional form for the independent

variables affect on dependent variable for per capita expenditure of each service area. In this stage, the key variable is whether they contract with private, nonprofit or another government to produce the service.

The second part of analysis estimates per capita service expenditures with private firms, nonprofit organizations, and other government units. The problem in this case is that estimates of β (parameters) derived from simply regressing y on x using those observation for which contract out will be inconsistent and biased. This is a sample selection problem. The two-stage Heckman selection model allows us to safely truncate observations from municipalities which do not contract out.

A dichotomous variable z (=0 or 1) determines whether or not y is observed, y being observed only if $z=1$. Whether y_i is observed or not can depend upon the value of another variable, z_i (CONTRACTOUT). This study began with a probit model for the probability of $z_i=1$, estimated using all observations and yielding coefficient vector:

$$z_i^* = w + v_i$$

(where, $\text{corr}(\mu_1, v_i) = \rho$. $\rho \neq 0$)

The *selection* stage essentially involves modeling such a dichotomous dependent variable (in-house production versus contracting out production), where the *outcome* stage is akin to a regression equation in which a continuous y variable (expenditure of local government service) is modeled as a function of a set of explanatory variables.(33) The

outcome stage would estimate the expected value of y (expenditure of local government service), conditional on z_i (CONTRACTOUT)=1 and on the vector x_i . We then run a regression model with Inverse Mill's ratio with local government service expenditures as the dependent variable. We have three categories of sector choices: private, nonprofit, and other government production and use two dummy variables i.e., PRIVATE and NONPRFT in the selection model.(34) To estimate this model, we take the estimated inverse Mill's ratio θ (take any value of pdf and divided by cdf and get any truncated normal distribution) from the probit estimates. For the sub-sample, we then employ the OLS to regress y on β including the inverse Mill's ratio θ . And it is compared with the results from the OLS regression and the Heckman selection model.(35)

$$y_i^* = \beta + \theta + \mu_2$$

(where, $y_i = y_i^*$ if $z_i = 1$)

This study utilizes a unique data set to investigate the claims of cost savings from private firms delivering government services. A Survey of Alternative Service Delivery Approaches conducted in 1997 by the International City and County Management Association (ICMA) is combined with service expenditure data from the 1997 Census of Government Finances.

In order to examine how the service attributes affecting expenditures on each service area, two services are examined: parks and landscaping maintenance and operation of recreation facilities. Table 1 provides descriptive information on these two services.

(Table 1 is about here)

Dependent Variables

Service cost is measured as per capita expenditure measures for each service. The service expenditure data is available from city finance data from U.S. Census of Bureau. The contracting decision is operationalized as a dummy variable scored 1, if the local government reported in the 1997 ICMA survey the service was contracted. At the second stage outcome model, per capita expenditure is observed only when a municipality contracts out a service to the external providers focusing on municipal service expenditure if a government contracts with any external vendors (other government, private or nonprofit).

Independent Variables

To assess the impact of transaction costs on contracted service costs, we measure the local market competitiveness. The market of potential contractors encompasses other governments, private firms and nonprofit organizations that operate in each particular service area.⁽³⁶⁾ The availability of other governments is measured as a total number of municipalities, special districts, and towns in each county (NOGOV). The potential private vendors in the marketplace is measured as the total number of private establishments in each service area at the county level as reported in the 1997 County

Business Patterns (NOPRV).(37) The hypothesized effect of the availability of alternative contractors is negative.

The measure of the availability of nonprofit providers is program service revenues in each service area (NPOREV).(38) The expected effect of NPOREV on expenditure service production is negative.(39) More nonprofit organizations in community may result in greater competition among nonprofit service providers. Increased competition is expected to lower the costs of service delivery. Racial heterogeneity of a municipality's residents is measured as the percentage of the population that is non-hispanic white in 2000 (WHITE). More nonprofit contracting is expected when a municipality has greater racial heterogeneity. Greater cost savings from contracting out are expected in the community with more homogenous characteristics because of lower information costs. The hypothesized effect of WHITE is negative on selection stage and positive on outcome stage. Financially healthy governments are expected to be more able to absorb the risks of privatization. If the local governments have large portion of revenue from their own sources, they will have more willingness to design local production choice. It is a measure of financial health of the local government and is calculated as the ratio of general revenue from own sources and total revenue (FINCHEALTH).

Institutional factors also affect local government's choice of contracting out and its potential efficiency gains. Two constitutional level rules are included, state tax and expenditure limitations (TELS) and the average per capita measure of total local intergovernmental revenues (INTERLOCAL). Council-manager form of municipal

government (MANAGER) is also included as a collective choice rule. State level rules impose on local government finance such as TELs constraint municipalities' discretion to increase their tax base. Thus a municipality under TELs will have more incentive to make contract out choice to service expenditures. The expected impact on the selection model is positive. Financial dependency on the intergovernmental revenue is expected to decrease the incentive to pursue costs savings through contracting out because local governments are not able to shift easily their savings to the other programs. We hypothesize that the effect of INTERLOCAL is negative for the selection stage and positive for the outcome stage.

We also include the council-manager form of government and treat it as an institutional arrangement (MANAGER). This is derived from ICMA surveys in various years.(40) Professional leadership and efficiency incentives of the council-manager system make managers more likely to consider cost savings from contract out.(41) The hypothesized effect of MANAGER is positive for both selection and outcome stage models.

Economic conditions of a local government are measured in three ways: median household income level (INCOME), a dummy variable for location in a metropolitan area (MSA), and financial ability and willingness to raise revenues as indicated by per capita local government taxes (TXPOP). Higher per capita taxes may suggest greater likelihood of constituency resistance to government spending, and thus greater awareness of the need for reduced costs.(42) However any long-term savings from contracting can be realized only if local governments choose to reallocate the savings from service

contracting to lower taxes. Stein found fiscal pressures provide an incentive to employ external providers.(43) Thus TXPOP is employed as a control variable in the outcome stage model. The population of the city is also expected to capture both resources and potential economies of scale is measured by the 2000 population in thousands (POP).

(Tables 2 and 3 here)

The decision to contract out is operationalized as a dichotomous decision (CONTOUT). We also include three sector choice categories as private (PRIVATE), nonprofit (NONPRFT), and other government production (OTHERGOV). The working data set is summarized in Table 2 and the specifications for the first stage selection probit model and the second stage OLS regression model are presented in Table 3.

FINDINGS

Per capita expenditure, which includes all production choices, is analyzed using OLS regression. For the selection model, the dependent variable is only observed when the local government contracts out the service to the external providers including other government. Table 4 reports local government service expenditure OLS regression coefficient of variation for economies of scale, management, institutions, and production sector choices. The negative impacts of nonprofit contracting out (NONPRFT) on expenditures on two service areas are consistent with cost saving expectations from contracting with nonprofit organization, though those are not statistically significant. Park

and recreation service areas are predicted as service areas which have difficulty in achieving any significant efficiency gains from contracting out to the profit-seeking firms (PRIVATE). Also the choices of other government (OTHERGOV) units are associated with significantly lower spending. The results suggest that if another government service provider increase in service production, it decreases the average of per capita expenditure on park service by \$16.6, holding others constant.

Cost savings realized from service contracting are anticipated when the local government has sufficient alternative choice of external providers. Competitive markets and economies of scale reduce transaction cost risk with which local government must face. Evidence for this relationship has been strong for the nonprofit markets. As expected, for parks and recreation services, the program revenue of nonprofit organization (NPOREV) has a statistically significant effect on lowering cost.

The availability of government unit service providers (NOGOV) is expected to produce more market-like prices. Considering the limited mobility and difficulties of monitoring quality of service, other government service production is an attractive option. As hypothesized, the sign of the number of governments is negative. However the effect of NOGOV does not provide statistically significant support for hypothesis.

The impact of council-manager form of government (MANAGER) on service expenditure is unexpected, however. When park service is provided by the municipality under manager-council form, the expected average per capita expenditure is \$13.7 higher

than other forms of government. The impact of MANAGER has a similar positive impact on recreation service program costs.

The financial health of local government (FINCHEALTH) is negatively related to the service expenditure. A municipality, which is more financially independent, may have more financial resources to control and is more able to manage the service delivery process, which could result in cost savings. Homogeneity of population (WHITE) is hypothesized to lower service expenditures because of reduced information costs. This hypothesis is not consistent with directions of coefficient for both services.

As hypothesized, local government's dependency on intergovernmental revenue (INTERLOCAL) is significantly related to lowering the cost-saving incentives in parks and recreation service areas. Also, several control variables are statistically significant i.e., the median income (INCOME) and total tax per capita (TXPOP).

(Table 4 is about here)

Table 5 reports the probit estimates of contracting out choices of two services.

Technically, this process is required to produce the inverse Mills ratio (θ). The statistical results provide an important insight to understanding sector choice. The council-manager form of government (MANAGER) appears to lead municipalities to try contracting alternatives rather than to provide services directly. The positive impact of council manager form of government is consistent with predictions of Feiock and Clinger-mayer

and Ferris and Grady.(44) The theory predicts city managers may have a greater preposition toward policy innovation than mayors or their appointees.

(Table 5 is about here)

The Heckman selection model estimation failed to reject the null hypothesis that “contracting out choice and the level of service expenditure are independent of each other.” This indicates that the regression results with truncated data would be unbiased. It is therefore appropriate to refer to the coefficient values of the regression model for both analyses.

In table 6, the results show that privatization with for-profit firms is positively associated with per capita expenditure of the park service; on the other hand, the effect is not consistent in the recreation service. More specifically, when the park service is provided by a private organization, holding the other independent variables constant, the expected average per capita expenditure is \$21.8 higher than nonprofit or other government providers.

The expected expenditure impacts across the three sectors are also reported in table 6. But they fail to achieve statistical significance. Also, dependency on intergovernmental revenue has a positive effect on per capita expenditure. This is consistent with the charge that Intergovernmental aid indirectly lessens the cost saving incentive. Again, racial homogeneity had a negative impact on per capita service expenditure.

DISCUSSION

Although contracting out the delivery of municipal service has been attractive to local government because it often promises substantial cost savings, the previous studies of contracting have not always held that contracting out reduces service expenditures. The findings do not suggest a simple solution to this complex problem because transaction costs vary across, services and communities and institutions.

Support for market competition prediction can be derived from the positive impacts of economic strength indicators, such as NPOREV across different methodological analyses (see table 4, 6). If nonprofit contractors have a significant cost advantage over other production choices, the competitiveness of the market for potential nonprofit contractors should lead higher efficiency gains from contracting out to nonprofits.

This research addresses how institutional settings define the context in which policy decisions are made and implemented. State level rules confine the scope of local government discretion, such as limiting the level of tax levy. Strict tax limitation (TELs) appears to be a heavy burden for municipalities and leads them to consider contracting out services to other alternative providers. The governmental characteristics affect contract decisions and its management. Efficiency may be more important goal, relative to other priorities for city managers than for elected officials. In many respects, these institutional predictions are consistent with the statistical results reported in tables 4-6.

One of the most interesting findings is that manager form of government has a strong positive impact on decisions to contract out park and recreation services. That result is quite consistent with existing local institution literatures. However, the direction of impact of form of government on per capita expenditure is positive on both services: parks and recreation, which was unexpected (see table 4). Existing research on the impact of form of government suggests professional managers are more attentive to efficiency concerns than elected officials. These controversial results may be explained by managers being active contracting municipal service deliveries to the external providers, and not cutting corners of service qualities on order to reduce expenditure level. Bearing this in mind, the quality of contracted service may be high. Further study assessing the service quality differences under different forms of government is important to investigate this claim.

Table 1. Frequencies of production choice for local services ^a

	Park	Recreation
In-House (Public employee only / partly)	535	553
	210	184
Other Government	48	72
Private	149	75
Nonprofit	11	40
Misc ^b	36	56
Total No. of Provision	933	921

Sources: Survey of Profile of Local Government Service Delivery Choices (The number of observations =1055) International City Management Association, 1997.

^a Some of local governments contract out their services to the multiple sector providers, thus Table 1 does not provide percentage information.

^b ICMA survey category includes Franchises / concessions, Subsidies and Volunteers. Those are not included in this analysis.

Table 2. Variable definitions and data descriptions.

Variables	Descriptions
Dependent Variables	
CONTOUT	1: The local government service which is provided by external providers 0: otherwise
PER CAP EXP	The per capita expenditure measure of each service area (1997)
CEN EXP	The service per capita expenditure which are observed only when municipality contracts out service to external providers.
Transaction Costs	
PRIVATE	1: The local government service which is provided by profit seeking firm 0: otherwise
NONPRFT	1: The local government service which is provided by nonprofit organization 0: otherwise
OTHERGOV	1: The local government service which is provided by other government unit 0: otherwise
NOGOV	Number of local governments in county1997 (number of municipality+ number of special district+ number of town)
NOPRV	Total number of private establishments at county level 1997
NPOREV	Program service revenue of nonprofit organization as county level 1997 (NTEE)
NONPO	Number of nonprofit organization in each NTEE category
WHITE	The percent of the municipality's population that is white (2000)
FINCHEALTH	The percentage of general revenue from own sources from total revenue (1997)
Institutions	
TELS	1: the municipality operates under city property tax limits 0: otherwise
MANAGER	1: the municipality operates under manager-council government form 0: otherwise
INTERLOCAL	Average per capita measure of total local intergovernmental revenue for cultural services Average per capita measure of local Health and Hospital intergovernmental revenue for health services
Control Variables	
TXPOP	Municipality taxes per capita (1997)
MSA	1: the municipality is located in Metropolitan Statistical Area 0: otherwise (1997)
POP	Total population (1997)
INCOME	Median household income (1999)

Table 3. Model specifications.

Selection Probit Model		
Dependent Variable	Independent Variables	
CONTOUT	Institution variables	TELS, INTERLOCAL, MANAGER
	Transaction cost variable	WHITE
	Control variable	TXPOP, MSA, POP
Regression Model / Outcome Stage Model		
Dependent Variable	Independent Variables	
Per capita Expenditure / Censored per capita expenditure	Sector choice variable	PRIVATE, NONPROFIT, OTHERGOV (base category for second stage model)
	Transaction cost variable	NOGOV, NOPRV, NPOREV, FINCHEALTH, WHITE
	Institution variable	INTERLOCAL, MANAGER
	Control variable	INCOME, TXPOP, POP, MSA

Table 4. OLS regression estimates on service per capita expenditures

PER CAP EXPNDT	Parks Landscaping (n=927)		Recreation Facilities (n=915)	
	Coef	t	Coef	t
OTHERGOV	-16.58**	-1.97	-10.97	-1.57
PRIVATE	2.935	0.55	5.008	0.69
NONPRFT	-1.15	-0.07	-14.17	-1.49
MANAGER	13.71**	3.23	15.14***	3.52
NPOREV	-3.98e-06**	-2.06	-5.93e-06**	-2.57
NOPRV	-.507	-0.29	.0334	0.90
NOGOV	-.015	-0.44	-.0450	-0.93
INTERLOCAL	.098**	3.40	.094**	3.25
WHITE	.078	0.69	.139	1.18
FINCHEALTH	-.347**	-3.12	-.350**	-3.11
TXPOP	.083***	10.32	.0841***	10.43
INCOME	.0005***	4.29	.00045***	3.75
POP	.00005**	2.14	.000047**	2.01
Cons	13.64	1.14	10.87	0.90
R2	.162		.167	

*p<.10,**p<.05,***p<.001

Table 5. Selection probit estimation of contract out

CONTOUT	Parks Landscaping (n=924)		Recreation Facilities (n=912)	
	Coef	Z	Coef	z
TELS	.1090	0.94	-.1481	-1.25
INTERLOCAL	-.0018*	-1.79	-.00078	-0.87
MANAGER	.3908**	3.31	.3227**	2.64
WHITE	-.0021	-0.76	-.0021	-0.75
TXPOP	.0002	1.43	.00055**	2.94
MSA	.3379**	2.73	-.0205	-0.17
POP	1.61e-06**	2.75	1.18e-06**	2.14
CONS	-1.415***	-4.68	-1.160***	-3.86
LR Chi2	47.87***		47.87***	

*p<.05, **p<.01, ***p<.001

Table 6. Outcome stage model of regression estimates on censored service per capita expenditures

Censored Per Capita Expenditure	Parks Landscaping (n=193)		Recreation Facilities (n=155)	
	Coef	t	Coef	t
PRIVATE	21.809**	2.09	13.77	1.32
NONPRFT	2.41	0.13	-2.13	-0.18
MANAGER	-4.032	-0.34	8.75	0.69
NPOREV	-3.82e-06	-0.35	-8.61e-06	-0.69
NOPRV	1.221	0.34	-.046	-0.52
NOGOV	-.027	-0.35	-.053	-0.41
INTERLOCAL	.2332**	2.04	.084	0.80
WHITE	-.156	-0.56	-.3081	-1.02
TXPOP	.0862***	5.58	.0894***	5.77
FINCHEALTH	.0729	0.26	.0879	-0.27
INCOME	.00035	1.36	.0011**	3.39
POP	.000033	0.93	.000082*	1.88
Cons	1.389	0.04	-11.28	-0.35
R2	.234		.329	

*p<.05, **p<.01, ***p<.001

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37. For the measurement of potential private vendors of each service area in this article we employ the service categories of County Business Patterns (CBP) 1997 from US Census Bureau. CBP is an annual series that provides subnational economic data by industry which covers most of the country's economic activity. Parks--CBP 71219 National parks and other similar institutions, Recreations--71394 Fitness and recreational sports centers.
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