

THE INTERGOVERNMENTAL CONTEXT OF ALTERNATIVE SERVICE DELIVERY CHOICES

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Abstract:

This paper evaluates the impact that states have on local governance decisions. We suggest that when states impose constraints on less politically costly tools for funding local services, cities turn to alternative service delivery mechanisms to solve the problems of inefficiency often generated by diseconomies of scale and jurisdictional externalities. But when states constrain those other mechanisms, the relative merits of outsourcing increase. Using data on alternative service delivery choices made by cities, we find that our theory is generally supported.

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Recent research has documented the many complex organizational structures found in everyday service provision in communities across the United States. A central theme running through this research is the recognition that cities have at their disposal numerous mechanisms for the delivery of goods and services, and the choice of tool and is still the primary responsibility of the local government.

Equally important is the realization by many of these local governments that they are also solely accountable for the outcomes of the decisions that are made. However, one of the central conclusions from this research is the recognition that a fragmented governance structure has at least some adverse consequences. Among the most discussed of these consequences is a loss of economies of scale in the production of government goods and services and jurisdictional externalities.

Research suggests that one important way in which local governments look to overcome much of the costs of local government service provision is through outsourcing. But what has been ignored in previous studies is the complex interaction between resource extraction, state-imposed constraints that change transaction costs, and alternative service delivery mechanisms.

We suggest that state rules can make some options more or less costly, and that these rules change the decision calculus of local governments. Local governments respond to these rules differentially, depending on the rules employed by the state and local circumstances. It is therefore insufficient to model local decisions with the inclusion of simple dummy variables that identify state rules. The simple reason is that these rules interact with the circumstances of the municipalities that are subject to them; the effects of these rules are non-uniform. Using survey data from the International City/County Management Association, we propose to evaluate local outsourcing decisions in a model that interacts state rules with local fiscal, economic and political conditions.

Literature Review

Much of the empirical work on local government service provision arose when the ICMA began surveying local governments. Since 1983, the International City/County Management

Association has conducted periodic surveys of its member cities and counties to estimate the amount and type of outsourcing activity (similar surveys from the Advisory Commission on Intergovernmental Relations go back to the 1960s). As part of these surveys, respondents were asked to estimate and evaluate services that were “outsourced”. Several scholarly studies have been conducted with this survey data.

Recent studies using this data begin with Ferris (1986), who used the ICMA survey data to empirically examine the factors explaining when local governments outsource services. His dependent variable is the percentage of 43 different services that were contracted out in each jurisdiction. He suggests that services are most likely to be outsourced when cost savings are possible, when the jurisdiction faces serious financial pressures, and when the political opposition to outsourcing is low. Although he did not separate cases by service provider category, his basic model became the standard upon which others were built. Ferris and Graddy (1986) evaluate the different types of outsourcing, while Morgan, Hirlinger and England (1988) develop a two-stage model where the first, selection stage identified factors that impact the decision to outsource, and in the second stage the government decides the type of outsourcing.

Nelson (1997), using the ICMA data and a basic dichotomous dependent variable, finds that the decision to contract out is based in part on the degree of homogeneity of the population, based on Hirsfeld indices of age and education. Morgan and Hirlinger (1991) show that outsourcing to other local governments is more likely in cities with the council-manager form of government.

One of the more notable recent studies is that conducted by Brown and Potoski (2003), who use ICMA’s 1997 survey and a survey they conducted to identify service-specific transaction costs associated with outsourcing. They show that when government services have higher asset-specificity or high monitoring costs, they are less likely to be outsourced. Asset-specificity refers to services that require specialized investments or high initial investments. Outsourced services are difficult to monitor when outcomes or outputs are difficult to identify or count.

More recently, Lamothe *et al.* (2008) use the ICMA data from both 1997 and 2002 to capture the dynamic nature of decision making. In this article, the authors hypothesize and find strong empirical evidence to support the idea that past production decisions either expand or constrain future options. This is especially true in the case of local governments that chose not to take the outsourcing approach and instead choose in-house service delivery. They also point out that while outsourcing might seem like the wave of the future and the choice of many ideologues, it appears that local governments are far more pragmatic than previously believed.

Carr *et al.* (2009) use data from a survey of Michigan local governments to develop a model of local government service delivery that takes into account both the traditional rational choice approach and institutional theories. They are especially interested in the role that professional and policy networks play in shaping local government decisions. Their findings suggest that networks are used when outsourcing as a mechanism for reducing risk in an uncertain environment.

However, despite the wealth of important literature on outsourcing as a policy tool for local government, very little has focused on the role the state has played in shaping the decision making of local governments.

Theory

Cities have at their disposal numerous mechanisms for the delivery of goods and services to their residents. Whether a government chooses to deliver any particular good or service themselves or to contract it partially or wholly to another local government, a for-profit firm, or a nonprofit, the city retains policy responsibility and, importantly, accountability to the electorate for delivery. While responsibility remains with the governing body, control over outcomes necessarily diminishes with modes of production that include other providers. It is the potential mismatch between responsibility and control that generates a desire on the part of governments to produce the good or service with internal resources (i.e., “in house”) whenever possible.

A countervailing motivation for governments, however, is the desire – perhaps even “need” – to minimize the costs of producing a good or service. Service delivery mechanisms that incorporate other actors offer the possibility of minimizing costs through cost sharing arrangements, competitive bidding, and economies of scale.

Alternative service delivery mechanisms, thus, are means of controlling costs of production, but they may come with high political transaction costs. We should expect, then, that these alternative methods should be viewed most favorably by cities when resource extraction is the most difficult.

There are, of course, many different way to conceptualize the issue of “resource extraction.” We borrow a notion from existing research (Krueger and Bernick 2010) that suggests that cities with a stronger revenue base, the ability to annex additional land, and the ability to utilize special districts to fund services are all mechanisms for resource extraction.

These various methods of resource extraction are, at least at the margins, substitutable (Carr 2000). Cities opt for one method of resource extraction (or combination of methods) over others based on the lowest political and administrative transaction costs. Thus, the choice of mechanism for resource extraction is similar in concept to a policy tool (Salamon 1989), and the choice of the tool or set of tools is a function of the relative transaction costs of those tools.

When the transaction costs for these tools of resource extraction are high, however, cities look to other options. Among these other options are the alternative service delivery arrangements that are the central focus of this study.

Statewide rules imposed on the ability of cities to extract resources from their environment can, we believe, significantly impact a city’s decision calculus. For example, from Proposition 13-style assessment caps to limits on incorporations of new governmental entities to restrictions on annexation, states attempt (usually imperfectly) to constrain the actions and extractions of their local governments. However, the degree to which these actually constrain depends on a host of characteristics of the targets of the constraints.

As discussed above, these limits are usually included in models of delivery choice via simple dichotomous “dummy” variables. We maintain that the relationship between rules, resource extraction, and service delivery mode is more nuanced than previously documented.

We hypothesize that state limits on property tax revenue generation, on the ability of local governments to annex unincorporated land, and on the creation of special districts create incentives for cities to choose alternative service delivery mechanisms to achieve economies of scale. Further, we suggest that these rules function interactively with the local activities they are designed to affect. These other local policy options – property tax revenue, annexation, and special district formation – represent alternative policy tools to generate additional revenues that have straightforward implications for outsourcing. The state-level rules are all mechanisms for constraining the ability of local governments to acquire resources for policy implementation. Our argument is that when states make these other tools relatively more costly to utilize, either politically or economically, cities are more likely to utilize alternatives to in-house production -- alternative policy tools -- because they can facilitate higher service levels and more efficient service provision.

First, we argue that higher own-source revenues represent a locally controlled resource that acts, in some ways, as an alternative to outsourcing. Revenue provides the mechanism by which governments implement policies. To the extent that cities have higher revenue, they need not rely on other mechanisms for funding policy initiatives, though they might in the interests of efficiency. But when revenue is in short supply, cities opt for other mechanisms to fund policy. Thus, we anticipate that greater revenue per capita should lead to less outsourcing.

However, the story becomes more complicated when we introduce state restraints on cities’ ability to raise revenue. When states impose property tax revenue limits, cities worry about exceeding that revenue cap. When facing such a cap and when revenues are high, cities should opt for more cooperation to provide services while keeping revenue below the state-imposed cap.

This suggests an interactive effect between the state-imposed limit and local revenue. For cities in states without a limit, we expect the relationship between revenue and outsourcing to be negative, but when states impose such a limit, we anticipate that the relationship between revenue and outsourcing will be positive. However, not all outsourcing is the same.

Given that outsourcing to private sector entities, by definition, requires some residual capture by the firm, we should not expect constrained municipalities to outsource to for profit agencies. Depending on the resources that nonprofit providers bring to service provision, it may or may not be efficiency enhancing to choose this route. With regard to alternative service delivery mechanisms that require other governments, we suspect that the same logic that applies to for profit firms applies to outsourcing to other governments, especially in environments of resource constraints. However, joint production, for services that are subject to scale efficiencies, should be increasing in revenues relative to in-house production precisely because the resource constraints place a premium on efficient delivery given a fixed budget.

Second, states often limit the creation of new local governments. While such a limit may reduce the number of cities, it also limits the number of new special districts that can be created, which are much more prolific than cities. Special districts are, in a sense, another mechanism for service delivery that overcomes efficiency concerns by sizing the taxing jurisdiction to the size of the community being served (Foster 1997; McCabe 2000). Thus, we expect that in the absence of limits on the creation of special districts, this mechanism will be utilized more and we should see less outsourcing. However, when states limit the ability to create special districts, local governments will turn to outsourcing more frequently as an alternative. Stated in terms of alternative service delivery methods, we should expect internal production to decrease in the number of special districts, all other things equal. Moreover, it would seem that, with limitations on the creation of special districts, this alternative is no longer viable, though it need not lead to clear expectations regarding the interaction

term except that it should mitigate the general tendency to avoid internal production when the ability to create special districts is unconstrained.

Third, we evaluate annexation and suggest that the process works in a similar manner. For cities facing the need to resolve resource extraction problems, annexation provides an opportunity to expand city borders and increase the tax base without reducing political autonomy. Thus, in an environment that is conducive for annexation, cities will outsource less. When the environment is not conducive to annexation, they will outsource more. But many states impose limits on annexation activity. Several studies have evaluated state annexation policies on annexation activity with mixed results (Sengstock 1960; Liner 1990; Carr and Feiock 2001; Palmer and Lindsey 2001). Simplifying Senstock (1960), we hypothesize that annexations requiring a political process for approval have higher transaction costs relative to those requiring approval from smaller governmental organizations (courts and cities).

Control Variables

In addition to the major variables of interest, we include several control variables common to the existing literature. The first two control variables captures the effects of two different service characteristics first laid out by Williamson (1981). The degree to which certain specialized investments are required to produce a service has an important effect on the decisions of local governments to provide a service or outsource to another entity (Brown and Potoski 2003). As a service become more asset specific, a local government is more willing to produce the good or service, so as to avoid the opportunity for a monopolistic vendor to take advantage of the government that is contracting out. However, at a certain point, a service becomes too asset specific to produce internally, especially for smaller local governments, and thus a government becomes willing to produce a service externally. Similarly, we hypothesize a curvilinear relationship between asset specificity and outsourcing where we should see the likelihood of outsourcing decreasing as asset specificity increases until the very highest levels of asset specificity where we should see the likelihood of outsourcing

increasing. Because of this, the model includes a measure of asset specificity and a squared term of asset specificity.

The second service characteristic variable included in the model is an indicator of service measurability. In other words, how difficult is it to measure the outcomes of a service. Outsourcing is more likely when service measurability is easier and more accurate because the contracting government has an easier time monitoring the activities of the service provider.

Third we include a variable, form of government, that captures institutional characteristics that make it more or less likely to choose outsourcing as a policy tool. The literature on local government service provision suggests two different rationales for why a city manager might lead to more outsourcing. First, the city manager position can be viewed as a mechanism for reducing information costs associated with policy making in a complex environment. The manager is not as interested in a particular policy but with efficient implementation. Thus they are able to gather diverse opinions from a variety of stakeholders, assimilate that information, and provide useful policy recommendations to part-time, less knowledgeable (but ultimately more democratically accountable) policymakers (Krueger and Bernick 2010). The city manager is in a situation where they would find it in his or her career interest to help policymakers find ways to balance competing claims and goals (Feiock and Kim 2000; Feiock, Jeong, and Kim 2003). Thus, the city manager can reduce the transaction costs associated with outsourcing and make the option more viable.

The second rationale has to do with what we know about organizational dynamics and institutional norms. Brown and Potoski (2003) point out that council-manager cities are more likely to be members of ICMA and association membership is one of the ways that organizations learn about popular institutional norms (see also Scott 1987). ICMA has long advocated the major tenants of the “reinventing government” movement, including outsourcing, and we anticipate that these ideas have diffused throughout the membership of ICMA. Thus, while we have two potential explanations for how government form may impact the decision to outsource, both explanations arrive at the same

conclusion. In other words, we expect cities with the council-manager form are more likely to outsource services than mayor-council cities.

The final control variable included in the model is a measure of the population of the city. Borrowing from existing research, we hypothesize a curvilinear relationship and thus include a squared term for population. As Stein (1990) points out, the largest communities are those, because of economies of scale, have the ability to internally produce goods and services. In addition, the smallest communities are often in the more rural areas and thus lack the potential partners to cooperate with. The medium size communities in either rural or metropolitan areas either have the ability, and or need to look for external forms of service provision.

Findings

We report the results of a multinomial logistic regression (Mlogit) model in Table 1.¹ Mlogit, which has been commonly used in the recent literature on alternative service delivery decisions (see for example Lamothe, Lamothe, and Feiock 2008; Brown and Potoski 2003), provides results that compare the impact of the independent variables' effects compared to some baseline category. In our case, as with previous studies, we use internal service production as the comparison category. Thus, the coefficients in Table 1 demonstrate the impact that each independent variable has on the choice of each alternative service delivery mode compared to internal production.

Utilization of Mlogit requires that the model meet an assumption of the independence of irrelevant alternatives (IIA). The idea behind IIA is that the odds of any set of choices are independent of the remaining elements in the choice set. The Hausman-McFadden (1984) test for the independence of irrelevant alternatives shows that internal production (some 57 percent of the observed choices) may be suspect. In some ways, this confirms our suspicion that a more elaborate choice model may be appropriate because the sequence of decisions undertaken when considering alternative methods of service delivery is unlikely to simply consist of these five choices simultaneously considered.

¹ See Luce (1959) and McFadden (1974).

On the other hand, we wish to balance a more elaborate choice structure with the desire to generate findings comparable to previous scholarship. Thus, we acknowledge that there is some evidence that IIA may not hold and will further investigate alternative specifications in future research.

Table 1 demonstrates that 21 of the 36 variables of interest (nine variables in four categories) are statistically significant. In general, the variables associated with special districts perform best.

It is not technically valid to infer the effects of interactions from simply examining the regression coefficients (Greene n.d.). As a result, we performed a series of likelihood-ratio tests (with asymptotic chi-square distributions) to examine whether the fit of the model declines precipitously in the absence of the interactions. For property tax revenue, we find a likelihood-ratio statistic of 11.78 (4 d.f.) with an accompanying p-value less than 0.02. For special districts, a similar test yields a likelihood ratio test statistic of 16.09 (4 d.f.) with an associated p-value of 0.003. Finally, for annexation activity, we uncover a test statistic of 22.37 (4 d.f.) that yields an associated p-value of 0.0002. In all cases, there is evidence to suggest that the statistical fits are improved by the interaction terms.

To speak to the broader question of whether the three limits and baseline variables that we propose are important, in a statistical sense, we specified a joint test of the hypotheses that all of the interaction terms are unnecessary. The resulting chi-square statistic is 51.9 (12 d.f.); this result is statistically significant to four decimal places. In short, there is evidence of merit, at least in terms of statistical fitting, to the propositions we have put forward.

To aid interpretation, we generated the predicted probabilities of each substantive variable of interest over the values of each of the service alternatives, holding other variables at their means (and binary variables set to zero). We discuss the substantive interpretation of the findings in the context of these graphs.

Figure 1 shows that there are very few differences between cities in states with and without property tax caps with respect to providing services through nonprofit agencies as a function of per

capita property tax revenue. The top middle panel of Figure 1 shows a similar dynamic. Though the two lines differ, the differences are quite small, and the presence or absence of caps does not exercise much influence over the propensity to engage in for-profit outsourcing. When we move to forms of service delivery that are exclusively governmental, we begin to notice patterns that conform to expectations.

The top right panel of Figure 1 shows that service delivery through other governments is largely nonresponsive to per capita property tax revenue for cities in states without caps on such revenues, but is notably decreasing for cities in states that cap property tax revenues. To the extent that other governments face similar caps and given the relatively low and nonresponsive levels of service provision that do not engage governmental providers, this suggests that the revenue constraints are binding insofar as other governments are unwilling to provide such services via whatever set of contractual arrangements are feasible. On the other hand, in the bottom left panel, we see that joint production appears to be picking up some of the slack. Finally, though the differences in the bottom middle panel are small, we uncover the force of property tax limits. As revenues increase under these limits, internal production becomes more likely, while levels of internal production are relatively flat without such constraints.

Figure 2 describes the response of various alternative service delivery mechanisms in response to the number of special districts that exist in the county (per 10,000 population) in which a city is located with and without limits on incorporation. In the top left and top center panels, we see that outsourcing to nongovernmental entities decreases a bit more rapidly absent constraints on incorporation limits than it does in the presence of such limits. In the presence of such limits, outsourcing to nonprofit and for-profit entities is relatively constant. Turning our attention to government producers, though the probability of provision by other governments is decreasing both with and without limits on incorporation, the rate of decrease is more profound without limits on incorporation than it is with such limits. Similarly, though the starting points are different, we also see

that joint production decreases as the number of special districts increase, but where limits on incorporation exist, cities start higher and always engage in more joint production than in cities where no limits on incorporation exist. In addition, the rate of change in joint production falls off noticeably, even at relatively low numbers of special districts.

All of these decreases for cities that are not subject to limits on incorporation are explained, it seems, by the increasing tendency to provide services internally. Where limits on incorporation do not exist, internal production is weakly increasing in the number of special districts and all of the alternative service delivery mechanisms are weakly decreasing. It would seem that limits on incorporation create lesser incentives for internal delivery of services than do the absence of such limits.

Turning to the measures of annexation activity depicted in Figure 3, we see that cities with no annexation limits tend to participate in joint ventures slightly more as annexation activity increases, while cities with annexation limits tend to outsource to other governments and for-profit firms more as annexation activity increases. In the case of outsourcing to for-profit firms, both cities with limits and cities without annexation limits appear to increase their use of outsourcing as annexation activity increase, although cities with imposed limits appear to make greater use of such arrangements as annexation activity increases. At the low end of the annexation activity scale, however, cities with limits appear to utilize outsourcing to for-profits less than cities without such limits. Outsourcing to other local governments behaves as predicted by the theory. As annexation activity increases, cities without annexation limits decrease outsourcing activity, while cities with limits decrease their outsourcing activity. Outsourcing to nonprofits does not appear to be affected by annexation activity.

We now turn to a brief discussion of the control variables. First, it is interesting that city managers appear averse to outsourcing. In the regression table, cities with manager systems, all other things equal, are significantly more likely to engage in joint production relative to internal production, do not obviously favor service delivery by other governments to internal production, but are less likely

to utilize either for-profit or nonprofit agents for service delivery. We suspect there is a great deal more to say about this that has to do with relatively general and simple bargaining structures, but for now we leave this as an empirical observation. Second, there is evidence that measurability and asset specificity, as studied by Brown and Potoski, perform in a fashion similar to their study.

Discussion

Because we have a large amount of data and are thus not limited by the degrees of freedom available in the model, we can relax the assumption of linearity in the variables of interest. From a theoretical perspective, this is particularly useful because we hypothesize that the state-imposed limits we study here have their greatest effect as local governments approach those limits. In other words, as the limits become truly constraining, our theory suggests that cities in states with and without limits would be most different. By allowing nonlinearity, we can look for changes in the relationships across values of the independent variables of interest.

We achieve this by fitting Mlogit models that employ a vector spline algorithm implemented in the VGAM package for R (Yee 2010). The procedure essentially operates in two stages. First, a generalized linear model (McCullagh and Nelder 1989), the same model presented in Table 1, is fitted to the data. From this, the effects of nonlinear regressors are back-fitted based on generalized residuals that are used to fit smooth functions of the predictors.²

VGAM takes as input a user-specified number of degrees of freedom that are constraints on over-fitting. To avoid over-fitting the model, we opt to limit the degrees of freedom (per function) to be three (two more than a linear fit). Because the function is akin to piecewise fitting and then smoothing the knots that tie together the component parts, this puts notable limitations on the functional forms we could represent but does not simply assume a straight line.

² The existence of these generalized residuals is what renders generalized linear models a bit different from standard maximum likelihood estimators but they are asymptotically equivalent.

The model that we estimate is:

$$U_{ij} = a_j + X_i\beta_j + D_i\gamma_j + f_j(z_i) + g_j(z_i*D_i) + \varepsilon_{ij}$$

U_{ij} is a latent utility for each alternative service delivery method (ASDM) j for unit i , j is the ASDM-specific constant, X_i is a (row) vector of control variables, and β_j is a (column) vector of regression coefficients specific to the j^{th} comparison (note the model is not identified with a base category). D_i captures the presence or absence of a state-level policy limit that applies to i , γ_j is the effect parameter for this policy, and z_i are the key theoretical variables that have conditional effects that depend on whether D_i is or is not in effect. The functions f_j and g_j are the smoothed functions described above. With multiple z_i , we would need some index for the functions (and we have three), but we want to finesse this. Though splines are not commonly used, we find it difficult to justify fitting lines when we have this quantity of data and estimate so little; our theory generates some directional expectations in the abstract but we see no obvious reason that these expectations imply straight lines in the latent utilities. For this reason, we think it reasonable to utilize this semi-parametric method to fit functions of the covariates to the outcomes. We think that the interesting nuance to the results justifies the practice.

Table 2 presents the outcomes of the variables of interest using this nonlinear approach. Because we utilize more than 1 degree of freedom for each variable, we utilize a chi-square test of significance. We find that 16 of the 24 variables are statistically significant. We present predicted probabilities based on these estimates in Figures 4, 5 and 6. These figures on the nonlinear relationships correspond to the linear models presented in Figures 1, 2 and 3.

In Figure 4, we see in the panels for outsourcing to for-profit firms and to other local governments, statistically significant in Table 2, that cities in states with tax limits move away from their counterparts in states without limits at higher levels of revenue (per capita), as predicted by the

theory. The same process appears to be occurring with annexation activity in Figure 6, though the effect is less visually striking. As with the linear models, the impact of special districts is important, but in the direction opposite of what we anticipated. This is particularly notable in the panel for joint production in Figure 5. Cities in states with limits participate in joint production more than cities without limits, but as the number of special districts increases, the probability of joint production decreases. In general, we see this pattern in all the panels in which the probability of outsourcing decreases as the number of special districts increases, suggesting a more complex pattern of service provision than the current state of theory predicts. Clearly, more empirical and theoretical work is needed to fully evaluate the inter-connectedness between special district formation, service provision, and provision method choice.

Conclusions

In an environment that is often characterized by rising expectations of services and an unwillingness to pay, local governments appear to aggressively seek out means of efficiently providing goods and services that resident desire.

Productive efficiency can take many forms, from consolidation and annexation to interlocal cooperation and outsourcing. However, the decisions that local governments make are not unconstrained by outside forces. Foremost among these external forces are the rules that state governments place on local governments.

In this paper, we show that state-level rules interact with the local environment to alter the decision calculus of local leaders. The story is complex because on the one hand, we demonstrate that local governments are responsive to state rules, but on the other hand, the mechanisms through which state influence works are indirect.

We show that cities choose their service delivery mechanisms strategically based on, among other things, state-imposed limits on resource extraction. Outsourcing is politically challenging, and so

it is perhaps not surprising that cities opt for other choices when possible. But when states make these other choices more politically costly, cities will outsource to achieve policy goals.

Beyond the questions of intergovernmental relations, this article raises several questions for scholars of interlocal relations and local governance structures. The normal topics of the local governance literature – special district formation, annexation patterns, interlocal cooperation, and city-county and city-city consolidation – are shown to be intertwined. In the literature currently, we treat them separately so that our models are empirically tractable, but we should be looking to a future in which these processes are modeled interactively, as they occur in the real world. This is not just a model-building challenge, of course. Our theories need further refinement as well. The end result, however, will be a much stronger understanding of how political and administrative motivations at multiple levels of analysis interact to create the mix of institutional arrangements we see on the current local U.S. landscape.

Table 1. Multinomial Logistic Regression Results

	Joint Production		Other Local Government		For-Profit Firm		Non- Profit	
Property Tax Revenue								
Limit (Yes/No)	-0.0179	0.0721	0.4799 *	0.1101	0.2293 *	0.1049	0.3993 *	0.1733
Tax Revenue Per Capita	-0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002
Tax Revenue * Limit	0.0003 *	0.0001	-0.0003	0.0003	0.0000	0.0002	-0.0007 *	0.0004
Special Districts (SPDs)								
Limit (Yes/No)	0.3667 *	0.1444	-0.6701 *	0.2814	-0.6388 *	0.2207	-0.3103	0.3790
SPDs in County per 10,000 Population	-0.3539 *	0.0868	-0.4024 *	0.1355	-0.2077 *	0.0915	-0.2022 *	0.1181
SPDs * Limits	0.3046 *	0.0879	0.3179 *	0.1365	0.1290	0.0925	0.1961	0.1193
Annexation Activity								
Limit (Yes/No)	0.0224	0.0891	-0.2797 *	0.0997	-0.1203	0.1123	0.0768	0.1943
Annexation Activity	0.0000 *	0.0000	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Annexation Activity * Limit	0.0000	0.0000	0.0002 *	0.0000	0.0001 *	0.0000	0.0000	0.0001
Control Variables								
Asset Specificity	2.1302 *	0.2591	5.1433 *	0.3484	0.1606	0.3595	6.4794 *	0.8839
Asset Specificity Squared	-0.3679 *	0.0427	-0.6648 *	0.0542	0.0627	0.0568	-0.9796 *	0.1360
Measurability	0.8798 *	0.2869	-1.0189 *	0.3192	-4.3369 *	0.2450	5.6405 *	1.0283
Measurability Squared	-0.1677 *	0.0533	0.2909 *	0.0545	0.6925 *	0.0441	-0.6800 *	0.1711
City Manager Form	0.2900 *	0.0469	0.0693	0.0538	-0.1160 *	0.0551	-0.1773 *	0.1000
Population	0.0000 *	0.0000	0.0000 *	0.0000	0.0000 *	0.0000	0.0000	0.0000
Population Squared	0.0000 *	0.0000	0.0000 *	0.0000	0.0000 *	0.0000	0.0000 *	0.0000
Constant	-5.7730 *	0.5417	-9.7623 *	0.7741	4.0890 *	0.6496	-23.4968 *	2.5029

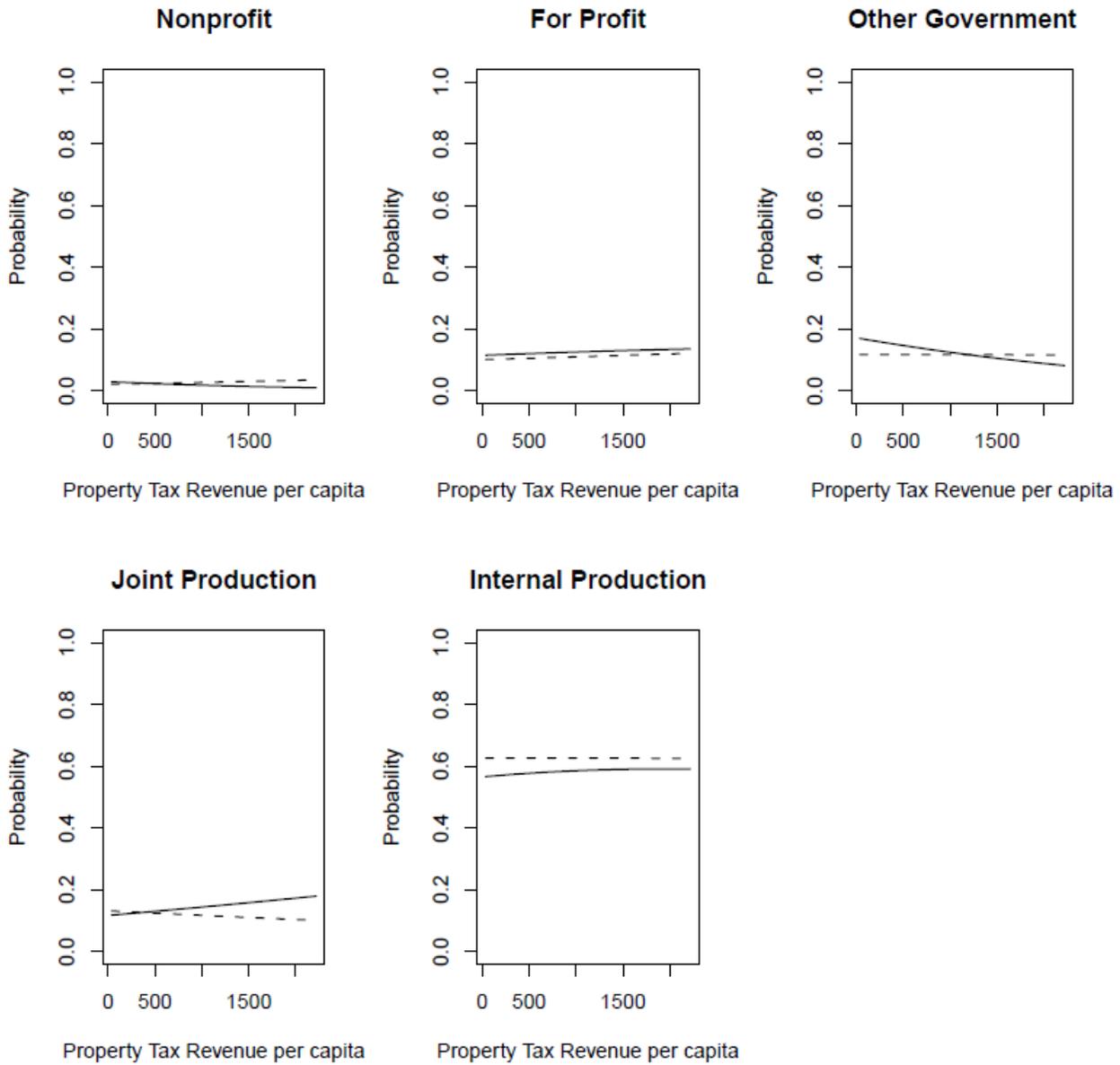
*Note: Estimates in first column, and robust standard errors are in second column of each service delivery type. * indicates significance at the 0.05 level or better. Regional dummy variables were included in the analysis to control for the impact of regional practices, but excluded from the table. N=25,429. Observed frequencies: Internal production: 14,499 (57%), Joint production: 4,675 (18%), Other Local Government: 3,113 (12%), For-Profit Firm: 2,500 (10%), Non-Profit: 642 (3%).*

Table 2. Vector Generalized Additive Multinomial Logistic Regression Results

Variable	In States...	Service Method	DoF	χ^2	P (χ^2)
Revenue	Without limit	Joint Production	1.8	1.91	0.341
Revenue	Without limit	Other Government	2.0	29.93 *	0.000
Revenue	Without limit	For-Profit	2.0	9.54 *	0.009
Revenue	Without limit	Non-Profit	2.0	2.37	0.304
Revenue	With limit	Joint Production	2.1	6.66 *	0.040
Revenue	With limit	Other Government	2.0	87.48 *	0.000
Revenue	With limit	For-Profit	2.0	64.46 *	0.000
Revenue	With limit	Non-Profit	1.9	0.67	0.695
SPDs	Without limit	Joint Production	2.0	13.65 *	0.001
SPDs	Without limit	Other Government	2.0	13.55 *	0.001
SPDs	Without limit	For-Profit	2.0	4.33	0.110
SPDs	Without limit	Non-Profit	2.1	12.08 *	0.003
SPDs	With limit	Joint Production	2.0	15.45 *	0.000
SPDs	With limit	Other Government	2.0	14.82 *	0.001
SPDs	With limit	For-Profit	1.9	6.97 *	0.029
SPDs	With limit	Non-Profit	2.0	4.95	0.087
Annexation Activity	Without limit	Joint Production	2.0	8.32 *	0.015
Annexation Activity	Without limit	Other Government	2.0	3.20	0.199
Annexation Activity	Without limit	For-Profit	2.0	13.08 *	0.001
Annexation Activity	Without limit	Non-Profit	2.0	1.30	0.514
Annexation Activity	With limit	Joint Production	1.9	31.46 *	0.000
Annexation Activity	With limit	Other Government	1.8	6.66 *	0.030
Annexation Activity	With limit	For-Profit	2.0	11.57 *	0.003
Annexation Activity	With limit	Non-Profit	1.9	0.88	0.621

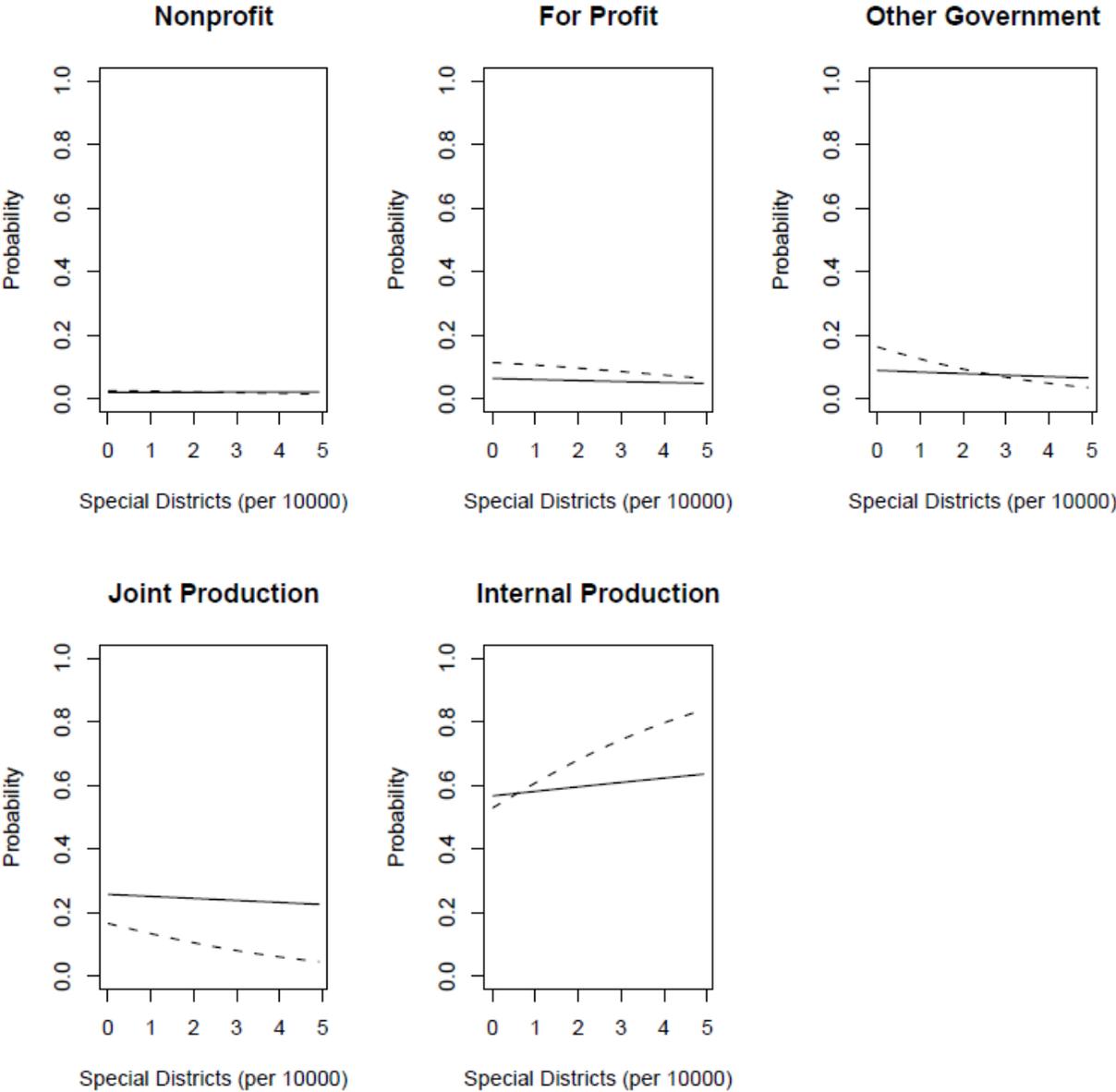
Note: N=25,429. Numerical columns report degrees of freedom (DoF) consumed by splining, Chi-square statistic for non-linear effect, and p-value of the given Chi-square statistic. Null hypothesis of Chi-square test is against a linear effect.

Figure 1. Property Tax Revenue and Service Delivery Choices



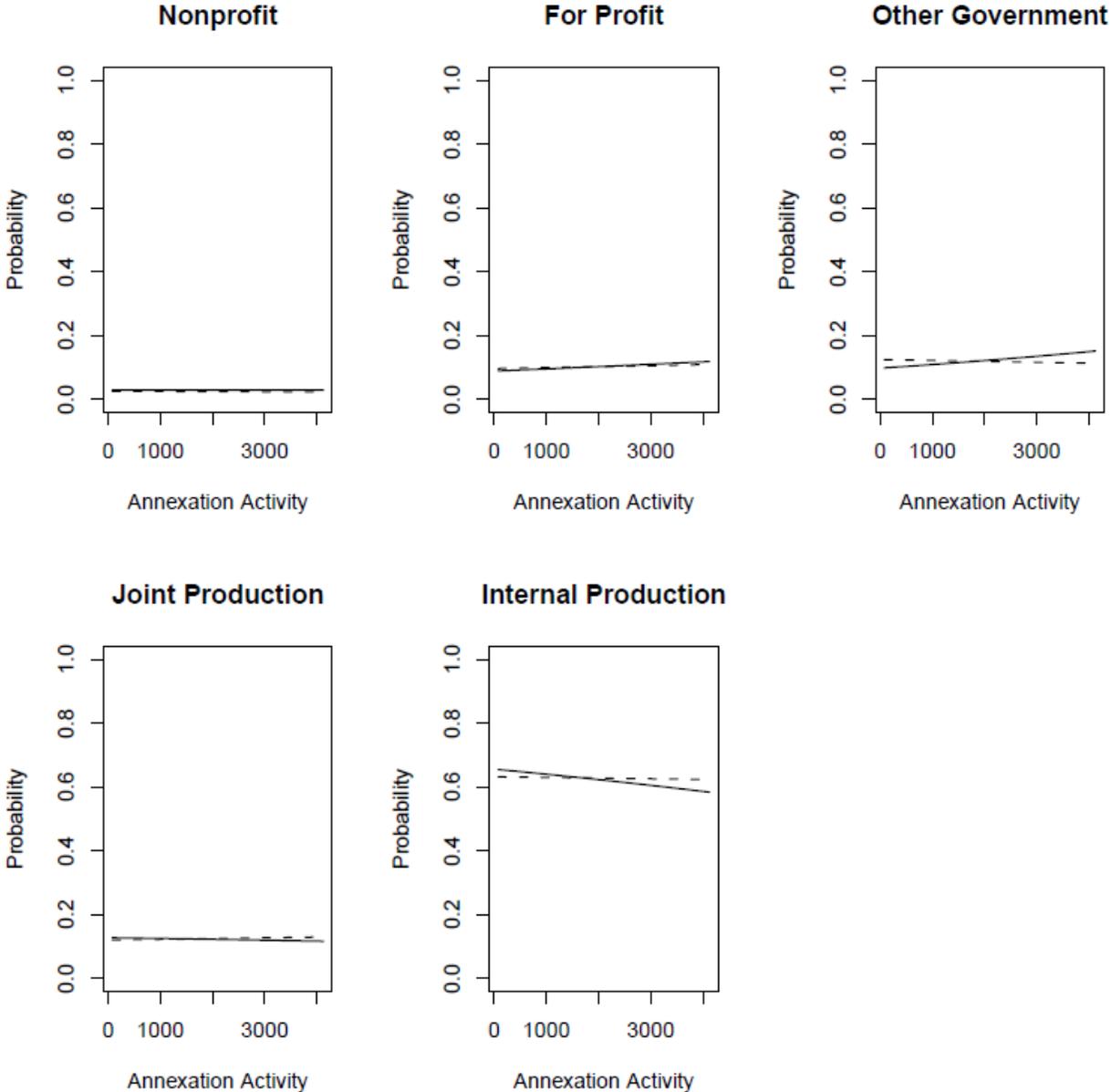
Note: Lines represent predicted probabilities of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on property tax revenue; solid lines represent cities operating in states with a limit.

Figure 2. Number of Special Districts in County and Service Delivery Choices



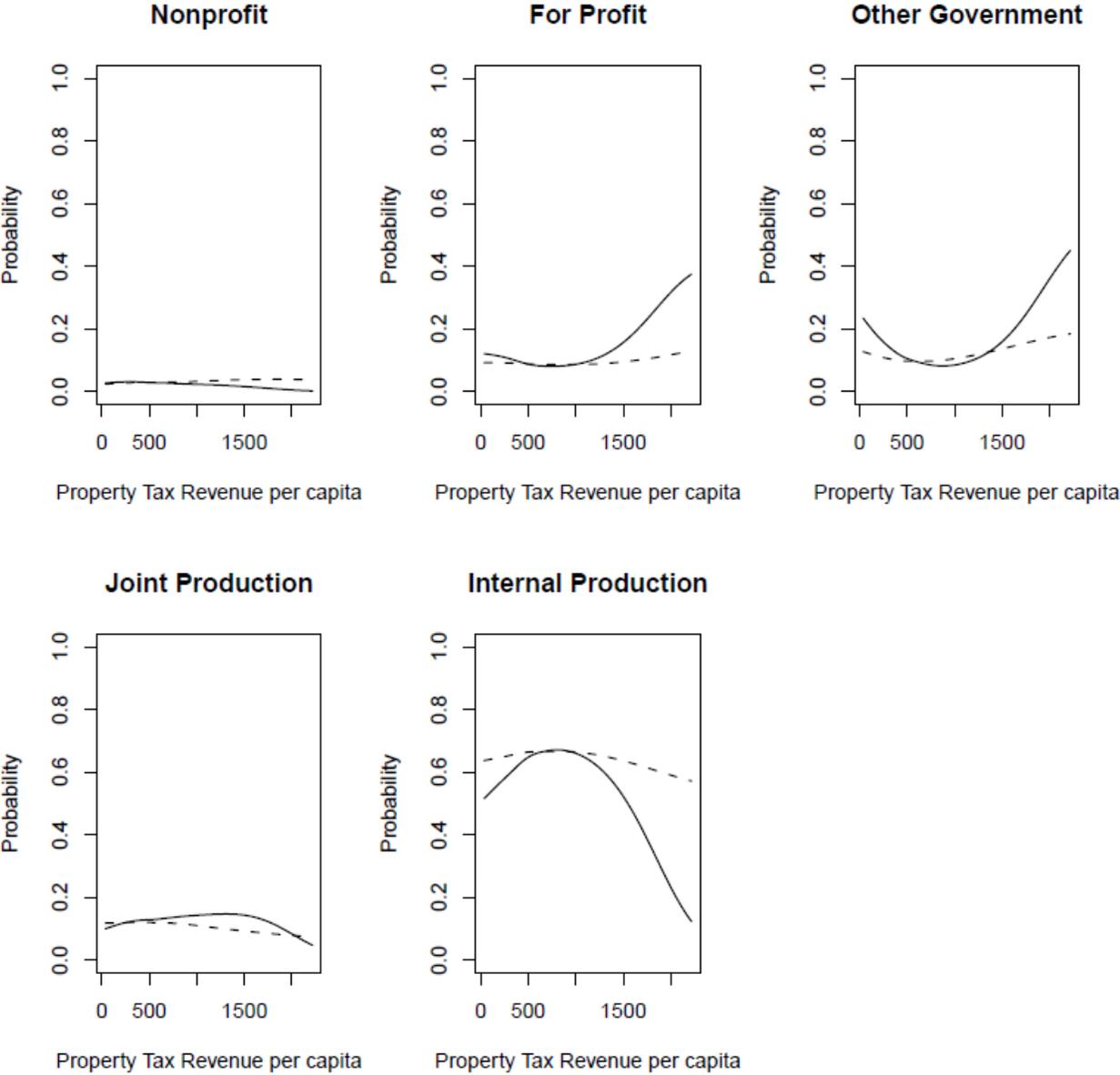
Note: Lines represent predicted probabilities of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on local government creation; solid lines represent cities operating in states with a limit.

Figure 3. Annexation Activity and Service Delivery Choices



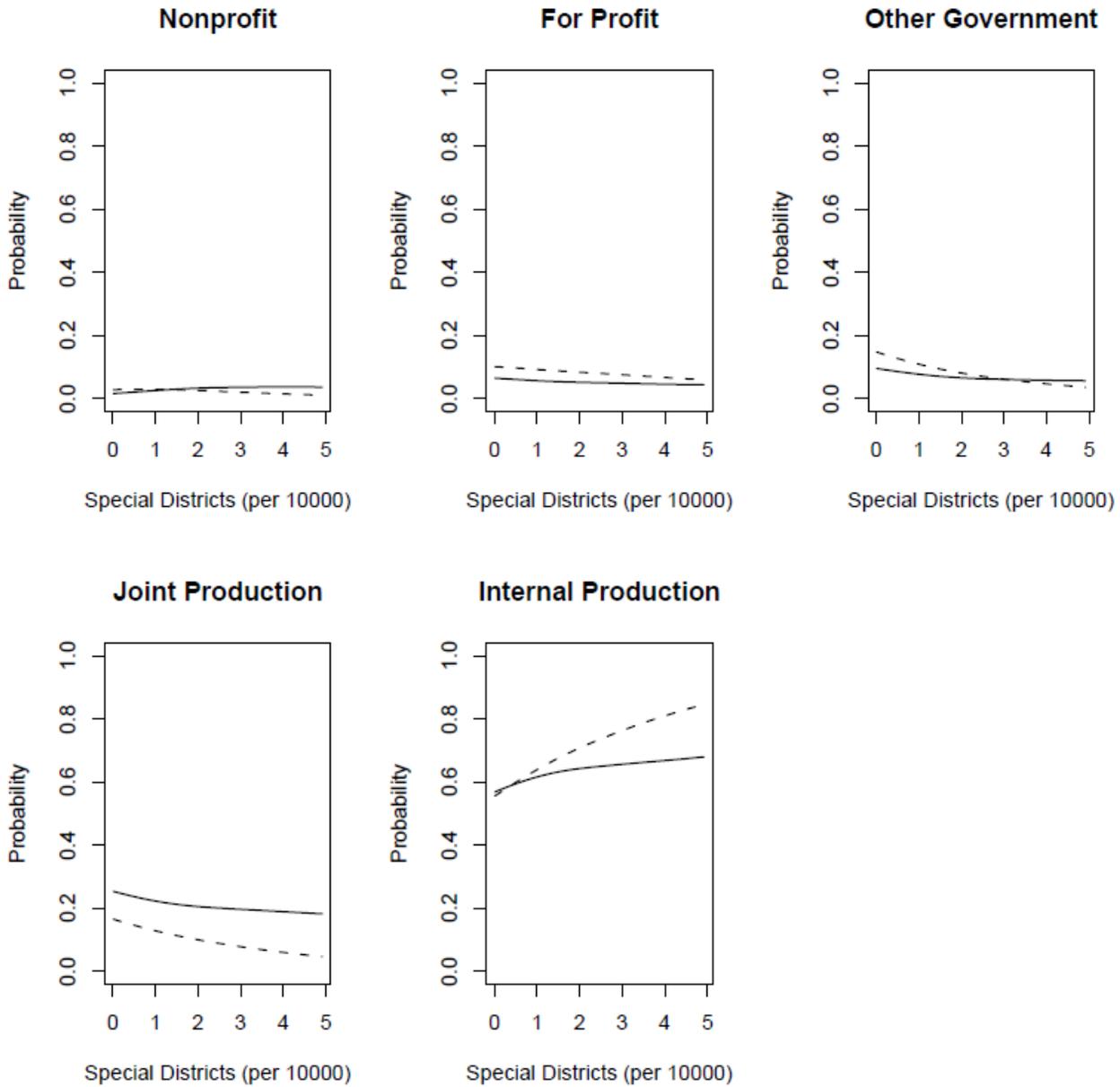
Note: Lines represent predicted probabilities of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on annexation activity; solid lines represent cities operating in states with a limit.

Figure 4. Property Tax Revenue and Service Delivery Choices (Non-Linear)



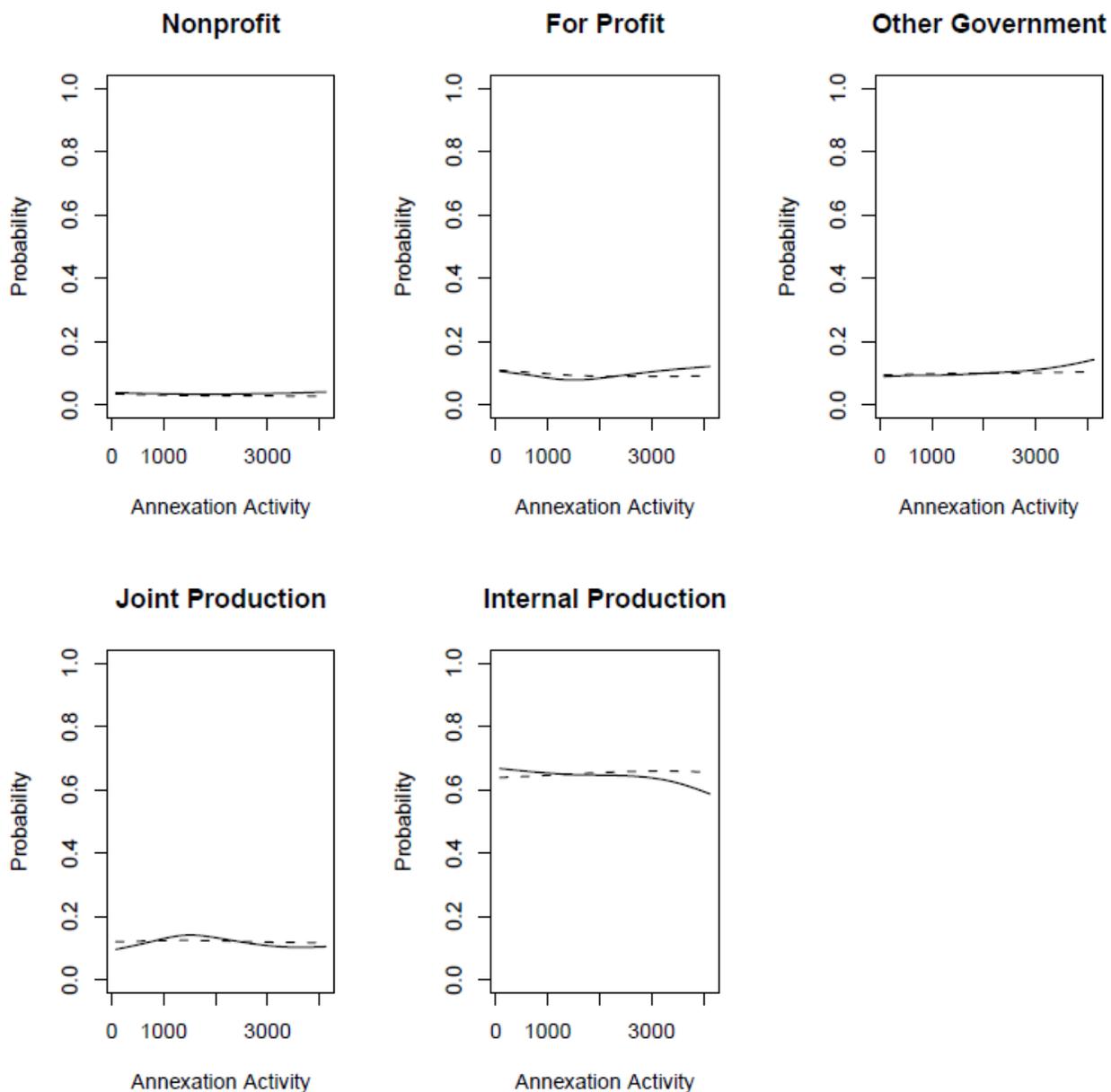
Note: Lines represent predicted probabilities estimated with splines of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on property tax revenue; solid lines represent cities operating in states with a limit.

Figure 5. Number of Special Districts in County and Service Delivery Choices (Non-Linear)



Note: Lines represent predicted probabilities estimated with splines of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on local government creation; solid lines represent cities operating in states with a limit.

Figure 6. Annexation Activity and Service Delivery Choices (Non-Linear)



Note: Lines represent predicted probabilities estimated with splines of each service delivery alternative at indicated level of independent variable. Dotted lines represent cities with no state limits on annexation activity; solid lines represent cities operating in states with a limit.

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