Outsourcing in U.S. Cities: Ambulances and Elderly Voters

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Abstract

This paper develops a political economy model of city service provision, and uses empirical analysis to pin down some of the model's key assumptions. Many of the largest cities in the United States outsource emergency medical services, and analysis of data from the 200 largest U.S. cities finds that a number of variables are significant determinants of emergency ambulance outsourcing, including the fraction of a city's voters over the age of 65. This finding provides evidence that interest-group politics are important, and suggests a particular shape for the model's contracting cost curve. JEL codes: D23, D72, H11, H40, L24.

1 Introduction

How will aging baby boomers affect the scope of government? Over the twenty year period from 2010 to 2030, the percent of the population age 65 or older is projected to increase by more than half.[1] In addition, it is likely that the elderly as a group enjoy non-trivial influence on policy.[2] This article explores how age, other characteristics

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[1]By 2010 approximately thirteen percent of the U.S. population will be age 65 or older. This figure is expected to rise to twenty percent by 2030. (Federal Interagency Forum on Aging-Related Statistics, "Older Americans 2004: Key Indicators of Well-Being." Washington, DC: U.S. Government Printing Office. November 2004.)

[2]Campbell (2003) explores the processes by which elderly achieve their policy objectives in the national policy arena. In terms of local public services, Poterba (1998) discusses several empirical studies that find a negative correlation between public school spending and high numbers of elderly voters, suggesting that elderly voters can and do successfully target local government spending towards their preferences.

of the electorate, and of the city, affect local government leaders' decision of whether or not to outsource public service provision.

To model the outsourcing question, this study views governments as firms, and looks by analogy to the boundary of the firm problem from industrial organization (Coase, 1937). Since this problem was introduced, a number of both positive and normative models of public service delivery mode have been developed in the literature; however there still is no agreed upon *political theory of the firm* model. The present paper develops one such candidate, by explicitly incorporating political economy considerations with the "costly contracting" framework, due to Steven Tadelis and his coauthors.[3]

In addition to developing the political economy component, this paper also broadens the parameter space of the contracting cost curve. Taken together, these two modifications, concerning political economy and contracting costs, allow a variety of new predictions to come from the model. These predictions are put to the test in the empirical section.

The empirical section explores a single service that is frequently provided (though not necessarily produced) by local governments – emergency ambulance service. This single-service focus, in contrast to the design of multi-service studies, facilitates exploring the influence of interest groups. Several theoretical studies have analyzed the influence of interest groups, but the topic has received relatively scant attention in the empirical literature.[4] Emergency ambulance service is naturally of interest to one group in particular, the elderly. This is intuitive, and it has been documented that the elderly use emergency ambulances more than other groups.[5]

Emergency ambulance service is the transport component of emergency medical service (EMS). These are the types of ambulances that respond to "911" calls in the United States, or "112" calls in the European Union. In the U.S. this particular service exhibits great variation across cities in whether it is produced by the city in house or provided through outsourcing; in the sample analyzed here, the service is outsourced somewhat more than half the time. Frequent outsourcing of emergency ambulances is in sharp contrast to the other core public safety services (policing and fire suppression) which are seldom outsourced. Also, the ambulance data used in this study allows for a more representative sample of cities. Previous studies have used samples of cities that are over represented by ones with the council-manager form of

[3]The present work builds on Levin and Tadelis (2007) and Bajari and Tadelis (2001). Other candidate models include Laffont and Tirole (1993), Hart, Shleifer and Vishny (1997), Boycko, Shleifer and Vishny (1995).

[4]Although a few empirical contributions have studied the influence of interest group politics on local government service provision, including Walls et al. (2005), who deal with recycling, and focus on environmentalists as an interest group.

[5]For evidence of a positive correlation between use and age, see Gerson and Skvarch (1982) and Downing and Wilson (2005). In addition to analyzing the role of interest groups, another benefit of the single-service focus is the ability to better control for specific institutional details of the emergency ambulance service setting.

government. (Brown, et al. 2007)

The summary of the theoretical model is as follows. Two political candidates compete for votes by selecting platforms, which consist of a level of service and tax rate. Candidates have two technologies available to provide the public good: in-house ("make") technology and outsource ("buy") technology. Heterogenous citizens vote for the candidate that promises them higher utility. Without any primitive preference for mode, candidates choose as a platform the level of service, tax rate and mode of provision that maximizes their vote share; thus, service level and mode are determined jointly.

In this setting, when groups of individuals have heterogenous tastes for the public good, demographic shifts cause the platform that politicians run on to change. If the public good-loving group increases in size, politician's platforms increase with respect to service level.[6] An increase in service level, in turn, causes the likelihood of outsourcing to either increase, decrease, decrease at first and then increase (U-shaped), or increase at first and then decrease (inverted U-shaped), depending on the contracting cost curve shape assumption. Thus, in addition to the two hypotheses *always outsource* and *never outsource*, the model generates four additional hypotheses for how demographic variation affects outsourcing. Results from the empirical section will help to distinguish among the hypotheses, and this will shed light on which assumptions are appropriate for the shape of the contracting cost curve..

The empirical section uses survey data on emergency ambulance provision in the 200 largest U.S. cities, conducted in 1990 and 2000. This data, combined with Census data of the basic demographic variables in the model, are used in the baseline regressions. The full empirical specification also includes data on partisan voting outcomes, labor market conditions, state legal institutions, and several other variables. Among the empirical findings for ambulances are that: public/private wage ratios are positively correlated to outsourcing likelihood, cities that are in Republican-leaning counties are more likely to outsource, and while most state laws related to city governance do not affect ambulance outsourcing, the presence of laws that forbid cities from short-term borrowing, and institutional arrangements where states rather than cities have responsibility for assessing the value of residential property for taxation purposes, are both positively and significantly correlated with outsourcing. Average housing value, and especially population are also shown to be significant predictors of ambulance outsourcing. Also, the empirical section finds suggestive evidence that differences exist between how council-manager and mayor-council forms of government respond to political pressure.

The main correlation of interest, however, is between the percent of a city's voting age population that is elderly, and ambulance outsourcing. The results show an inverted U-shaped correlation. This finding is significant in both years and holds up

[6] To be more precise, an increase in the size of the public good-loving group causes service level to increase as long as this group's tax base and voting power are not too low. This insight is fully clarified in the next section.

in both the baseline and full empirical specifications. In the context of the model, the inverted U-shaped correlation implies the following two features for an urban politics theory of the firm: first, the variable costs of contracting are convex – as politicians provide higher levels of the public service in order to attract the votes of the elderly, contracting costs rise at an increasing rate, causing the costs of outsourcing to surpass the costs of in-house provision for high service levels. Second, fixed costs are positive, and prevent outsourcing at low levels of elderly, leading to the positive slope on the first arm of the inverted U. In the context of the costly contracting model, this finding provides support for the key assumption of convex contracting costs. However, fixed costs to contracting seem to be important, and these were assumed to be zero in Levin and Tadelis (2007). From a transaction cost standpoint, the empirical results lend support to convex, but highlight the importance of fixed, contracting costs. From a political economy standpoint, the results suggest that interest group politics are important.

The remainder of this paper is as follows. The next section presents the model, including its comparative static properties. Section three then presents the empirical methodology, data and results of the 1990 and 2000 data analyses. Section four concludes with a discussion and summary of the findings, as well as suggested directions for future research.

2 Model

This section explores the types of policies that emerge under competition between two office-seeking candidates when candidates have multiple modes of public service provision at their disposal, and voters are heterogenous in their preferences and tax base. The first subsection posits the preferences of voters and the technology by which politicians can turn tax dollars into the public service. The second subsection explores the probabilistic nature of elections and the platforms and policies that result from citizen characteristics and other given parameters. The third subsection explores comparative static properties, and in particular how demographic shifts affect the probability of outsourcing.

2.1 Preferences and Public Good Production Technology

Consider a city inhabited by a continuum of citizens with a population mass equal to one. These citizens are indexed by i and each citizen i is a member of only one group j. There are two groups in society, $j \in \{Y, O\}$ (for young and old) and each group makes up α^j fraction of the population, so that $\alpha^Y + \alpha^O = 1$. Group members share two things in common. One is their taste for the public service, λ^j.[7] Each

[7]Of course, cities provide an array of goods and services; the single service assumption here is meant to emphasize the tension between different citizen groups with respect to certain publicly

group member has the same basic quasi-linear preferences over private consumption c, and the publicly provided service g, which is given by

$$W^j = c^j + \lambda^j \ln(g) \tag{1}$$

where $\lambda^j \geq 0$ represents the intensity of a citizen's preference for the public good; this taste parameter is common to all citizens in group j. Individuals in the same group also have in common the size of their tax base, represented by y^j.[8] For now, interpret y^j as income.[9] The public service is financed by a uniform proportional tax τ on income that is common to all citizens. After tax income is consumed; thus consumption for a member of group j is given by $c^j = (1-\tau)y^j$. Substituting for consumption, equation (1) becomes

$$U^j(g, \tau, \lambda^j, y^j) = (1-\tau)y^j + \lambda^j \ln(g) \tag{2}$$

The production function for the public service is a simple linear transformation of labor units into units of output, but public service provision must be undertaken in one of two possible ways, or modes. Denote mode of provision by x. In the first mode, the city can provide the public service through the *make* technology, (in-house provision) so that $x = \mu$. In this case the city hires and manages employees. Alternatively, the city can *buy* the service (outsourced, or privatized provision) so that $x = \beta$. In this case the city contracts with another entity that produces the service. Let the city's balanced budget equation under in-house provision be given by

$$\tau^\mu y = w^\mu g^\mu + s \tag{3}$$

where the superscript μ refers to in-house provision mode, or "make". The tax rate and public service level are now written with a superscript indicating the mode of provision, as the correspondence between service level and tax rate is mode dependent. y is the average tax base, equal to the average tax base (income) in the city ($y = \Sigma_j \alpha^j y^j$), and w^μ is the wage that must be paid to a public manager to produce one unit of output. Finally, s represents the setup costs the city must incur to engage in production; these may be associated with requisite fixed capital investments.

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provided services.

[8] To avoid a corner solution, the tax base y is assumed to be high enough for all groups so that every resident consumes some of both c and g.

[9] City governments obtain their revenue from taxes on a variety of sources, including personal and corporate income taxes, sales and excise taxes. However, the predominant source of tax revenue are property taxes. In 1996, property taxes accounted for 74 percent of local government tax revenues, and sales taxes, personal income taxes and excise taxes accounted for about fifteen, five and five percent of revenue, respectively (Garrett and Leatherman, 2000). Therefore for some purposes, housing value is the most important tax base. However, interpreting the tax base as income best reflects the basic notion that consuming more of the public good means consuming less of everything else, and that the size of one's taxes will depend on the size of one's tax base.

The other option for the city is to "buy" the service. Let the balanced budget equation when the service is outsourced be given by

$$\tau^{\beta} y = w^{\beta} g^{\beta} + d(g^{\beta}, r) \tag{4}$$

w_{β} is the wage that must be paid to a private manager to produce one unit of output. By assumption, $w_{\beta} < w_{\mu}$, that is a private company's cost of production is always less than a government's.[10] The second term on the right hand side of equation (4), $d(g, r)$, represents the contracting cost curve (CCC). Conceptually, contracting costs include the costs of *all* aspects of contracting. Therefore, while the model assumes that $w_{\beta} < w_{\mu}$, it can be true that $\tau^{\beta} > \tau^{\mu}$ for a given service level g if $d(\cdot)$ is substantially higher than s. Contracting costs rise with service level g. For example, a higher g could be more costly to contract over simply because writing more detailed contracts requires more paper.[11] The other argument in the CCC is r, a general catch-all for how difficult it is to contract in the city. It includes potentially a wide variety of characteristics of the environment.[12]

Throughout, this paper assumes that $\frac{\partial d}{\partial g} > 0$, because specifying and monitoring a higher level is more costly and that $\frac{\partial d}{\partial r} > 0$, because r by definition describes the difficulty of contracting. However two other assumptions are less strict: $d(0, r) \in \mathbb{R}$ and $\frac{\partial d^2}{\partial g \partial g} \in \mathbb{R}$. The first of these assumptions captures the notion that there could be fixed costs to contracting,[13] and the second assumption reflects the fact that there

[10]The wages are taken as parameters given to the model, however these relative wages have microfoundations. The appendix contains an outline of a moral hazard problem that derives the $w^{\beta} < w^{\mu}$ result formally, due to Levin and Tadelis (2007), who conceptualize the make or buy decision as contracting over time or performance, respectively. In a nutshell, employees prefer performance (buy) contracts to time (make) contracts, and so are willing to accept a lower wage for a performance contract. Under such a contract, employees have an incentive to allocate effort efficiently, as once the performance requirement is met, the employee can stop working and start collecting the outside option (which may simply mean he goes home early.) On the other hand, this option is not available under a time contract by definition. In the former case, the high powered incentive primarily affects the owner of the firm rather than lower level employees, who may face similar incentives under both outsourcing and in-house regimes.

[11]There are many reasons drawing up contracts could be more costly for higher service levels, where service level includes both quality and quantity aspects. For example in the context of ambulances, it may be easier to monitor ambulance response times than to develop clever ways to ensure paramedics are always delivering the correct lifesaving techniques inside the ambulance. Both higher response times and better techniques represent higher quality, and to achieve either may require higher quantity.

[12]A monopolistically competitive firm's higher price enters the cost of production through r. It may be more conventional to think of a city with few suppliers as affecting the wage w. However, one can also interpret this as a haggling cost and thus a transaction cost incurred by the city.

[13]Fixed costs to contracting could include those incurred while learning about the contracting process, search costs incurred while locating a lawyer, and potentially costs that are more political in nature, such as dealing with striking employees. Negative fixed costs do not give rise to any substantive difference in the model from zero fixed costs, although fixed costs could be negative, for example, if there were subsidies from outsourcing.

could be either economies of scale or diseconomies of scale to contracting.[14]

Solving equations (3) and (4) for τ^{μ} and τ^{β} respectively, and substituting them back into equation (2), each in turn, yields the two utility functions given below.

$$U^j(g^{\mu}, \lambda^j, y^j, y, s, w^{\mu}) = (1 - \frac{w^{\mu}g^{\mu} + s}{y})y^j + \lambda^j \ln(g^{\mu}) \tag{5}$$

$$U^j(g^{\beta}, \lambda^j, y^j, y, r, w^{\beta}) = (1 - \frac{w^{\beta}g^{\beta} + d(g^{\beta}, r)}{y})y^j + \lambda^j \ln(g^{\beta}) \tag{6}$$

2.2 *Political Competition and Platform Determination*

While equations (5) and (6) represent the voters' basic preferences under each public service provision mode, voters are assumed not to vote deterministically, at least from the perspective of the candidates (or the econometrician). Another dimension unrelated to policy (e.g. personality), also affects voter utility, and this dimension is represented here by two uniformly distributed random variables.[15] The first random variable is σ^{ij} and this is specific to each individual, but is drawn from a distribution that is common to that individual's group j, so that in addition to y^j and λ^j, groups also share the same distribution of their σ^{ij}'s. The second random variable δ is common to each citizen in the population. There are two political candidates, $k = A, B$ and the random variables represent a citizen's non-policy based bias towards (or if negative, against) candidate B. The timing is as follows: candidates become aware of citizen characteristics (y^j, λ^j), given parameters $(w^x, r, d(0, r), s)$ and the distributions of σ^{ij} and δ. Next, candidates announce platforms, (g^x_A, g^x_B). Then uncertainty is resolved (σ^{ij} and δ are determined), elections are held, and the winning candidate implements his platform. In the election stage, citizen i in group j votes for candidate A only if

$$U^j(g_A) \geq U^j(g_B) + \sigma^{ij} + \delta$$

σ^{ij} is distributed uniformly over the support $[\frac{-1}{2\phi^j}, \frac{1}{2\phi^j}]$ where ϕ^j is specific to group j, and δ is distributed uniformly over the support $[\frac{-1}{2\psi}, \frac{1}{2\psi}]$.[16] ϕ^j will be interpreted

[14] Bajari and Tadelis (2001) develop a model with constant returns to scale to contracting. Contracting over quality is interpreted as contracting over contingencies. If each contingency is equally costly to cover, then people first contract over the contingencies that are most likely to occur, and so contracting costs will be convex in quality. However, changing one of the assumptions of Bajari and Tadelis (2001), if there are sufficient economies of scale to contracting over contingencies, a concave contracting cost curve $d(g, r)$ can result, even when some contingencies have a low probability of occurring. Thus, it is not clear a priori whether there are constant returns to scale (or decreasing returns to scale) to contracting, both of which imply $d(g, r)$ is convex, or if there are increasing returns to scale, implying $d(g, r)$ is concave.

[15] This section of the model borrows from Persson and Tabellini (2000). As they discuss, the assumption of a uniform distribution is without loss of generality.

[16] Assuming the distribution of δ is not too narrow rules out a corner solution.

as a group j voter's "voting power". $\phi^j > 0$ is assumed for all j, and a high ϕ^j means σ^{ij} is distributed over a short interval, and voters base their vote less heavily on things unrelated to policy.

Given the platforms of both candidates, the vote share for candidate A is given by

$$\pi_A = \sum_j \alpha^j \phi^j (\sigma^j + \frac{1}{2\phi^j})$$

where σ^j is defined as $\sigma^j = U^j(g_A) - U^j(g_B) - \delta$. Defining σ^j in this way simplifies solving the model mathematically, but it also has an interpretation. A voter with $\sigma^{ij} = \sigma^j$ can be thought of as the "swing voter" in group j – the voter who is indifferent from voting for candidate A or B. Everyone in group j with a value of σ^{ij} less than σ^j votes for candidate A. To see that equation (8) is candidate A's vote share, note that because σ^{ij} is distributed over $\left[\frac{-1}{2\phi^j}, \frac{1}{2\phi^j}\right]$, the term $\phi^j(\sigma^j + \frac{1}{2\phi^j})$ is always between zero and one, and this represents the percent of group j voters that vote for candidate A. Candidate A's expected vote share is

$$E\pi_A = \frac{1}{2} + \sum_j \alpha_j \phi_j [U^j(g_A) - U^j(g_B)] \tag{7}$$

As candidates are assumed to be office-seeking, they announce platforms to maximize their expected vote share. Candidates are also assumed to have equal access to utilize either mode. To illustrate how candidates determine platforms in equilibrium, consider the problem facing Candidate A. If he uses the "make" production technology, the platform (g_A^μ) that maximizes his probability of winning solves

$$\frac{\partial E\pi_A}{\partial g^\mu} = \sum_{j=O}^{Y} \alpha_j \phi_j \frac{\partial U^j(g_A^\mu)}{\partial g_A^\mu} = 0 \tag{8}$$

Given the functional form assumption on $U(\cdot)$, equation (8) yields a unique solution for g_A^μ, denoted $g_A^{*\mu}$. If instead candidate A uses the "buy" production technology, an equation analogous to (8) shows how the optimal $g_A^{*\beta}$ is determined. (Equation (8) uses the utility curve from equation (5), so the analogous equation would simply use the utility function from equation (6) instead.) Candidate B also performs analogous maximization problems for each mode; it will be the case that $g_B^{*\mu} = g_A^{*\mu}$ and $g_B^{*\beta} = g_A^{*\beta}$ because $E\pi_B$ is simply $1 - E\pi_A$.

Each candidate $k \in \{A, B\}$ must decide which platform, $g_k^{*\mu}$ or $g_k^{*\beta}$ to announce, taking into account the action of the other candidate. In equilibrium, each candidate selects the platform that yields the highest probability of winning given the platform selected by the other candidate.

Proposition 1: There is a unique Nash equilibrium to the two-party probabilistic voting game with multiple production functions where each candidate announces

the same platform. Moreover, the equilibrium platform g^* that is chosen by both candidates is given by $g^{*\mu}$ whenever $\sum_j \alpha_j \phi_j U^j(g^{*\mu}) \geq \sum_j \alpha_j \phi_j U^j(g^{*\beta})$ and is given by $g^{*\beta}$ whenever $\sum_j \alpha_j \phi_j U^j(g^{*\mu}) < \sum_j \alpha_j \phi_j U^j(g^{*\beta})$.

Proof: Given candidates are optimizing, one can focus attention onto only four states of the world in the election stage: $(g_A^{*\mu}, g_B^{*\mu})$, $(g_A^{*\mu}, g_B^{*\beta})$, $(g_A^{*\beta}, g_B^{*\mu})$ and $(g_A^{*\beta}, g_B^{*\beta})$. However if each candidate is offering a different platform, it implies one candidate has a probability of winning that is greater than .5 and the other a probability of winning that is less than .5; thus one candidate could change platforms and strictly increase his chance of winning,[17] which eliminates both $(g_A^{*\mu}, g_B^{*\beta})$ and $(g_A^{*\beta}, g_B^{*\mu})$ as possible equilibria. Finally, only one of either $(g_A^{*\mu}, g_B^{*\mu})$ or $(g_A^{*\beta}, g_B^{*\beta})$ will be an equilibrium, as one is inferior in the sense that, in the inferior case, either candidate could unilaterally change his platform to the optimal level with the other mode, which would yield a higher value to his expected vote share and strictly increase his chances of winning. *Q.E.D.*

This proof generalizes results from the probabilistic voting literature to account for multiple production functions; here, the production functions are taken from the transaction cost economics literature. While the proof rests on the concept of Nash equilibrium, it is straightforward to extend it to the concept of subgame perfection if platform announcements are sequential. In this setup, the random variable δ essentially decides the *election*. However more importantly, the parameters of the model - $\alpha^j, \lambda^j, \phi^j, y^j, w^x$ and r - decide *policy.*

2.3 Comparative Statics

This subsection explores how changes in the variables of the model effect likelihood of outsourcing. Of particular interest is how changes in the size of the elderly voter group affects the likelihood of outsourcing. To answer this question, one must first understand how changes in the size of the elderly voter group affects service level. Through substituting equation (5) into equation (8) and solving, one can see that $g^{*\mu}$ solves the following for g (derivation in appendix):

$$gw_\mu = \frac{y(\alpha^O \phi^O \lambda^O + \alpha^Y \phi^Y \lambda^Y)}{(\alpha^O \phi^O y^O + \alpha^Y \phi^Y y^Y)} \tag{9}$$

Note that dividing both sides by w_μ yields a closed form solution for $g^{*\mu}$. The solution using the buy production technology, found by inserting (6) into (8), however, does not have a closed form. Nonetheless, one can characterize $g^{*\beta}$ as solving the following for g:

[17] This is true unless the optimized in-house and privatized platforms coincide. However continuity ensures that this is a measure zero event.

$$gw_\beta + gd_g(g,r) = \frac{y(\alpha^O\phi^O\lambda^O + \alpha^Y\phi^Y\lambda^Y)}{(\alpha^O\phi^O y^O + \alpha^Y\phi^Y y^Y)} \tag{10}$$

This is an equation whose right-hand side is identical to the right-hand side of the previous equation. Denote the expression on the right-hand sides of (9) and (10) by Ω. Although one cannot derive a closed form solution for $\frac{\partial g^{*\beta}}{\partial \alpha^O}$ without imposing a functional form assumption on $d(g,r)$, one can still characterize the *direction* of the comparative static, if not its precise magnitude. If $\frac{\partial \Omega}{\partial \alpha^O} > 0$ then both $\frac{\partial g^*_\mu}{\partial \alpha^O} > 0$ and $\frac{\partial g^*_\beta}{\partial \alpha^O} > 0$ because the left hand sides of both (9) and (10) are monotonically increasing in g, so that if their right-hand side (Ω) increases, then g, the only variable in the left-hand side of both equations, must increase to preserve the equality.

Demographic shifts (changes in α^O) affect service level through three channels: a *tax base effect*, a *preference-power effect*, and a *tax-payer-power* effect. First, the tax base effect causes y in the numerator of Ω to change; an increase in average tax base will contribute to a service level increase. If the portion of elderly increases, then average tax base will increase if $y^O > y^Y$and will decrease if the reverse holds.[18] Second, the preference-power effect comes through the second term in the numerator of Ω, $(\alpha^O\phi^O\lambda^O + \alpha^Y\phi^Y\lambda^Y)$. If the portion of elderly increases, the preference-power effect will be positive, and will contribute towards an increase in service level if $\phi^O\lambda^O > \phi^Y\lambda^Y$, that is, if the elderly's preference for the publicly provided good, weighted by their voting power, is stronger than the preference of the young, weighted by their own voting power.[19] Finally, the tax-payer-power effect influences service level though the term $(\alpha^O\phi^O y^O + \alpha^Y\phi^Y y^Y)$, the denominator of Ω. If the portion of elderly voters increases, the tax-payer-power effect serves to decrease service level if $\phi^O y^O > \phi^Y y^Y$ (and will increase service level if the reverse holds.) This effect causes service levels to fall when α^O increases, because although elderly voters may enjoy consuming the publicly provided good, they are averse to paying for it.

In sum, one must take into account the combined influence of all three forces

[18] That the income of the elderly is larger than that of the young (i.e. $y^O > y^Y$) seems to be an unreasonable assumption for most cities. However, it is quite plausible if housing value is the tax base. In Census data for the 200 largest U.S. cities in 2000, the ratio of average housing value for householders older than 65 to average housing value for householders between the ages of 15-64 was 1.3. Only 25 cities had a ratio less than one, and only four cities had a ratio less than .8.

[19] As discussed in the introduction, $\lambda^O > \lambda^Y$ is likely to hold. As for the relationship between ϕ^O and ϕ^Y, Campbell (2003) explains that the elderly are more likely to have their policy preferences realized than other groups, partly as a result of their high rate of voting participation. Indeed, a recent survey conducted by the Pew Research Center (2006) shows that a person of age over 65 is nearly twice as likely as the average 18-29 year old to be a regular voter, and is nearly three times as likely to be registered to vote. If this research implies that $\phi^O > \phi^Y$, for example, if voter turnout is correlated with voting power, then this condition is more likely to hold. The interpretation of ϕ^j as a measure of abstention makes sense in the reduced form version of the model, as candidate A maximizes his expected vote share, $E\pi_A = \frac{1}{2} + \sum \alpha_j\phi_j[U^j(g_A) - U^j(g_B)]$. In this case, ϕ can be thought of as a measure of the fraction of eligible voters, α, that actually vote.

when analyzing how a demographic shift affects changes in service level. If $\lambda^O > \lambda^Y$, $\phi^O > \phi^Y$ and $y^O > y^Y$, as seems plausible given the balance of the extant data and literature, it can be shown that the positive preference-power and tax base effects outweigh the negative tax-payer-power effect, so that service level increases when the portion of elderly voters increases. However, even if one of these conditions does not hold, for example if $y^O < y^Y$, the derivative can still in fact be positive, as long the tax base of the old is not "too much" less than that of the young. The cutoff point, when y^O is much less than y^Y, occurs when the negative tax base effect from the increasing size of a poor, elderly population, overtakes the positive tax-payer-power and preference power effects. All of these claims are demonstrated formally in the appendix.

The table below summarizes how some of the variables of the model affect service level, and the conditions under which the stated comparative static direction holds.

Table 1 Effect of Variable Change on Equilibrium Service Level

Direction of Comparative Static	Condition
$\frac{\partial g^*}{\partial \alpha^O} > 0$	$\lambda^O > \lambda^Y$, $\phi^O > \phi^Y$ and $y^O > y^Y$ *
$\frac{\partial g^*}{\partial \lambda^O} > 0$	$\alpha^O \neq 0$
$\frac{\partial g^*}{\partial \lambda^Y} > 0$	$\alpha^Y \neq 0$
$\frac{\partial g^*}{\partial y^O} < 0$	$\phi^O > \phi^Y$
$\frac{\partial g^*}{\partial y^Y} > 0$	$\phi^O > \phi^Y$
$\frac{\partial g^*}{\partial \phi^O} > 0$	$\frac{\lambda^O}{y^O} > \frac{\lambda^Y}{y^Y}$
$\frac{\partial g^*}{\partial \phi^Y} < 0$	$\frac{\lambda^O}{y^O} > \frac{\lambda^Y}{y^Y}$

* This condition is sufficient, but not necessary, for this direction to hold.

As service level g varies with some parameters of the model, the change in service level affects the *likelihood of outsourcing*. First, consider how an exogenous change in service level g affects likelihood of outsourcing. Then, working backwards, it is possible to say how the variables of the model affect likelihood of outsourcing, as table 1 shows how the variables of the model affect service level g. Consider figure 1a below, which plots four separate cases of both balanced budget constraints (equations

3 and 4) on the same graph. The shape of the "buy" balanced budget constraint depends on two parameters of the contracting cost curve; as described in section 2.1, two assumptions on contracting costs are flexible: $d(0,r) \in \mathbb{R}$ and $\frac{\partial d^2}{\partial g \partial g} \in \mathbb{R}$. Exploring the model at different points in these two dimensions of parameter space yields four scenarios, one for each pair of contracting cost curve assumptions, with the tax-base τy on the y-axis and service level g on the x-axis.

As long as fixed costs to contracting are not too high in the convex case, and setup costs are not too high in the concave case, there could be only one or two points of intersection of these two curves.[20] The lower envelope is associated with the least cost mode for any given level g and these points of intersection can be thought of as "kink" points on the lower envelope. If something causes the level of service to move nearer to a kink point, it can be interpreted as increasing probability of regime change, and if the kink point marks a regime change from $g^{*\mu}$ to $g^{*\beta}$, one can interpret this as the likelihood of outsourcing increasing. On the other hand, if the kink point marks a regime change from $g^{*\beta}$ to $g^{*\mu}$, one can say the likelihood of outsourcing is decreasing. The number of kink points, and whether they mark a regime change from $g^{*\mu}$ to $g^{*\beta}$ or vice versa, is a function of the two dimensions of contracting costs. The prediction for how an increase in service affects likelihood of outsourcing (denoted by $\mathcal{L}$) for each set of contracting curve is illustrated in figure 1b.

Proposition 2: Depending on the values of $d(0,r)$ and $\frac{\partial^2 d}{\partial g \partial g}$, the likelihood of outsourcing is either increasing, decreasing, U-shaped, or inverted U-shaped with respect to service level, or is one (always buy) or zero (always make.) With high fixed costs and concave contracting cost curve (CCC), the likelihood of outsourcing is increasing as service level increases; with low fixed costs and a convex CCC, likelihood of outsourcing is decreasing as service level increases; with low fixed costs and concave CCC, likelihood of outsourcing is U-shaped as service level increases; and with high fixed costs and a convex CCC, likelihood of outsourcing is inverted U-shaped as service level increases. If setup costs are very high in the concave case, outsourcing will always occur, and if fixed contracting costs are very high in the convex case, outsourcing will never occur.

Proof: Interpreting service levels moving closer to kink points as higher likelihoods of regime change establishes the claims in proposition 2.

Fig 1a about here

Fig 1b about here

To illustrate Proposition 2, consider the case of a convex CCC with positive fixed costs. If a politician needs only to provide a *low level* of public service quality

[20] This holds as long as $\frac{\partial d^2}{\partial g \partial g} \neq 0$.

in order to maximize his electoral chances, then he will not find it worthwhile to incur the fixed costs associated with outsourcing (which may be thought of as costs associated with labor union strikes, although other interpretations are possible.) If the politician needs to provide a *moderate level* of service quality to maximize his probability of election, the cost savings allowed by outsourcing (that are associated with its more efficient production method) outweigh the fixed cost to contracting, and the variable costs to contracting are still not high. However, if a very *high level* of service quality is required to maximize the politician's electoral changes, the variable contracting costs (which may include specifying, monitoring and enforcing the contract) associated with outsourcing become increasingly important. With convex contracting costs, in-house production will again become the cost minimizing way to provide the service.

A few comparative statics remain to establish. Until now this subsection has only described the comparative static properties of the model for changes in the demographic and political economy variables α, ϕ, y and λ and has said nothing about the industrial organization variables $r, w, d(0, r)$ and s. The effect of a change in these variables on likelihood of outsourcing is much more straightforward, as their effects do not depend on service level and the shape of the contracting cost curve. Consider how these variables affect the lower envelope of the two balanced budget equations in figure 1a. If the fixed costs to contracting $d(0, r)$ increase, then the likelihood that a random service level will be produced with buy technology decreases; thus the likelihood of outsourcing decreases. The same hold true for an increase in contracting difficulty r and for an increase in the private contractor's wage w^{β}. Conversely, if the setup costs s to in-house provision increase, then the likelihood that any service level will produced with make technology decreases, and the likelihood of outsourcing increases, and the same holds true for the in-house producer's wage w^{μ}.

When interpreting the model it is crucial to distinguish between those variables that affect likelihood of outsourcing directly (e.g. those listed in the bottom half of table 2), versus those that affect likelihood of outsourcing though a change in the service level (those in table 1). The effect of an increase in service level on likelihood of outsourcing depends on the two assumptions on the contracting cost curve, and therefore cannot be determined using logic alone. The most important comparative static for this purpose is on α^{O}. If the percent of the voting age population over 65 increases, then under plausible conditions, service level will increase, but it is unclear if this increase in service level will cause the likelihood of outsourcing to increase, decrease, be U-shaped or inverted U-shaped.

Table 2 Effect of Variable Change on Outsourcing Likelihood			
An increase in this variable...	...causes likelihood of outsourcing to:		
	$\frac{\partial d^2}{\partial g \partial g} \geq 0$	$\frac{\partial d^2}{\partial g \partial g} < 0$	under ← assumptions ↓
g	decrease	decrease, then increase	$d(0,r) < s$
	increase, then decrease	increase	$d(0,r) \geq s$
r	decrease		
w^{μ}	increase		
w^{β}	decrease		
$d(0,r)$	decrease		
s	increase		

3 *Data and Empirical Methodology*

The main goal of the empirical section is straightforward – to see how the fraction of elderly voters in a city correlates with the mode of ambulance provision. A variety of variables, both those suggested by the model and by previous studies, serve as controls.[21] The directions of the correlation between outsourcing and a number of these control variables, however, is also of interest, as several of these can be used to judge the validity of the model.

The empirical model used here is a Probit, and the mode of emergency ambulance transport provision, denoted MODE , is the dependent variable, with buy equal to one and make equal to zero.[22] The theoretical model of the previous section generates four competing hypotheses for how the percent elderly correlates with outsourcing, depending on the shape of the contracting cost curve. The empirical results presented in this section will be used to distinguish between them, and thus to identify the shape of the contracting cost curve. In particular, this section will investigate whether the relationship between percent elderly and outsourcing is either monotonically increas-

[21] Related empirical work includes Lopez-de-Silanes, Shleifer and Vishny (1997), Levin and Tadelis (2007), and others; see reviews and references in Hirsch (1995), Mueller (2003), and Brown and Potoski (2003).

[22] The data appendix contains the details of how the data was coded into either make or buy.

ing or decreasing, U-shaped, inverted U-shaped, or other. Any correlation consistent with one of the first four relationships is consistent with one specific version of the model, while any other correlation (or lack of a correlation) is inconsistent with the model.

As a digression, a more direct test than the one outlined above would explore directly how variation in quality level correlates with outsourcing. Unfortunately, direct empirical measures for quality level of the service are difficult to obtain for a number of reasons. First, public service quality is inherently hard to measure (Tirole, 1994). Also, even when it would have been possible to gather a decent measure of quality, no entity to date could be found that has made available such data.[23] This lack of data on quality explains the approach taken here; it is not possible to see how quality correlates with outsourcing, but it is possible, though the model developed in the previous section, to say how some of the determinants of quality affects the likelihood of outsourcing.

Alternatively one may prefer to see if expenditure data correlates with outsourcing. Here too, good data for ambulance expenditures are difficult to obtain, because they are often combined with data on first responders under the heading emergency medical service (EMS)[24] and because this type of data is often lumped together with expenditures for fire departments. Also, there is no guarantee that high expenditures necessarily leads to high quality.

Data for the dependent variable come from the *Journal of Emergency Medical Service* (*JEMS*) for the years 1990 and 2000 (published in 1991 and 2001, respectively) and these provide the dependent variables for two separate data sets. *JEMS* is a trade publication that produces an annual survey of emergency medical services, both first-responder and transport providers, in the 200 largest U.S. cities. This data is highly detailed, including the type, name and address of all emergency ambulance providers in a community.[25] The independent variables come from a number of different sources. Table 3 summarizes all the variables used in this study and their

[23]The lack of data on EMS performance, and its effect, was lamented in a series of articles published by Robert Davis in *USA Today* beginning on 7/28/2006.

[24]There are many components to what is commonly known as EMS. Many surveys ask about emergency medical service as if it were one service. In fact, there are two main components: first responder service, and transport service. A first responder is the first unit dispatched to the emergency scene, usually by a central 911 center. In the majority of cases, the city owned fire department has responsibility for first responding, and it is not uncommon for a fire truck to be dispatched for this purpose. After stabilizing the situation, a transport vehicle (ambulance) typically arrives to take the patient to a hospital if further care is required. It may be the case that the ambulance is both the first responder and transport provider, but it is never the case that the fire truck is both, as fire trucks lack the capability of carrying patients in a horizontal position. Other data sets that have been used in previous literature, for example, those collected by the International City Managers Association (ICMA) and U.S. Census Bureau's *Census of Government* (Organizational Phase) do not differentiate between these two distinct components of EMS.

[25]Private ambulances exist in almost all communities, however these ambulances do not always provide *emergency* transport service, the focus of this study.

relationship to the theoretical model, and table 4 provides summary statistics.

Several of the independent variables used here are from the 1990 and 2000 Decennial Census (summary file 3). Two of these variables are the natural logarithm of the population, LOGPOP, and the average value of housing property in the city, LOGHOUSE, calculated as total housing value over number of households. While the model predicts level will not depend on y (due to the quasi-linear nature of the utility function) LOGHOUSE is still an important control variable, as it may have a tax base effect, or an influence on r if contractors are attracted to wealthier areas, and the greater competition makes it easier for cities to contract. LOGPOP may be related to both s and $d(0, r)$. For example, large cities may experience economies of scale or scope with in-house production, and so may lower s. Larger cities may also more have experience with contracting, lowering $d()$, but on the other hand, may face larger political fixed costs to contracting, for example, if there is a wage externality, larger cities may have more employees affected. Therefore neither LOGPOP nor LOGHOUSE has a prior expected sign.

Another variable from the Decennial Census is the fraction of the voting age population over 65 (a proxy for α^O) denoted by POP65. This is the variable that is of primary interest in this study, as ambulances are a service for which the elderly are a particularly important group.[26] The value of its square, denoted POP65SQ is also critical, to distinguish between the four main hypotheses of the theoretical model. As such there are no expected signs for POP65 or its square.

Finally from the Decennial Census, the value of owner-occupied housing units without a mortgage over number of households over 65 (the approximate average value of houses owned by elderly), divided by value of owner-occupied housing units with a mortgage over number of households between 18 and 65 (the approximate average value of houses owned by young) creates the variable H65/H18 (a proxy for y^O/y^Y). If the elderly have a larger tax base than the young, then the elderly will be paying for a larger portion of the public service, and this will serve to reduce the service level.[27] Therefore while cities with a large portion of the population over 65

[26]The theoretical model suggests the *fraction* of the voting age population that is elderly is the appropriate measure to use here, but it is possible that the absolute *number* of elderly voters affects the outsourcing decision, for example, by representing a "critical mass" to form an interest group. Although not reported here, the results obtained when the absolute number, rather than the fraction of elderly are used do not differ substantially from the results obtained by using the fraction of elderly.

[27]In principal H65/H18 (and a square of this term, H65/H18SQ) could be used as POP65 and POP65SQ – to understand the shape of the CCC. However, there are a number of reasons why the POP65 variables are superior for this purpose. Most importantly, the empirical measure of H65/H18 is not perfect. Also, the quasi-linear nature of the utility function means the model is weaker with respect to income predictions, because, for example, the utility function does not capture wealth effects. How then to handle H65/H18? This paper takes two approaches. First, it limits the sample to only those cities where H65/H18 >1, the sufficient condition for the positive comparative static on α^O with respect to service level. Second, it simply includes H65/H18 as a control variable. Both methods were used, and similiar results obtain, however this paper only reports results from the second method.

should have a high service level, the theoretical model suggests the relative tax base variable is also an important determinant of service level.

Table 3 Variables and their Theoretical Counterparts

Variable	Description	Model Proxy
MODE	Mode of ambulance provision; "make"=0, "buy"=1	x
LOGPOP	Logarithm of the city's population	s, r
LOGHOUSE	Logarithm of the average housing value in the city	y, r
POP65	Fraction of voting age population above 65 years of age	α^O
POP65SQ	the square of population > 65	α^O
H65/H18	value of unmortgaged property divided by the number of households over 65 years of age, over value of property with a mortgage divided by the number of households between 18 and 65	y^O/y^Y
UNION	fraction of all city government employees in unions	r
FIREUNION	fraction of city fire department employees in unions	r
RELWAGE	Average wage of city employees over average wage of private sector employees in the county in which the city is located	w^μ/w^β
FIREWAGE	Average wage of fire employees over wage of private sector employees in county in which city is located	w^μ/w^β
UNEMPLOYMENT	Unemployment rate in county in which city is located	r
PERREP	Percent of votes for Bush in county in which city is located	r
NOSTRIKE	Dummy indicating state law prohibits city employees from striking	$r, w^\mu/w^\beta$
NOPOLACTIVITY	Dummy indicating state law prohibits political activity by city employee	r
MERIT	Dummy indicating state law requires cities use a merit system in hiring	r
STANDARDS	Dummy indicating state law sets city purchasing standards	r
DEBTLIMIT	Dummy indicating debt limits imposed on cities,	r
BORROWING	Dummy indicating state law permits short-term borrowing by cities	r
TAKEOVER	Dummy indicating state law authorizes state "take over" of city finances	r
BALANCEDBUDGET	Dummy indicating state law mandates city have a balanced budget	r
STATEASSESS	Dummy indicating property tax assessment is a state function	r

Table 4 Summary Statistics										
	1990					2000				
Variable	**Mean**	**SD**	**Min**	**Max**	**Obs**	**Mean**	**SD**	**Min**	**Max**	**Obs**
MODE	.65	.47	0	1	200	.57	.50	0	1	200
LOGPOP	12.24	.75	10.33	15.81	200	12.37	.72	11.49	15.90	200
LOGHOUSE	10.66	.54	9.23	12.26	200	11.09	.52	9.42	12.44	200
POP65	.16	.04	.05	.35	200	.15	.04	.07	.22	200
POP65SQ	.03	.02	.003	.12	200	.02	.01	.005	.05	200
H65/H18	1.61	.55	.43	4.40	200	1.47	.47	.33	3.51	200
UNION	.43	.34	0	1	199					
FIREUNION	.60	.52	0	2.98	192					
RELWAGE	1.13	.20	.63	1.78	199	1.15	.24	.60	1.97	200
FIREWAGE	1.36	.33	.14	2.48	192	1.41	.39	.46	3.06	183
UNEMPLOYMENT	5.38	1.85	2	12.9	200	3.97	1.22	1.6	10.4	200
PERREP	.52	.10	.22	.78	197	.45	.12	.09	.82	200
NOSTRIKE	.04	.18	0	1	199					
NOPOLACTIVITY	.50	.50	0	1	199					
MERIT	.45	.50	0	1	199					
STANDARDS	.78	.41	0	1	199					
DEBTLIMIT	.86	.34	0	1	199					
BORROWING	.10	.30	0	1	199					
TAKEOVER	.12	.33	0	1	199					
BALANCEDBUDGET	.08	.26	0	1	199					
STATEASSESS	.19	.39	0	1	199					

Two variables relate to the unionization of city workers, and come from the U.S. Census Bureau's 1987 Census of Government (Employment Phase). The percent of all city workers in a union, UNION, and the percent of firefighters in unions, FIREUNION, may capture the value of $d(0, r)$. If there is high unionization of firefighters, for example, then it could be hard to privatize the service. If the city makes the service itself, it will usually do so through the fire department, and so fire departments may take actions to prevent losing responsibility for providing emergency ambulance service. Therefore the expected sign on both of the unionization variables is negative. Unionization data was not available in latter years, and is therefore only included in the 1990 regressions.

Another two variables relate to the relative wage rates between public and private sector workers, denoted RELWAGE and FIREWAGE. Both are measures for w^{μ}/w^{β} and come from two sources: the public (make) wage component comes from the 1987 and 1997 Census of Government (Employment Phase), and the private wage from 1987 and 1997 County Business Patterns. The public wage is calculated as the total payroll divided by the number of workers for RELWAGE; the public wage for FIREWAGE is calculated as the total payroll for fire department employees divided by

the number of fire department employees. The private wage is the average wage of private workers in the county in which the city is located, also calculated by total payroll over total employees. The model yields a clear prediction: w^{μ}/w^{β} (and thus RELWAGE and FIREWAGE) should be positively related to outsourcing.

Two additional variables, used in previous studies, are unemployment in 1990 and 2000 (from the Bureau of Labor Statistics), and a measure of ideology. UNEMPLOYMENT affects labor market conditions, and Lopez-de-Salinas et al. (1997) argue that politicians will have an incentive to keep services in-house to avoid political costs when unemployment is high. Thus, the expected relationship between unemployment and outsourcing is negative. As for ideology, more Republican leaning areas are expected to be associated with more outsourcing, as Republicans traditionally favor a smaller scope of government compared to Democrats. Thus the expected relationship between the Republican percent of the vote, PERREP, and outsourcing is positive. In the 1990 sample PERREP comes from 1988 data on the percent of votes cast for the Republican presidential candidate (George H.W. Bush) in the county in which the city is located, and these data come from ICPSR. Similarly, the percent of votes for the Republican presidential candidate (George W. Bush) in the county in which the city is located serve to proxy for PERREP in the 2000 presidential election for the 2000 data set; these are taken from http://cnn.com/elections. A standard theoretical interpretation for how PERREP (or ideology) affects outsourcing involves recourse to Republican's primitive preference for outsourcing, or conversely, Democrat's primitive preference for government production.

Finally, the regressions also include a number of dummy variables. One is related to the cost of employment. U.S. Advisory Commission on Inter-governmental Relations (USACIR) presents data on state laws that impact various aspects of city governance. Data from USACIR (1993), variable NOSTRIKE (f5), is a dummy variable that indicates the presence of a state law that prohibits city employees from striking. In terms of the model here, this interpretation could serve to reduce w^{μ}, making outsourcing less likely. However NOSTRIKE may also lower r, making outsourcing more likely; thus its effect on likelihood of outsourcing may be ambiguous. However, Lopez-de-Salinas et al. (1997, p. 454) write, "...holding wages constant, we expect that the ability to strike is a deterrent to contracting out."

Other dummy variables serve to proxy for r, the catch-all contracting cost variable in the model. USACIR variables include a number of "clean government variables" including: NOPOLACTIVITY (f15) indicating state law prohibits political activity by city or county employees, MERIT (f1) indicating state law requires cities to adopt a merit system, and STANDARDS (e14) indicating state law sets purchasing standards for local governments. All of these should be positively correlated with outsourcing, because "...the more difficult it is to pursue political ends through in-house provision of public services, the more likely local politicians are to privatize these services." (Lopez-de-Salinas et al. 1997, p. 453).

There are also a number of budget constraint dummy variables: DEBTLIMIT (e1)

indicating debt limits are imposed by states on cities, BORROWING (e7) indicating state law forbids short-term borrowing by local units, TAKEOVER (e19) indicating state law authorizes state "take over" of the financial administration of the city, BALANCEDBUDGET (e24) indicating state constitution or statutory law mandates a balanced budget, and STATEASSESS (e23) indicating property tax assessment is a state function. All of these should be positively correlated with outsourcing, as "...the harder budget constraints politicians face, the more likely they should be to privatize government." (Lopez-de-Salinas et al. 1997, p. 454).

The results of the Probit regressions using the 1990 data are reported below in table 3. None of the USACIR variables are included in these specifications, but including them did not alter the sign, magnitude or significance of any of the variables substantially. A table containing the estimated coefficients from regressions using the dummy variables in the baseline specifications appears in the appendix. The signs and significance of these dummy variables are discussed below, along with the results from table 3.

Rather than reporting the estimated Probit coefficients, which are difficult to interpret, the table below reports the marginal effect, that is, the change in the probability of outsourcing for an infinitesimal change in each independent, continuous variable and reports the discrete change in the probability of outsourcing for dummy variables.

The estimated coefficient on POP65 is positive across all specifications. In the fourth specification, the coefficient is significant at the 5% level, and is significant at the 1% level in all subsequent specifications. The estimated coefficient on POP65SQ is negative in all specifications, is significant at the 5% level in the fourth specification and at the 1% level in all subsequent specifications. Together, the positive marginal effect on POP65 and negative marginal effect on POP65SQ suggests that *the percent of the voting age population over the age of 65 has an inverted U-shaped correlation with probability of outsourcing.*[28] In terms of the theoretical model, this finding is what one would expect if the CCC is convex with positive fixed costs.

The results for LOGPOP are negative and significant at the 1% level, with similar marginal effect estimates and standard errors across all specifications. Although no prior sign was expected, this finding suggests that larger populations may be more strongly associated with economies of scale in setup costs than thickness, or competitiveness, of the contractor market. The results for LOGHOUSE are positive across all specifications, but the marginal effects fall in magnitude in the later specifications, so much so that in the last specification this variable is no longer significant at the 10% level. It is possible that correlation between LOGHOUSE and other variables, especially H65/H18, means its effect on outsourcing is diluted in the larger specifications. The theoretical model did not shed light on the expected sign of LOGHOUSE;

[28]The top of the inverted U is calculated to occur when POP65 is between 18 and 20%. In the data, 62 cities have a fraction of the population over 65 that is larger than 18%, and 22 cities have a POP65 that is greater than 20%.

the positive correlation is consistent with contractors being more likely to operate in areas of high housing value, although it is unclear how average housing value affects service level.

Table 5 Largest 200 U.S. cities, 1990

Dependent variable: mode (buy = 1), marginal effects reported, standard errors in ( )

POP65	.10	3.72	.83	8.31**	11.03***	11.97***	12.14***
	(.77)	(3.26)	(.84)	(3.57)	(3.65)	(3.75)	(3.71)
POP65SQ		-10.62		-21.71**	-28.72***	-30.70***	-33.46***
		(9.36)		(10.17)	(10.26)	(10.49)	(10.54)
LOGPOP			-.17***	-.18***	-.17***	-.18***	-.18***
			(.05)	(.05)	(.06)	(.06)	(.06)
LOGHOUSE			.24***	.26***	.17*	.16*	.05
			(.08)	(.08)	(.09)	(.09)	(.10)
FIREWAGE						.34**	
						(.14)	
FIREUNION						-.06	
						(.07)	
RELWAGE					.46**		.42**
					(.22)		(.21)
UNION					.06		
					(.12)		
PREREP					.99***	.87**	.80**
					(.38)	(.38)	(.38)
UNEMPLOYMENT					-.02	-.02	-.008
					(.02)	(.02)	(.02)
H65/H18							-.23**
							(.10)
Pseudo R2	.00	.01	.10	.12	.18	.16	.20
LL	-130	-129	-117	-114	-104	-103	-101

***, ** and * denote significant at 1%, 5% and 10% level, respectively

The coefficient on RELWAGE is positive, and this is consistent with the sign suggested by the model. The estimates are significant at the 5% level, and are of about the same magnitude in both specifications in which they appear. When FIREWAGE is used, similar results obtain; namely, the marginal effect is positive (although of slightly smaller magnitude) and significant at the 5% level. The coefficient on PERREP is also of the expected sign (positive), consistent with the notion of a primitive

preference for outsourcing on the part of Republicans. The marginal effect of PERREP varies in magnitude from .8 to 1, and varies in significance from the 1% level to the 5% level.

Neither of the unionization variables, UNION nor FIREUNION, are significant. Also, the coefficient on UNEMPLOYMENT is not significant at the 10% level in any specification. H65/H18 is significant at the 5% level and of negative sign. There was no a priori expected sign for this variable.

Finally, although the USACIR dummy variables were not included in the above specifications, they were included in a separate specification reported in the appendix. BORROWING, which indicated that state law forbids short-term borrowing by cities, was positive (marginal effect equals .25) which is in-line with the theory presented in Lopez-de-Silanes et al. (1997), and significant at the 5% level, both when included with the rest of the other state law variables and when included separately. STATEASSESS, which indicated state property tax assessment is a state function, was also positive (marginal effect equals .16), again consistent with theory, and this was significant at the 10% level in both specifications. No other variable was significant at the 5% level in either specification, nor at least the 10% in both specifications. Overall, the analysis indicates that for state laws, emergency ambulance service outsourcing is more responsive to "budget constraint" variables than to "clean government" variables, but not all budget constraint variables are important.

The same specifications in table 3 are repeated with the 2000 data, and the results are reported below in table 4. As indicated above, not all of the variables available for 1990 were also available for 2000, in particular those related to unionization, and the USACIR variables.

The results of the analysis of the 2000 data largely confirm the findings of the 1990 data with respect to POP65 and POP65SQ. The coefficient on POP65 is positive and varies in significance from 5% in the fourth specification to 1% in later specifications. Similarly, the coefficient on POP65SQ is negative (as in 1990) and varies in significance from 5% to 1% in later specifications.[29]

The marginal effect and significance of LOGPOP are very similar in 2000 and 1990 in that it is positive and significant at the 1% level in all specifications. The coefficient on H65/H18 remains negative and is still significant at the 5% level, as in 1990. However there are a number of differences to report with the rest of the variables. LOGHOUSE is not significant at the 10% level in any specification. Also, RELWAGE, while still positive in all specifications, is no longer significant at the 10% level in any. However when FIREWAGE is used as the public wage, the coefficient remains positive at the 5% level. This suggests that taking into account the specific details of the institutional setting for ambulances is important, and is a strength of the single-service focus of this study.

[29]In this case, the top of the inverted U occurs between 14-16%, somewhat earlier than in 1990. In the 2000 data, 115 cities have fractions of their populations 65 or older that are larger than 14%, and 61 cities have fractions larger than 16%.

Table 6 Largest 200 U.S. cities, 2000

Dependent variable: mode (buy = 1), marginal effects reported, standard errors in ( )

POP65	-.06	6.15	.10	14.87**	17.33**	23.01***	16.73**
	(1.01)	(6.85)	(1.06)	(7.35)	(7.50)	(8.40)	(7.68)
POP65SQ		-21.47		-50.80**	-58.39**	-75.69***	-58.42**
		(23.44)		(25.02)	(25.51)	(28.29)	(26.08)
LOGPOP			-.23***	-.26***	-.24***	-.23***	-.24***
			(.06)	(.06)	(.06)	(.06)	(.06)
LOGHOUSE			.06	.08	.04	-.02	-.06
			(.07)	(.07)	(.08)	(.08)	(.09)
FIREWAGE						.27**	
						(.13)	
RELWAGE					.27		.13
					(.18)		(.20)
PERREP					.51	.44	.64*
					(.33)	(.34)	(.33)
UNEMPLOYMENT					-.02	-.06	-.02
					(.03)	(.04)	(.03)
H65/H18							-.22**
							(.11)
Pseudo R2	.00	.003	.07	.09	.11	.11	.12
LL	-136	-136	-127	-125	-122	-112	-120

***, ** and * denote significant at 1%, 5% and 10% level, respectively

UNEMPLOYMENT remains insignificant as in 1990. However PERREP, while still positive, is not significant in 2000, except for being marginally significant in the final specification. There are several possible explanations for why these variables do not do as well of a job explaining ambulance outsourcing in the 2000 regression.

Although only conjecture, perhaps the most compelling reason is that urban sprawl has intensified over the decade, and so the variables that rely on county-level measures do not do as well of a job of measuring the city characteristics they are meant to proxy. These county-level variables include PERREP, RELWAGE and UNEMPLOYMENT.

Another reason the variables are no longer significant in the 2000 sample could be unobserved changes in the EMS industry over the 1990s. Given the potential changes over time, it is important to know whether data from both years should be pooled. The Chow-type test for Probit models (Greene, 2000) rejects the hypothesis

that the coefficient vectors are the same in both periods at the 95% confidence level.

A final result may shed light on the different but related question of if, and how, cities with different forms of government respond to political incentives. The large majority of cities are of two main forms: council-manager or mayor-council. The first is analogous to a parliamentary form of government in that the elected council hires a manager to run the city, while the second is analogous to a presidential system of government in that the voters elect not only the council, but also the leader (the mayor).

Levin and Tadelis (2007, p. 12) conjecture, "...elected mayors may have motivations that are more explicitly political than appointed managers." They find that managers are somewhat more likely to outsource services, and this is true here as well.[30] The notion that mayors are more political than managers can be captured through the theoretical model presented in this paper. If it is true that city managers do not care about politics, a corresponding assumption is that managers are social welfare maximizers. In the context of the model, this means managers treat each ϕ^j as equal to one, and so although managers would still take into account the preferences of the elderly, they would be less sensitive to their concerns than would mayors.

This story basically plays out in the 2000 data, although the author is hesitant to make too much of the result. In the 2000 data, the correlation on POP65 and POP65SQ is being driven by the mayor-council cities. When the sample is split by form of government, both forms exhibit the inverted U-shaped correlation, but it is only significant for mayoral cities. Pooling the samples does not lower the standard errors, although the Chow-type test for Probit models (with 95% confidence) suggests both form of government samples should be pooled. In 1990, however, managerial cities did exhibit the inverted U-shaped correlation and it was significant and the 5% level, and pooling both types of cities lowered the standard errors. The Chow-type test indicates both form of government samples should also be pooled in 1990. While it is difficult to find the reason for the apparent change in behavior in managerial cities, this finding provides suggestive evidence that mayoral cities may be more responsive to the elderly as an interest group compared to managerial cities when it comes to emergency ambulances, and this seems to be a fairly recent trend.

4 Conclusion

This study has contributed towards the development of a political economy "make or buy" model by combining politicians, voters, elections and the transaction economics of public good production technology into a common framework. This study has also suggested an alternative shape for the contracting cost curve, which better fits the

[30] Results using a form of government dummy (council-manager=0, mayor-council=1) are not reported. The estimated marginal effect was negative, but was not significant.

results of the data, and also makes sense theoretically; namely, that while contracting costs may be convex with respect to quality, there may also be important fixed costs to contracting. These fixed costs may be related to the "political considerations" that feature prominently in many discussions of local public service outsourcing.

Future research should look at other settings beyond EMS; schools, recycling programs and public transportation projects are other areas of local public policy where interest group politics have been shown to be important. These are ideal areas to explore in the context of the model developed here. Another direction to consider is to improve the understanding of appropriate empirical measures of the power of certain groups (the ϕ 's); this would shed light on an important dimension to intergenerational voter conflict. As this article demonstrates, age-based interest group politics are important in other areas of public policy, beyond the often studied topic of social security and Medicare.

5 Appendix

1. Derivation of $w_\beta < w_\mu$
2. Derivation of equilibrium g
3. Derivation of comparative statics
4. Data Appendix: JEMS Data Set
5. State Laws and Outsourcing
6. Figures 1a and 1b

5.1 Derivation of $w_\beta < w_\mu$

Theoretical support for the assumption that $w_\beta < w_\mu$ comes from Levin and Tadelis (2007). They postulate: a utility function U for the worker is equal to $w - c(e) + (T - t)\widehat{w}$, where w is the salary the worker receives upon meeting his contractual obligations, $c(e)$ is the cost of exerting an unobservable effort level e, T is the amount of time in a day, t is the amount of time the worker spends on the job and $\widehat{w}$ is the value of the worker's outside option. The worker can turn his time and effort into output according to the function $q = (\rho + e)t$, where ρ is "baseline" productivity, i.e. the level of effort the worker will exert without any inducements.

To produce the public service, the politician must contract with the worker. The politician can either use a performance contract, whereby the politician specifies an output level $\overline{q}$ that the worker must attain (i.e. the worker must meet the constraint $q > \overline{q}$), or an attendance contract, whereby the politician specifies a time level $\overline{t}$ that the worker must attain (i.e. the worker must meet the constraint $t > \overline{t}$.) To achieve $\overline{q}$

with an attendance contract, the politician must select $\bar{t} = \overline{q}/\rho$ because the worker has no incentive to exert any unobservable effort. While under a performance contract the politician simply selects $\overline{q}$, he must incur monitoring costs $d(q, r)$ to ensure the quality standard is met.

Levin and Tadelis' (2007) proposition 1 shows why minimization on w, subject to the worker's participation constraint, $U \geq \widehat{w}T$, will never lead to both the performance and attendance constraints binding at the same time; in short, removing the time constraint when the performance contract binds results in a savings of setup costs s, and removing the performance constraint when the attendance constraint binds results in a savings of contracting costs d. Their proposition 2 shows why the salary needed to induce a worker under a performance contract to work is less than is needed to induce a worker under an attendance contract to work: under a performance contract, the worker has an incentive to exert unobservable effort, because the worker can leave the job (and collect the reservation wage $\widehat{w}$) whenever the job is finished, i.e. whenever $q \geq \overline{q}$. In this setting, it can be shown that the worker will select $e > 0$. Because the worker prefers the performance contract, ceteris paribus, he would be willing to accept a slightly lower wage to work under a performance contract versus attendance contract.

5.2 Derivation of equilibrium g

Equation (10) is reproduced here: $\frac{\partial E\pi_A}{\partial g^\mu} = \sum_{j=O}^{Y} \alpha^j \phi^j \frac{\partial U^j(g^\mu_A)}{\partial g^\mu_A} = 0$

For the make case, $U^j(g^\mu) = (1 - \frac{w^\mu g^\mu + s}{y})y^j + \lambda^j \ln(g^\mu)$, and $\frac{\partial U^j(g^\mu_A)}{\partial g^\mu_A} = -\frac{w^\mu y^j}{y} + \frac{\lambda^j}{g^\mu}$

thus equation (10) can be rewritten as $\sum_{j=O}^{Y} \alpha^j \phi^j (\frac{\lambda^j}{g^\mu} - \frac{w^\mu y^j}{y}) = 0$

As there are only two groups, $j = Y, O$, it is $\alpha^O \phi^O (\frac{\lambda^O}{g^\mu} - \frac{w^\mu y^O}{y}) + \alpha^Y \phi^Y (\frac{\lambda^Y}{g^\mu} - \frac{w^\mu y^Y}{y}) = 0$

Expanding, $\frac{\alpha^O \phi^O \lambda^O + \alpha^Y \phi^Y \lambda^Y}{g^\mu} = \frac{w^\mu (\alpha^O \phi^O y^O + w^\mu \alpha^Y \phi^Y y^Y)}{y}$ and solving for service level, yields: $g^\mu = \frac{y(\alpha^O \phi^O \lambda^O + \alpha^Y \phi^Y \lambda^Y)}{w^\mu (\alpha^O \phi^O y^O + w^\mu \alpha^Y \phi^Y y^Y)}$ Multiplying both sides by w^μ yields equation (11).

Equation (12) is derived in a similar manner. For the buy case:

$U^j(g^\beta) = (1 - \frac{w^\beta g^\beta + d(g^\beta, r)}{y})y^j + \lambda^j \ln(g^\beta)$and $\frac{\partial U^j(g^\beta_A)}{\partial g^\beta_A} = -\frac{(w^\beta + d_g(g^\beta, r))y^j}{y} + \frac{\lambda^j}{g^\beta}$

and so equation (10), for the cases $j = O, Y$, after expanding can be rewritten as:

$\frac{\alpha^O \phi^O \lambda^O + \alpha^Y \phi^Y \lambda^Y}{g^\beta} = \frac{(\alpha^O \phi^O y^O + \alpha^Y \phi^Y y^Y)(w^\beta + d_g(g^\beta, r))}{y}$

This can in turn be rewritten as $g^\beta(w^\beta + d_g(g^\beta, r) = \frac{y(\alpha^O \phi^O \lambda^O + \alpha^Y \phi^Y \lambda^Y)}{(\alpha^O \phi^O y^O + \alpha^Y \phi^Y y^Y)}$, which is (12).

5.3 Derivation of comparative statics

$\Omega = \frac{y\left[\phi^Y \lambda^Y + \alpha^O(\phi^O \lambda^O - \phi^Y \lambda^Y)\right]}{[\phi^Y y^Y + \alpha^O(\phi^O y^O - \phi^Y y^Y)]}$ where $y = y^Y + \alpha^O(y^O - y^Y)$

Defining $a = (\phi^O\lambda^O - \phi^Y\lambda^Y)$, $b = (y^O - y^Y)$ and $c = (\phi^O y^O - \phi^Y y^Y)$,

$\Omega = \frac{(y^Y+\alpha^O b)(\phi^Y\lambda^Y+\alpha^O a)}{\phi^Y y^Y+\alpha^O c} = \frac{(\phi^Y\lambda^Y y^Y+\alpha^O a y^Y+\alpha^O b\phi^Y\lambda^Y+\alpha^{O^2} ab)}{\phi^Y y^Y+\alpha^O c}$

I. Comparative Static: α^O

$\frac{\partial\Omega}{\partial\alpha^O} = \frac{ay^Y+b\phi^Y\lambda^Y+2\alpha^O ab}{\phi^Y y^Y+\alpha^O c} - \frac{(\phi^Y\lambda^Y y^Y+\alpha^O a y^Y+\alpha^O b\phi^Y\lambda^Y+\alpha^{O^2} ab)c}{(\phi^Y y^Y+\alpha^O c)^2}$

Thus $\frac{\partial\Omega}{\partial\alpha^O} > 0$ if $y^Y a + \Omega c > (y^Y - y^O)(\phi^Y\lambda^Y + 2\alpha^O a)$

If the condition $\lambda^O > \lambda^Y$, $\phi^O > \phi^Y$ and $y^O > y^Y$ is met, then it can readily be checked that the inequality holds; thus $\frac{\partial\Omega}{\partial\alpha^O} > 0$ as argued in the text.

However the condition stated above is sufficient, not necessary for the comparative static on α^O to be positive For example, if $\lambda^O > \lambda^Y$, $\phi^O > \phi^Y$ but $y^O < y^Y$ then a sufficient condition for the term on the left hand side to be positive is $\phi^O y^O - \phi^Y y^Y \geq 0$ and the inequality will remain true whenever the difference between $y^Y - y^O$ is small, and the difference between $\phi^O\lambda^O - \phi^Y\lambda^Y$ is large. Thus, in a nutshell, as long as $\lambda^O > \lambda^Y$, $\phi^O > \phi^Y$ are true, then the comparative static will still be positive as long as y^O is not that much less than y^Y.

II. Comparative Static: λ^O

Because $\Omega = \frac{y\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]}$, $\frac{\partial\Omega}{\partial\lambda^O} = \frac{\alpha^O\phi^O y}{\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)}$

this derivative is clearly positive, as the expression contains no negative parameters. An analogous comparative static for λ^Y shows that it too is positive.

III. Comparative Static: y^O

$\Omega = \frac{[y^Y+\alpha^O(y^O-y^Y)]\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]}$ and

$\frac{\partial\Omega}{\partial y^O} = \frac{\alpha^O\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]} - \frac{[y^Y+\alpha^O(y^O-y^Y)]\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]\alpha^O\phi^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]^2}$

Then $\frac{\partial\Omega}{\partial y^O} > 0$ if:

$\alpha^O > \frac{[y^Y+\alpha^O(y^O-y^Y)]\alpha^O\phi^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]}$, or, $[\phi^Y y^Y + \alpha^O(\phi^O y^O - \phi^Y y^Y)] > [y^Y + \alpha^O(y^O - y^Y)]\phi^O$

Recalling that $\alpha^Y = 1 - \alpha^O$, this is $\alpha^Y\phi^Y y^Y + \alpha^O\phi^O y^O > \alpha^Y y^Y\phi^O + \alpha^O\phi^O y^O$

Cancelling terms, it can be seen that $\frac{\partial\Omega}{\partial y^O} > 0$ whenever $\phi^Y > \phi^O$

Therefore, if $\phi^Y < \phi^O$ as argued in the text, $\frac{\partial\Omega}{\partial y^O} < 0$ will hold. The analogous comparative static for y^Y can be demonstrated in a similar fashion.

IV. Comparative Static: ϕ^O

$\Omega = \frac{[y^Y+\alpha^O(y^O-y^Y)]\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]}$

$\frac{\partial\Omega}{\partial\phi^O} = \frac{[y^Y+\alpha^O(y^O-y^Y)]\alpha^O\lambda^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]} - \frac{[y^Y+\alpha^O(y^O-y^Y)]\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]\alpha^O y^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]^2}$

is positive if $\frac{[y^Y+\alpha^O(y^O-y^Y)]\alpha^O\lambda^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]} > \frac{[y^Y+\alpha^O(y^O-y^Y)]\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]\alpha^O y^O}{[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)]^2}$

which simplifies to $\lambda^O[\phi^Y y^Y+\alpha^O(\phi^O y^O-\phi^Y y^Y)] > y^O\left[\phi^Y\lambda^Y+\alpha^O(\phi^O\lambda^O-\phi^Y\lambda^Y)\right]$

Expanding this term yields $\lambda^O\alpha^Y\phi^Y y^Y+\lambda^O\alpha^O\phi^O y^O > \lambda^Y\alpha^Y\phi^Y y^O+\lambda^O\alpha^O\phi^O y^O$

Cancelling terms, and then simplifying again yields $\lambda^O y^Y > \lambda^Y y^O$

which in the text is rewritten as $\frac{\lambda^O}{y^O} > \frac{\lambda^Y}{y^Y}$. Thus $\frac{\partial\Omega}{\partial\phi^O} > 0$ if $\frac{\lambda^O}{y^O} > \frac{\lambda^Y}{y^Y}$. An analogous comparative static for ϕ^Y can be demonstrated in a similar fashion.

5.4 Data Appendix: JEMS Data Set

Data for the JEMS data set comes from annual surveys conducted by the *Journal of Emergency Medical Service*. They survey the 200 largest cities in the U.S. A typical entry includes the name of the city and a list of every EMS provider serving that community. In addition, next to the name of each provider, it reports the type of provider (categories include one through nine below) and whether it provides transport or first responding service to the community (or both).

Respondents to the JEMS survey had a list of nine options from which to choose:

- (1 - Fire Department) Fire-department-based responders trained as both fire-fighters and EMTs, using the either the same personnel to perform both fire protection and EMS, or different personnel to provide both services.
- (2 - 3rd service, municipal) Funded and operated by municipal government (utilizing local government employees) and not administered by the fire or police department
- (3 - 3rd service, county) Funded and operated by the county government (using county government employees) and not administered by a law-enforement or fire-protection agency
- (4 - Public Trust) A quasi-governmental entity that operates an ambulance system using its own employees.
- (5 - Hospital-Based) A hospital owned and operated ambulance service
- (6 - Private) A privately owned company or corporation engaged in the provision of medical transportation
- (7 - Public Utility Model) A regulated-monopoly ambulance system that selects the exclusive provider based on a competitive procurement process. These systems are usually single-tiered, providing emergency and non-emergency service with an all-advanced-life-saving fleet. Commonly, a quasi-governmental entity supervises the contract and performs billing/collection services

- (8 - Volunteer) A volunteer agency provides EMS
- (9 - Police) Funded and operated by municipal government (utilizing local government employees) and administered by the police department

Table 7 shows the number of cities utilizing each of the nine modes of provision in 1990 and 2000.

Table 7 Cities use of EMS transport delivery mode, by year

		1990	2000
1.	Fire department	53	74
2.	Third service (municipal)	16	11
3.	Third service (county)	12	11
4.	Public trust	1	0
5.	Hospital	15	8
6.	Private	93*	84**
7.	Public utility model	8	10
8.	Volunteer	1	1
9.	Police department	1	1

* The number 93 contains 39 sole private, 48 combinations of private and fire (6 and 1), two combinations of 6 and 2, two combinations of .6 and 3, and two combinations 6 and 5

** The number 84 contains 81 sole private providers, two combinations of 6 and 1, and one combination of 6 and 5

Items 1-2 and 9 were coded as "make" with items 3-8 coded as "buy".

5.5 Classifying Cities as "mayor-council" versus "council manager"

Form of government data comes from two sources. For 1992, the source is the Census of Governments, Organization Phase, and for 2007 the data was provided to the author by ICMA. When these data indicated a city switched form of government, the following rule was used to ensure accuracy of form of government data:

1. Treat ICMA data as correct, and count “commission” forms as “mayor-council”
2. Treat Census data as correct when it classifies a city as “council-manager”
3. Be suspicious of Census data that classifies a city as “mayor-council”; except when it can be verified through Google searches, as in the case of Sioux Falls, Chattanooga and El Paso. Label these cities as “council-manager.”

Google searches, telephone calls and researching city charters shows these rules are consistent with the available evidence. Using these rules makes sense for the following reasons: 1.) Knowing form of government data is ICMA's core competency. Also, city web pages verified all the ICMA categorizations were correct, except those of "commission." However, in these cases, city web pages (as well as telephone calls to city officials) revealed all switchers labeled as "commission" form were actually "mayor-council" form. 2.) "mayor-council" cities are more difficult to correctly classify than "council-manager" 3.) Due to the difference between "weak mayors" and "strong mayors" it makes sense to classify a switcher Census data labels as "mayor-council" as "council-manager" especially because many Google searches and telephone calls verify that the Census data is often wrong on these classifications. However, Google searches reveal that the Census is sometimes right, so it make sense to keep the classification the same in these cases. These three cities were verified to switch from mayor council to council manager. The rest of the cities could not be verified as having switched and in fact several were verified to not have switched with the help of ICMA employee Martha Perego, who was of great assistance and accessed the ICMA's city charter database on the author's behalf. For these cities, "council-manager" is used as form of government. The likely reason for why most switchers listed as mayor-council were incorrect is the difference between a "weak mayor" and "strong mayor".

The problem with this technique is that it will not catch cities that switched from council-manager to mayor-council; that is, some cities could still be incorrectly classified as mayor-council in 1987 even though they were council-manager cities, as they would not have shown up as switchers. However, as few cities switch form of government from year to year, this problem is not likely to be large.

5.6 State Laws and Outsourcing

Table 8 below presents regression results of the baseline specifications along with the USACIR state law dummies. Following Lopez-de-Salinas et al. (1997) the state law dummies are included both separately and together, as it is not clear that the presence of one law weakens the effects of other laws.

Table 8 Largest 200 U.S. cities, 1990

Dep. variable: mode, buy = 1, marginal effects reported, std errors in ( )

POP65	8.21**	7.18**	8.08**	8.57**	8.42**	9.134**	8.46**	8.78**	8.49**	8.31**
	(3.66)	(3.53)	(3.54)	(3.66)	(3.58)	(3.63)	(3.56)	(3.61)	(3.58)	(3.57)
POP65SQ	-21.09**	-18.71*	-20.66**	-22.53**	-21.95**	-25.02**	-22.25**	-22.83**	-21.98**	-21.71**
	(10.6)	(10.0)	(10.1)	(10.6)	(10.2)	(10.4)	(10.1)	(10.3)	(10.2)	(10.2)
LOGPOP	-0.17***	-0.18***	-0.17***	-0.18***	-0.18***	-0.18***	-0.17***	-0.17***	-0.17***	-0.18***
	(0.05)	(0.050)	(0.051)	(0.051)	(0.051)	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)
LOGHOUSE	0.27***	0.28***	0.27***	0.27***	0.27***	0.27***	0.24***	0.27***	0.28***	0.26***
	(0.077)	(0.077)	(0.077)	(0.078)	(0.078)	(0.077)	(0.081)	(0.077)	(0.080)	(0.077)
DEBTLIMIT	0.0323									0.110
	(0.11)									(0.14)
BORROWING		0.260**								0.253**
		(0.076)								(0.080)
STANDARDS			-0.146*							-0.133
			(0.077)							(0.085)
TAKEOVER				0.0194						0.0665
				(0.12)						(0.14)
BBUDGET					0.0269					-0.0251
					(0.13)					(0.18)
STATASSESS						0.159*				0.187*
						(0.080)				(0.093)
MERIT							-0.0691			-0.0646
							(0.074)			(0.081)
NOSTRIKE								-0.156		-0.168
								(0.20)		(0.22)
NOPOLACT									-0.0298	-0.0362
									(0.073)	(0.083)
Pseudo R2	.12	.14	.13	.12	.12	.13	.12	.12	.12	.18
LL	-113	-110	-112	-113	-113	-111	-113	-113	-113	-105

***, ** and * denote significant at 1%, 5% and 10% level, respectively

5.7 Figures 1a and 1b

Figure 1a Tax Price and Service Level

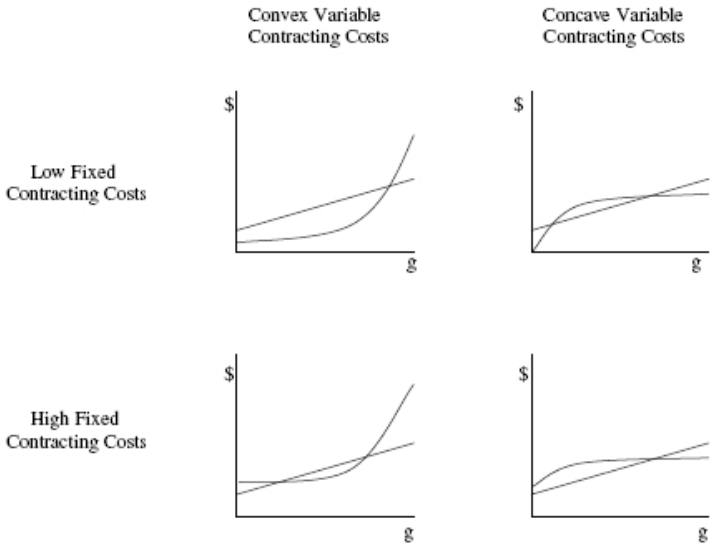
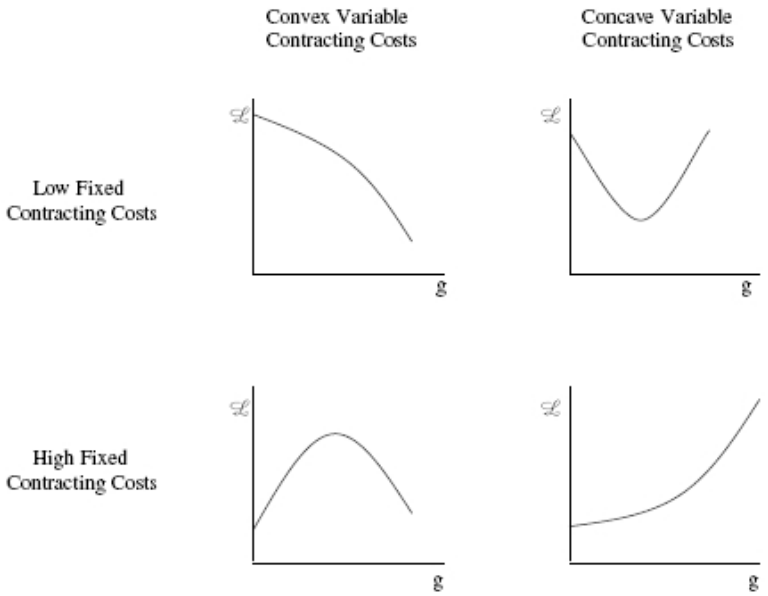


Figure 1b Likelihood of Outsourcing and Service Level



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