

## Government Form and Public Spending: Theory and Evidence from US Municipalities<sup>†</sup>

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*There are two main forms of government in US cities: council-manager and mayor-council. This paper develops a theory of fiscal policy determination under these two forms. The theory predicts that expected public spending will be lower under mayor-council but that either form of government could be favored by a majority of citizens. The latter prediction means that the theory is consistent with the co-existence of both government forms. Support for the former prediction is found in both a cross-sectional analysis and a panel analysis of changes in government form. (JEL H11, H72, R51)*

There are two main forms of government in US cities: mayor-council and council-manager. Under the mayor-council form, a mayor and city council are independently elected by voters and jointly develop policy. Under the council-manager form, policy-making power resides with the city council. The council appoints a manager to assist in the administration of city government functions, but this manager has no authority over policy development and can be replaced at any time by a vote of the council.<sup>1</sup> While some council-manager cities retain the position of mayor, the role is typically largely ceremonial.<sup>2</sup>

This paper develops a theory of fiscal policy determination under these two forms of government. This theory considers a city government charged with choosing among a set of projects or programs that could be undertaken. It assumes that the passage of projects under mayor-council requires the support of both the mayor and a majority of council-members, whereas under council-manager it requires the support of only the council. In addition, it assumes that voters have only partial

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<sup>†</sup>To comment on this article in the online discussion forum, or to view additional materials, visit the article page at <http://www.aeaweb.org/articles.php?doi=10.1257/pol.3.3.82>.

<sup>1</sup>The mayor-council form is the traditional form of municipal government in the US. The council-manager form appeared first in 1908 in Staunton, VA, and spread widely over the next half century as part of the municipal reform movement. See David Knoke (1982) for a historical analysis of the spread of the council-manager form.

<sup>2</sup>In the traditional council-manager form of government, there is either no mayor or a council-member is selected to be mayor by the council. In recent decades, many council-manager cities have chosen to separately elect a mayor. However, in these cities the mayor typically serves on the council and has less power than his counterpart in a mayor-council city.

information about the policy preferences of candidates for city-level offices. When voters choose candidates sincerely, these assumptions imply that expected spending will be lower under mayor-council than under council-manager. Moreover, this result generally remains true even when voters are sophisticated and choose candidates accounting for the different biases of the two systems.

The paper also uses the theory to provide a positive analysis of the choice of government form. It shows that either form of government could be chosen by citizens in a referendum.<sup>3</sup> Thus, even though mayor-council leads to lower spending, it is not necessarily majority preferred. While mayor-council may eliminate some projects which the majority oppose, it may also remove projects which the majority support. Citizens' choice of government form will appropriately balance these benefits and costs. In this way, the theory can explain the co-existence of both government forms in US cities.

The paper then investigates the theory's prediction of lower government spending under mayor-council form. It constructs a dataset that includes form of government and fiscal policy outcomes based on a large sample of cities covering the years 1982, 1987, 1992, 1997, and 2002. A cross-sectional analysis reveals that spending is significantly lower in mayor-council cities. A panel analysis of cities that changed their form of government also shows that spending falls (rises) following switches to mayor-council (council-manager), relative to jurisdictions not changing their form of government. The theoretical prediction is therefore supported. The quantitative magnitudes are large: the panel analysis suggests that per capita spending is about 9 percent lower in mayor-council cities. Assuming that this represents the causal effect of government form, municipal spending as a fraction of GDP would decrease by 0.16 percent if all cities in the United States switched to a mayor-council form.<sup>4</sup>

## I. Related Literature

There is a large literature on the differences between council-manager and mayor-council cities, dating back at least to the 1960s. Not surprisingly, differences in public spending across the two forms have been a major focus. Early results were mixed, with some studies finding higher spending under mayor-council (e.g., Bernard Booms (1966), and Robert L. Lineberry and Edmund P. Fowler (1967)) and some finding lower spending (e.g., Terry N. Clark (1968), and Edgar L. Sherbenou (1961)). Later work tended to the view that there is no difference (e.g., Kevin T. Deno and Stephen L. Mehay (1987), Paul G. Farnham (1990), Kathy Hayes and Semoon Chang (1990), and David R. Morgan and John P. Pelissero (1980)).<sup>5</sup> This

<sup>3</sup>While the process by which cities may change their form of government varies across the states, it is typically the case that a change must be approved by a majority of city residents in a referendum. Referenda can be initiated either by the city council or by petition of citizens.

<sup>4</sup>In 2002, per capita city government spending was about \$1,000, or 2.78 percent of per capita GDP (which was about \$36,000) and around 60 percent of cities were council-manager. Thus, our estimate implies that average per capita city government spending was 1,037 in council-manager cities and 944 in mayor-council cities. It follows that if all council-manager cities switched to mayor-council, average per capita city government spending would be 944 which is 2.62 percent of per capita GDP.

<sup>5</sup>In a study focused on the effect of council size, Reza Baqir (2002) finds that mayor-council form tends to reduce overspending associated with larger city councils. That is, the coefficient on the interaction between council size and mayor-council form is negative and statistically significant. The coefficient on the non-interacted mayor-

conclusion is reinforced by the recent work of Lynn MacDonald (2008), which is the most sophisticated analysis to date.<sup>6</sup> She uses a large, nationally-representative sample of cities and tracks fiscal policy outcomes and political institutions over two decades. Although her main focus is on the effects of the size of the city council, she also investigates the effects of government form.<sup>7</sup> In both a cross-sectional analysis and in a fixed effects panel analysis that is identified by cities changing their form of government over time, she finds no significant differences in government spending between mayor-council and council-manager.

This work looking at spending differences has largely been atheoretical, offering few arguments for why fiscal policy outcomes might differ across government forms. Early papers suggested that council-manager cities might have lower costs because managers were professionals with training in public administration. This neglects the fact that mayor-council cities can (and indeed do) hire administrators with such training or select mayors with managerial skills. Another argument was that city managers were more detached from the political process and therefore would be more able to hold down costs. However, as Deno and Mehay (1987) point out, council-members face political pressures and, since the manager is responsible to the council, these pressures should be effectively conveyed to the manager. Indeed, perhaps the most persuasive theoretical argument in the literature is that, in either form, political competition should ensure that spending is in line with the level demanded by the median voter (Deno and Mehay 1987).

This paper advances the literature on spending differences under mayor-council and council-manager in two ways. First, it starts with an explicit theory of spending decisions under the two government forms. The model departs from the median voter paradigm by incorporating realistic imperfections in the political process and delivers a clear prediction about the difference in size of government under the two forms. Second, it reaches an empirical conclusion at odds with the conventional wisdom in the literature.

In finding empirical differences between the two forms of government, our paper complements three recent papers that identify policy differences in areas other than aggregate spending. Jonathan Levin and Steven Tadelis (2010) show that council-manager cities are more likely to privatize services than mayor-council cities. They suggest that this result may reflect the explicitly political motivations of mayors, relative to those of city managers. Levin and Tadelis also show that privatization reduces fiscal costs, so the fact that council-manager cities are more likely to privatize should lower their costs. This finding does not contradict ours if, as our theory suggests, council-manager cities undertake more projects in any given service area. Ruben Enikolopov (2007) compares the policies of council-manager and mayor-council cities with respect to public employment. He finds that the number of full-time public

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council form variable, however, is positive. Thus, the effect of mayor-council form on per capita spending depends upon the size of the council, with the effect turning from positive to negative at a council size of 6, which is also the median council size in the dataset.

<sup>6</sup>We developed our empirical analysis independently of MacDonald's (2008) paper and thank Razvan Vlaicu for bringing it to our attention.

<sup>7</sup>MacDonald finds no relationship between the size of the council and government spending, and her results thus challenge the findings of Baqir (2002) and others that larger city councils produce higher spending levels.

employees is significantly higher in mayor-council cities, while the number of part-time employees displays no difference.<sup>8</sup> He argues that this is because mayor-council governments are more likely to value patronage jobs than are council-manager governments. These findings are fully consistent with those of Levin and Tadelis because privatization will reduce full-time public employment. Razvan Vlaicu (2008) finds a relatively large and statistically significant electoral cycle in hiring of police officers in mayor-council cities, which is not present in council-manager cities. This difference in responsiveness is present both in a cross-sectional analysis and in an analysis of cities that switched their form of government. Vlaicu (2008) argues that his finding reflects the fact that mayors have more incentive to pander to voters than do city-managers.<sup>9</sup>

A further related strand of the council-manager versus mayor-council literature is that seeking to understand why cities adopt one or the other form. Various theories of why cities switched to council-manager and adopted other related reforms have been offered.<sup>10</sup> These theories typically focus on class or ethnic conflict. A number of papers have explored these theories empirically, and have found little support for any of them (e.g., Thomas R. Dye and Susan A. MacManus (1976), Farnham and Stephen N. Bryant (1985), and Knoke (1982)). Rather, the main empirical finding has been the importance of regional factors: council-manager cities are most prevalent in the West and the South. Our theory offers an alternative account of why cities choose one or the other form.

Our paper also relates to a literature on presidential versus parliamentary forms of government at the national level.<sup>11</sup> Under a presidential form of government, the legislature and executive are independently elected, while under a parliamentary form, the executive is typically a member of the governing coalition in the legislature and is not independently elected by voters. At the local level, the mayor-council form is analogous to the presidential form, while the council-manager form is closer to the parliamentary form. Some papers in this literature are concerned with how fiscal policy differs under the two forms.<sup>12</sup> Torsten Persson, Gerard Roland, and

<sup>8</sup>A number of earlier papers explored the effect of government form on municipal wage levels with mixed results. See, for example, Linda N. Edwards and Franklin R. Edwards (1982), Ronald G. Ehrenberg (1973), and Ehrenberg and Gerald Goldstein (1975).

<sup>9</sup>Vlaicu (2008) develops a two period political agency model that generates this prediction.

<sup>10</sup>Switches to council-manager were often accompanied by switches to at-large elections for council-members and non-partisan elections.

<sup>11</sup>Also worth mentioning is the literature on elected versus appointed public officials. This literature seeks to understand the differences in policy choices made by public officials who are directly elected by the voters and those who are appointed by other elected politicians (e.g., Alberto Alesina and Guido Tabellini (2007), Timothy Besley and Stephen Coate (2003), and Eric Maskin and Jean Tirole (2004)). Since city-managers are appointed by the council and mayors are directly elected by the voters, it may seem that the comparison of the policies made by council-manager and mayor-council governments falls squarely within the purview of this literature. However, it should be emphasized that officially city-managers and mayors have very different roles in the policy-making process. In a mayor-council city, the mayor jointly develops policy along with the council. In a council-manager city, the manager is an administrator not a policy-maker. The theory of spending decisions presented in this paper reflects this official distinction by assuming that the manager has no impact on policy in a council-manager government and therefore plays a very different role from the mayor in a mayor-council government. This said, we acknowledge that managers may have de facto policy-making power and it may therefore be useful to apply the insights from the elected versus appointed literature to the council-manager versus mayor-council question. Theoretical efforts in this direction by Enikolopov (2007) and Vlaicu (2008) should therefore be regarded as complementary to the theory presented here.

<sup>12</sup>See John M. Carey (2005) for a broader overview of the literature, the bulk of which focuses on party-related issues such as the formation of governing coalitions, votes of confidence, etc. These are less relevant in the municipal

Tabellini (2000) examine these issues theoretically in the context of an infinite-horizon political agency model in which rent-maximizing politicians are imperfectly controlled by the threat of re-election. They show that a presidential form leads to smaller government. While this paper's theory produces a similar finding, the underlying mechanism is different. In particular, our theory adopts a more optimistic view of the political process, viewing politicians as heterogeneous actors seeking to move policy in their preferred direction. This is arguably a more appropriate view for local politics in the United States, where political rents appear limited.

On the empirical front, Persson and Tabellini (2003) analyze how fiscal policies differ across countries with presidential and parliamentary forms of government. They find that the size of government is significantly smaller in nations with presidential forms.<sup>13</sup> In a panel analysis, Persson and Tabellini (2006) study how becoming a democracy impacts countries' economic policies and growth. They find that government spending decreases in countries who adopt a presidential form of government, but increases in countries who adopt a parliamentary form. Persson and Tabellini's empirical results stand in sharp contrast to the conventional wisdom in the council-manager versus mayor-council literature that there is little difference in public spending across the two forms. While politics at the national level is certainly more complicated than at the local level, one might expect similar political institutions to have similar effects in both contexts. Our empirical analysis suggests that this may indeed be the case.

## II. Theory

This section presents our theory of fiscal policy determination under the two forms of city government. It outlines the theoretical model and derives the model's implications for spending decisions and choice of government form. It then identifies and defends the theory's key assumptions.

### A. The Model

The job of the city government is to choose the projects or programs the city should undertake. There are  $p$  potential projects indexed by  $i = 1, \dots, p$ . Each project  $i$  is characterized by a per capita tax cost  $C_i$  and a benefit parameter  $B_i$ . Citizens differ in the extent to which they value public programs. There are three *preference types*: high, moderate, and low, indexed by  $k \in \{h, m, l\}$  respectively. If project  $i$  is undertaken, a citizen of preference type  $k$  receives a payoff of  $\theta_k B_i - C_i$ , where  $\theta_h > \theta_m > \theta_l$ . The fraction of citizens of preference type  $k$  is denoted  $\mu_k$ . Both  $\mu_h$  and  $\mu_l$  are less than  $1/2$ , implying that the median voter is a moderate.

We compare two different forms of city government: *council-manager* and *mayor-council*. In the council-manager form, an  $n$  seat city council is responsible for project decisions. A project is implemented if and only if it is supported by

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context, where many elections are non-partisan (i.e., candidate party affiliations do not appear on the ballot) and cities are often dominated by a single party.

<sup>13</sup>Recently, this finding has been challenged by Lorenz Blume et al. (2009).

$q < n$  of the council-members. In the mayor-council form, project decisions are the responsibility of an  $n - 1$  seat city council and a mayor. For a project to be undertaken, it must be supported by  $q - 1$  council-members and the mayor.<sup>14</sup> Notice that in both forms the number of politicians is constant at  $n$  and the minimum number of supporters needed for a project to be implemented is  $q$ . All that differs across the forms is that, under mayor-council, the politician who is the mayor has additional power.<sup>15</sup>

Under both government forms, politicians are selected by the citizens in elections. Politicians are citizens and thus will also be either high, moderate, or low preference types. Following the citizen-candidate approach, these preferences will govern their decision-making when in office. At the time of the elections, citizens cannot observe how much candidates value public programs. They do, however, observe a signal of each candidate's preference type  $j \in \{\alpha, \beta\}$ .<sup>16</sup> The probability that a candidate of *signal type*  $j \in \{\alpha, \beta\}$  has preference type  $k \in \{h, m, l\}$  is  $\pi_k^j$ . We assume that  $\pi_l^\alpha = \pi_h^\beta = \underline{\pi}$  and that  $\pi_h^\alpha = \pi_l^\beta = \bar{\pi}$  where  $\underline{\pi}$  and  $\bar{\pi}$  are positive numbers such that  $\underline{\pi} < \bar{\pi} < 1 - \underline{\pi}$ . Thus, candidates of signal type  $\alpha$  are more likely to be high preference types and candidates of signal type  $\beta$  are more likely to be low preference types. Moreover, symmetry prevails in the sense that the likelihood that a candidate of signal type  $\alpha$  is a high preference type equals the likelihood that a candidate of signal type  $\beta$  is a low preference type and *visa versa*. For each seat in the council and mayor's office, there are two candidates, one of each signal type. This electoral process is consistent with either district-based elections, in which council members represent geographic constituencies, or at-large elections, in which all council members represent the entire city.<sup>17</sup>

When in office, a politician of preference type  $k \in \{h, m, l\}$  will support introducing project  $i$  if its benefit/cost ratio  $B_i/C_i$  exceeds  $1/\theta_k$ . Relabelling as necessary, we may assume that projects with lower index numbers have higher benefit/cost ratios; that is,  $B_1/C_1 > B_2/C_2$ , etc. Let  $p_k$  denote the identity of the marginal project for

<sup>14</sup>The motivation for this assumption will be discussed in Section IID below.

<sup>15</sup>Our objective is to hold everything constant but the allocation of decision-making authority. Thus, we are implicitly holding the size of the city administration constant as well. In our conception, when a city switches from council-manager to mayor-council, the administrator who is the manager in the council-manager form becomes the city's chief administrative officer in the mayor-council form. An alternative approach would be to compare an  $n$  member council with a manager and an  $n$  member council with a mayor, under the assumption that the mayor undertakes the manager's administrative work. In this conception, when a city switches to mayor-council, the number of politicians is increased by one at the same time the number of administrators is reduced by one, so that the total number of city officials (politicians plus administrators) remains constant. Note that the implications for public spending are broadly similar under this alternative conception. The details are available from the authors upon request.

<sup>16</sup>This signal should be thought of as emerging during the campaign as a result of media coverage of candidates' backgrounds, televised debates, campaign advertising, newspaper endorsements, etc. It should not be interpreted as a strategic choice—otherwise, candidates would simply choose to send the signal most likely to get them elected. In cities with partisan elections, it is natural to expect party affiliation to be one component of the signal. That said, using a regression discontinuity design, Fernando Ferreira and Joseph Gyourko (2009) find that city spending does not differ under Republican and Democratic mayors.

<sup>17</sup>In our data, about sixty percent of cities have at-large council elections, and the remaining forty percent have either single-member district council elections or mixed systems with both district-based and at-large seats. The procedure for at-large elections varies across municipalities. In some, if there are  $x$  seats up for election, each voter can vote for up to  $x$  candidates, and the  $x$  candidates with the most votes are elected. In others, seats are numerically labeled (i.e., Council Seat #1, Council Seat #2, etc.) and candidates must choose which seat to compete for. See Dye and MacManus (2003) for more detail. For an interesting analysis of the choice between at-large and district-based elections see Francesco Trebbi, Philippe Aghion, and Alesina (2008).

citizens of preference type  $k$ ; that is,  $p_k = \max\{i : B_i/C_i \geq 1/\theta_k\}$ , and assume that  $1 < p_l < p_m < p_h < p$ . Under either form of government, projects 1 through  $p_l$  will be implemented and projects  $p_h + 1$  through  $p$  will not be funded. The uncertainty concerns projects  $p_l + 1$  through  $p_h$ . There are three possible outcomes: i) none of these projects are undertaken; ii) projects  $p_l + 1$  through  $p_m$  are funded; and iii) all of these projects are implemented. These outcomes will depend upon the types of politicians who hold office but in a way that differs across the form of government.

### B. Implications for Public Spending

Under council-manager, projects  $p_l + 1$  through  $p_m$  will be implemented if and only if at least  $q$  of the  $n$  elected council-members are either high or moderate preference types and projects  $p_m + 1$  through  $p_h$  will be undertaken if and only if at least  $q$  of the  $n$  elected council-members are high preference types. Let  $\Pr(\#(h + m)/n \geq q/n | x)$  denote the probability that at least  $q$  of  $n$  elected council-members are high or moderate preference types when  $x$  members are of signal type  $\beta$  and  $n - x$  are of signal type  $\alpha$ . Similarly, let  $\Pr(\#h/n \geq q/n | x)$  denote the probability that at least  $q$  of  $n$  elected council-members are high preference types when  $x$  members are of signal type  $\beta$ . Then, we can write the expected spending level under council-manager when  $x$  council-members are of signal type  $\beta$  as

$$(1) \quad S_C(x) = \sum_{i=1}^{p_l} C_i + \Pr\left(\#\frac{h+m}{n} \geq \frac{q}{n} \mid x\right) \sum_{i=p_l+1}^{p_m} C_i + \Pr\left(\#\frac{h}{n} \geq \frac{q}{n} \mid x\right) \sum_{i=p_m+1}^{p_h} C_i.$$

Under mayor-council, projects  $p_l + 1$  through  $p_m$  will be approved if and only if at least  $q - 1$  of the  $n - 1$  council-members are either high or moderate preference types *and* the mayor is a high or moderate preference type. Similarly, projects  $p_m + 1$  through  $p_h$  will be funded if and only if at least  $q - 1$  of the  $n - 1$  elected council-members are high preference types *and* the mayor is a high preference type. Thus, we may write the expected spending level under mayor-council when  $x$  council-members are of signal type  $\beta$  and the mayor is of signal type  $j$  as

$$(2) \quad S_M(x, j) = \sum_{i=1}^{p_l} C_i + (1 - \pi_l^j) \Pr\left(\#\frac{h+m}{n-1} \geq \frac{q-1}{n-1} \mid x\right) \sum_{i=p_l+1}^{p_m} C_i \\ + \pi_h^j \Pr\left(\#\frac{h}{n-1} \geq \frac{q-1}{n-1} \mid x\right) \sum_{i=p_m+1}^{p_h} C_i.$$

Citizens choose the signal types of the elected officials and this will determine the expected spending levels under the two forms. The signal types they choose will depend on how sophisticated they are in their voting behavior. We consider two polar cases. The first is that citizens simply vote sincerely for the candidate whose favored policies they most prefer. The second is that they vote in a sophisticated manner, anticipating the policy outcomes associated with each possible mix of candidate types.<sup>18</sup>

<sup>18</sup>In elections for a single office holder who will be uniquely responsible for policy, sincere voting is equivalent to voting for the candidate whose election would produce the highest expected policy payoff. This is not the case

If citizens vote sincerely, high preference types will vote for candidates of signal type  $\alpha$  and low preference types for candidates of signal type  $\beta$ . Moderates will vote for candidates of signal type  $\alpha$  if the gain in surplus they get from projects  $p_l + 1$  through  $p_m$ , which we denote by  $G$ , exceeds the loss of surplus they experience from projects  $p_m + 1$  through  $p_h$ , which we denote by  $L$ .<sup>19</sup> If citizens vote in this way in each race, the candidate of the signal type preferred by moderates will win and thus all the elected politicians will either be of signal type  $\alpha$  or of signal type  $\beta$ . Thus, *either*  $x = 0$  under council-manager and  $(x, j) = (0, \alpha)$  under mayor-council, *or*  $x = n$  under council-manager and  $(x, j) = (n - 1, \beta)$  under mayor-council. Importantly, citizens choice of candidates will be the same under both government forms. It is then easy to establish:<sup>20</sup>

**PROPOSITION 1:** *If voters vote sincerely, expected spending is lower under a mayor-council form of government than a council-manager form.*

To understand the result intuitively, recall that projects  $p_l + 1$  through  $p_m$  will be implemented under council-manager if at least  $q$  of the  $n$  elected politicians are high or moderate preference types. Under mayor-council, this condition is necessary but not sufficient. If it is satisfied but the mayor happens to be a low preference type, projects  $p_l + 1$  through  $p_m$  will not be implemented. Similarly, projects  $p_m + 1$  through  $p_h$  will be implemented under council-manager if at least  $q$  of the  $n$  elected politicians are high preference types. Under mayor-council, this condition is necessary but not sufficient. If it is satisfied but the mayor is a low or moderate preference type, projects  $p_m + 1$  through  $p_h$  will not be implemented. The result then follows from the fact that, under mayor-council, the probability that at least  $q$  of the  $n$  elected politicians are high or moderate preference types is exactly the same as under council-manager because voters elect candidates of the same signal type under the two systems.

The sincere voting underlying Proposition 1 is naive, because it does not take into account the political process determining spending levels. Sophisticated voters will understand how policy outcomes vary with different combinations of candidate types and will choose candidates accordingly. While high preference voters will still prefer candidates of signal type  $\alpha$  and low preference voters candidates of signal type  $\beta$ , moderates will sometimes prefer a mix of the two signal types to appropriately balance the council. Moreover, the precise mix they prefer will depend upon the form of government. The expected spending result of Proposition 1 might then be invalidated if voters select more candidates of signal type  $\alpha$  under mayor-council.

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in legislative elections, and this leads to the distinction between sincere and sophisticated voting, which anticipates how different slates of candidates will interact to generate policy. Both concepts are distinct from strategic voting whereby voters vote to maximize expected utility and thus take into account their potential pivotality. On the question of whether voters do in fact vote sincerely or in a sophisticated manner in legislative elections see inter alia Arianna Degan and Antonio Merlo (2009), Morris P. Fiorina (1996), and Dean Lacy and Philip Paolino (1998).

<sup>19</sup>Formally,  $G = \sum_{i=p_l+1}^{p_m} (\theta_m B_i - C_i)$  and  $L = \sum_{i=p_m+1}^{p_h} (C_i - \theta_m B_i)$ .

<sup>20</sup>The proofs of Propositions 1 and 3 can be found in the Appendix. The proof of Proposition 2 is available from the authors upon request.

We assume throughout that moderate voters can coordinate on which candidates to support, allowing us to focus attention on a representative moderate voter.<sup>21</sup> Under council-manager, a moderate’s expected payoff with  $x$  council-members of signal type  $\beta$  can be written as

$$(3) \quad U_C(x) = \sum_{i=1}^{p_i} (\theta_m B_i - C_i) + \Pr\left(\frac{\#h + m}{n} \geq \frac{q}{n} \mid x\right)G - \Pr\left(\frac{\#h}{n} \geq \frac{q}{n} \mid x\right)L.$$

With sophisticated voting, moderates will choose  $x_C$  type  $\beta$  council-members, where  $x_C$  maximizes  $U_C(x)$ . Under mayor-council, a moderate’s payoff function with  $x$  council-members of signal type  $\beta$  and a mayor of signal type  $j$  is

$$(4) \quad U_M(x, j) = \sum_{i=1}^{p_i} (\theta_m B_i - C_i) + (1 - \pi_l^j) \Pr\left(\frac{\#h + m}{n - 1} \geq \frac{q - 1}{n - 1} \mid x\right)G - \pi_h^j \Pr\left(\frac{\#h}{n - 1} \geq \frac{q - 1}{n - 1} \mid x\right)L.$$

Moderates will choose  $x_M$  type  $\beta$ s in the council and a type  $j_M$  mayor, where  $(x_M, j_M)$  maximizes  $U_M(x, j)$ . Comparing expected spending under the two forms therefore requires comparing  $S_C(x_C)$  and  $S_M(x_M, j_M)$ . We now present:

PROPOSITION 2: *If voters are sophisticated and if*

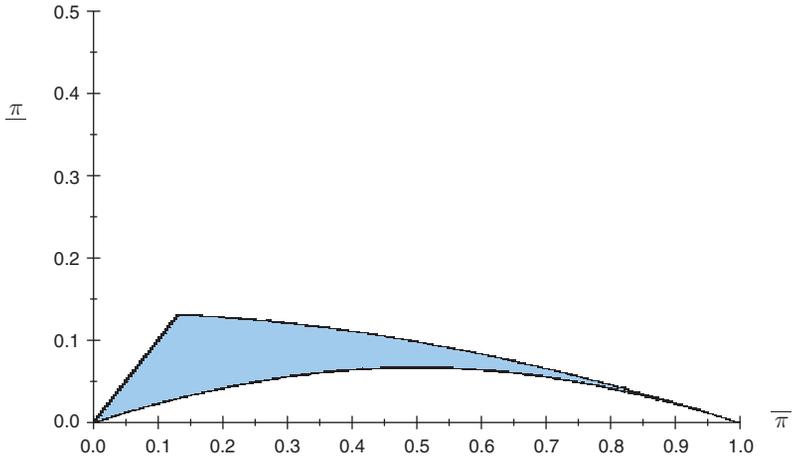
$$(5) \quad \frac{G}{L} \notin \left( \frac{\sum_{s=q-1}^{n-1} \binom{n-1}{s} \underline{\pi}^s (1 - \underline{\pi})^{n-1-s}}{\sum_{s=q-1}^{n-1} \binom{n-1}{s} (1 - \bar{\pi})^s \bar{\pi}^{n-1-s}}, \frac{\underline{\pi}^{q-1} (1 - \underline{\pi})^{n-q}}{(1 - \bar{\pi})^{q-1} \bar{\pi}^{n-q}} \right),$$

*then expected spending is lower under a mayor-council form of government than a council-manager form.*

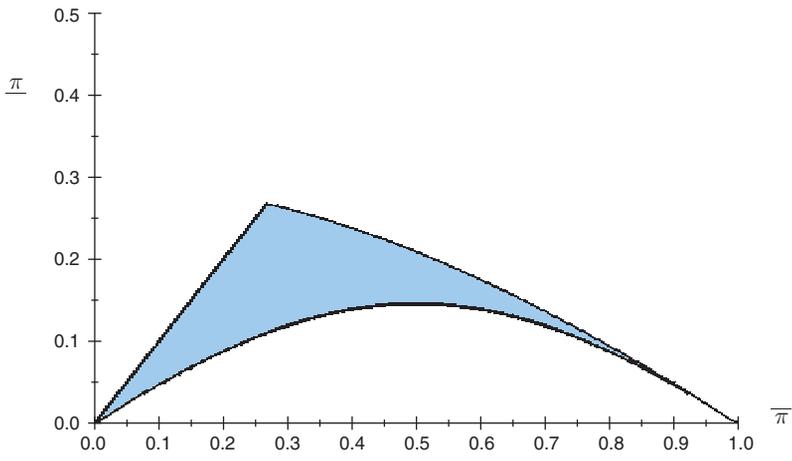
Proposition 2 provides a sufficient condition for the expected spending result to hold with sophisticated voting. The condition requires that the ratio  $G/L$  lies outside an interval determined by  $n$ ,  $q$ , and the parameters  $(\underline{\pi}, \bar{\pi})$ . This turns out to be a very mild requirement. To see this, consider the case of  $n = 3$  and  $q = 2$ . The condition in this case amounts to  $G/L \notin (\underline{\pi}(2 - \underline{\pi})/(1 - \bar{\pi}^2), \underline{\pi}(1 - \underline{\pi})/\bar{\pi}(1 - \bar{\pi}))$ . Note first that, if  $G > L$ , then the condition will necessarily be satisfied since, by assumption,  $\underline{\pi} < \bar{\pi}$  and  $\underline{\pi} < 1 - \bar{\pi}$ . If  $G < L$ , on the other hand, there exist feasible combinations of  $\underline{\pi}$  and  $\bar{\pi}$  for which the condition will not be satisfied. The shaded areas of Figure 1 depict combinations of  $\underline{\pi}$  and  $\bar{\pi}$  for which the conditions will not

<sup>21</sup>That is, we assume that moderate voters know (or correctly anticipate) who other moderates are voting for and so elect the optimal number of politicians of each signal type. For example, if there are three seats and the optimal number of candidates of signal type  $\beta$  is two, moderates must decide in which two races they will back type  $\beta$  candidates. If moderates fail to anticipate correctly how other moderates are voting and one group backs the type  $\beta$  candidate in races 1 and 2, and another group backs the type  $\beta$  candidate in races 2 and 3, then they might end up with anywhere from one to three  $\beta$  candidates elected.

Panel A.  $G/L = 0.25$



Panel B.  $G/L = 0.50$



Panel C.  $G/L = 0.75$

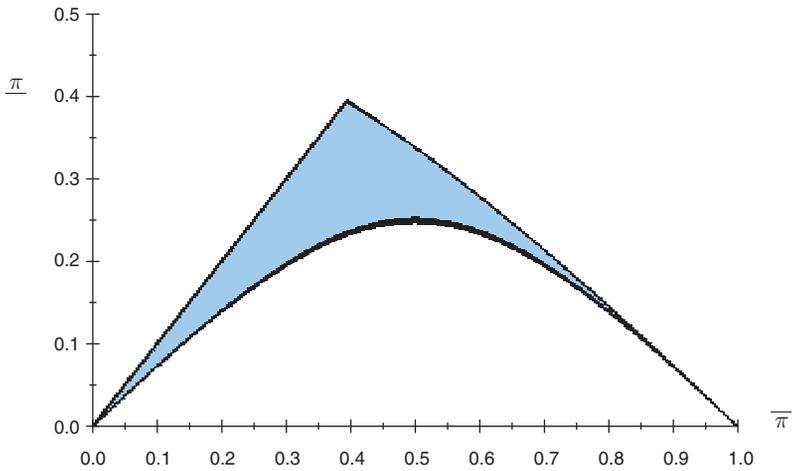


FIGURE 1

be satisfied for  $G/L$  equal to 0.25, 0.50, and 0.75. Evidently, when compared with the set of all  $\underline{\pi}$  and  $\bar{\pi}$  satisfying the assumptions  $\underline{\pi} < \bar{\pi}$  and  $\underline{\pi} < 1 - \bar{\pi}$ , these sets represent a small part of the parameter space. Moreover, for larger values of  $n$ , the set of parameter values violating the condition is even smaller.<sup>22</sup> Thus, Proposition 2 can be interpreted as implying that the expected spending result of Proposition 1 will typically hold even with sophisticated voters.

Proposition 2 naturally raises the question of whether the expected spending result will fail when equation (5) is not satisfied. The answer is not necessarily, but possibly. Appendix B presents an example with  $n = 3$  and  $q = 2$  in which the parameters  $(G/L, \underline{\pi}, \bar{\pi})$  violate equation (5) and the probability of approving projects  $p_l + 1$  through  $p_m$  and projects  $p_m + 1$  through  $p_h$  is higher under mayor-council. Obviously, this implies that the expected spending level will be higher under mayor-council.

To sum up, in principle, sophisticated voting could undermine the spending difference between the two forms of government if voters select candidates who are more likely to be low preference types under council-manager. However, the analysis suggests that this will not be the case. Admittedly, the model is restrictive in assuming that voters have only two signal types of candidates from which to choose. Moreover, introducing multiple types of candidates would make the model very intractable. Nonetheless, the analysis demonstrates that the spending result is at least somewhat robust to relaxing the sincere voting assumption.

### *C. Implications for Government Form*

We now turn to the question of which system of government citizens would choose if they had a referendum before city elections are held. Our analysis will presume that citizens understand the forces underlying the trade off highlighted by our theory. We recognize that this may be a heroic assumption given that the existing academic literature on US cities does not offer a coherent message on the spending difference between the two forms. However, it is widely understood that the mayor-council form embodies more “checks and balances” and our theory can be interpreted as capturing the benefits and costs of these additional checks and balances.

We focus first on the case in which citizens vote sincerely in city elections. Recall that both the probabilities of approving projects  $p_l + 1$  through  $p_m$  and projects  $p_m + 1$  through  $p_h$  are lower under mayor-council than under council-manager. Thus, high preference types will always favor council-manager and low preference types mayor-council. Moderates must trade off the benefit of a higher probability of obtaining the projects they like with the cost of a higher probability of obtaining the projects they do not.

Recall that the median voter is a moderate so that whichever system preferred by moderates will be majority preferred. To quantify the moderates’ trade off, suppose first that  $G > L$  so that candidates of signal type  $\alpha$  will be elected under both government forms. A moderate’s expected payoff under council-manager will therefore be  $U_C(0)$  and under mayor-council will be  $U_M(0, \alpha)$ . If  $G < L$  so that

<sup>22</sup>The most common council sizes in our dataset are 5 members and 7 members.

candidates of signal type  $\beta$  will be elected in both government forms, a moderate valuer's expected payoff under council-manager will be  $U_C(n)$  and under mayor-council will be  $U_M(n - 1, \beta)$ . Differencing these payoffs, we obtain:

**PROPOSITION 3:** *Suppose that voters vote sincerely in candidate elections. Then, if  $G > L$  a majority of voters prefer council-manager to mayor-council if and only if*

$$(6) \quad \underline{\pi} \Pr\left(\# \frac{h + m}{n - 1} \geq \frac{q}{n - 1} \mid 0\right) G > (1 - \bar{\pi}) \Pr\left(\# \frac{h}{n - 1} \geq \frac{q}{n - 1} \mid 0\right) L,$$

*and if  $G < L$  a majority of voters prefer council-manager to mayor-council if and only if*

$$(7) \quad \bar{\pi} \Pr\left(\# \frac{h + m}{n - 1} \geq \frac{q}{n - 1} \mid n - 1\right) G > (1 - \underline{\pi}) \Pr\left(\# \frac{h}{n - 1} \geq \frac{q}{n - 1} \mid n - 1\right) L.$$

To understand this result intuitively, consider the case in which  $G > L$ . The term multiplying  $G$  on the left-hand side of inequality in equation (6) is the probability that under mayor-council, more than  $q$  of the  $n - 1$  council-members will be high or moderate preference types but the mayor will be a low preference type. This is precisely the circumstance under which projects  $p_l + 1$  through  $p_m$  will be rejected under mayor-council but would not have been under council-manager. Similarly, the term multiplying  $L$  on the right-hand side of inequality in equation (6) is the probability that under mayor-council, more than  $q$  of the  $n - 1$  council-members will be high preference types and the mayor will not be a high preference type. This is the probability that projects  $p_m + 1$  through  $p_h$  will be rejected under mayor-council but would not be under council-manager. Essentially, therefore, the median voter's choice between council-manager and mayor-council involves trading off an expected benefit and an expected cost. The benefit is that mayor-council will eliminate projects that would be implemented under council-manager that the median voter does not want. The cost is that mayor-council will eliminate projects that would be implemented under council-manager that the median voter wants.

The most important point to note from this proposition is that, even though mayor-council produces lower expected spending levels, it is not necessarily preferred by a majority of voters. Thus, the theory can explain the fact that both government forms co-exist. It is clear from equation (6) and equation (7) that council-manager will be more likely to be favored by voters when the surplus from projects that low preference types would remove (i.e.,  $G$ ) is high relative to the loss from projects that high preference types would add (i.e.,  $L$ ). It is also clear that, when  $G > L$  and there is only a very small chance that candidates of signal type  $\alpha$  are low preference types (i.e.,  $\underline{\pi} \approx 0$ ) then mayor-council dominates. For in this case there is little chance that desirable projects will be rejected under either form of government and hence the median voter just wants to maximize the chance that undesirable projects are rejected. Similarly, when  $G < L$  and there is only a very small chance that candidates of signal type  $\beta$

are high preference types (i.e.,  $\pi \approx 0$ ), then there is no chance that undesirable projects will be approved and the median voter just wants to maximize the chance that desirable projects are approved. Council-manager therefore dominates.

Note that Proposition 3 assumes that moderate voters understand the difference in spending between mayor-council and council-manager when choosing the form of government but nonetheless vote sincerely in candidate elections. For the purposes of this exercise, therefore, it may be more logically consistent to assume sophisticated voting in candidate elections. However, as shown above, with sophisticated voting, except possibly in a very small part of the parameter space, both the probabilities of approving projects  $p_1 + 1$  through  $p_m$  and projects  $p_m + 1$  through  $p_h$ , are lower under a mayor-council form of government. Thus, in choosing between the two forms, moderate voters must again trade off the same expected benefit and cost. All that differs is that the expectations are more complex because they depend upon voters' endogenous choice of candidates.

#### D. Discussion

Our theory of fiscal policy determination under mayor-council and council-manager forms of government makes three key assumptions. First, candidates for public office have heterogeneous preferences over public programs which, while governing their behavior if elected, are not perfectly observed by voters. Second, under council-manager, programs are implemented if and only if they receive support from the required majority of the council. Third, under mayor-council, programs are funded if and only if they receive support from the required majority of the council *and* the mayor.

The first assumption is necessary to generate a difference between the two forms. If all politicians had the same preferences or, alternatively, if voters could perfectly observe politicians' preferences and elect only those who shared the majority preference, then the two forms of government would deliver exactly the same project choices.<sup>23</sup> While such unobservable heterogeneity seems uncontroversial, one might argue that politicians will not indulge their preferences when in office because of the fear of not being re-elected. However, as a matter of fact, the rewards to holding office at the city level are not large. Moreover, even if the rewards of office were large, re-election incentives will be dampened by the fact that politicians are collectively responsible for project decisions. Indeed, there is much empirical evidence to the effect that politicians follow their policy preferences even when holding offices that are highly prestigious (see, for example, Steven D. Levitt (1996) on US senators).<sup>24</sup>

The main content of the second assumption is that the city manager has no independent influence on policy choices under council-manager. This is the case despite the fact that the manager, with the cooperation of city administrators, typically

<sup>23</sup>This conclusion would be in line with Deno and Mehay (1987) and the median voter approach to local politics more generally.

<sup>24</sup>On this general topic see Dye and MacManus (2003) who argue that "electoral accountability" has little direct influence over city council-members. Consistent with our model, they argue that any congruence between the views of citizens and council-members comes from "belief sharing" (381).

prepares the budget for the council in council-manager cities. The justification for this assumption is either that the council is able to appoint a manager who shares the policy preferences of the majority of its members or that the threat of being fired by the council is sufficient to deter the manager from indulging his preferences.<sup>25</sup>

The third assumption is key for the spending result because it creates an asymmetry between the blocking and passing of projects. In particular, while both the council and the mayor can unilaterally block projects, the approval of both executive and legislature is necessary to fund projects. If we had assumed, for example, that a project was implemented unless it was opposed by both a majority of the council and the mayor, the asymmetry would go in the other direction and the spending result would be reversed.<sup>26</sup> Our motivation for this assumption comes from studying the way in which budgeting works in mayor-council cities. A crude description of the process is that the mayor, with the cooperation of city administrators, prepares a budget which provides a detailed list of the programs that are to be financed. This is sent to the city council who make amendments to the budget and approve it. While practices vary across cities, in many mayor-council governments the council can only amend the mayor's budget by removing support for programs.<sup>27</sup> This process will result in only programs that have the support of both the mayor and the majority of council-members being approved, which is our assumption.

In reality, things are more complicated than this simple description suggests, and procedures vary considerably across mayor-council cities. In some cases, at the budget preparation stage, the mayor may be required to obtain input from an executive committee, which can contain key members of the council. In other cases, the council may be able to add programs to the mayor's budget. At the budget approval stage, the mayor may be able to selectively veto the council's amendments or veto the whole package. The council may then be able to override the mayor's vetoes with a super-majority vote.<sup>28</sup> Despite this variation, we feel that our assumption is the natural place to start. The mayor's role in the budget preparation process gives

<sup>25</sup> By all accounts, turnover among city managers is frequent and the time spent in any given city is brief. In a sample of 120 larger council-manager cities, David N. Ammons and Matthew J. Bosse (2005) found that the median completed tenure of departing city managers was just five years.

<sup>26</sup> An alternative assumption would build in a status quo bias by assuming that the addition of *new* projects could be blocked by either the mayor or the council, but the removal of *existing* projects could be blocked by either the mayor or the council. In the language of George Tsebelis (1995), both the mayor and council would be "veto players" in the sense of being able to block change. In this case, expected spending would display more path dependence under mayor-council, but would not necessarily be lower.

<sup>27</sup> Unfortunately, there is no national database of city budgetary procedures, and our research was thus limited to case studies. Examples of large cities with this budgetary procedure include Cleveland, New York, Boston, and San Francisco. We found no cities in which the council could introduce new programs to the mayor's budget. See Irene S. Rubin (1990), and Megan Mullin, Gillian Peele, and Bruce E. Cain (2004) for additional details. This budgetary process is also in place in a number of countries with presidential form of governments (see Matthew Soberg Shugart and Stephan Haggard (2001)). For example, the current Chilean constitution allows Congress to amend each spending item in the president's budget downwards only and disallows the transfer of funds across different programs. Lisa Baldez and Carey (1999) provide a theoretical and empirical analysis of the impact of this constitution on policy outcomes in Chile. In their theoretical work, they use a two player (congress and president) game theoretic model with two dimensions of spending to compare outcomes under the Chilean constitution with what would happen under two alternative stylized constitutional rules.

<sup>28</sup> While the use of such selective vetoes does not seem to be important in practice, if it were then our model would still be a valid description of policy outcomes under mayor-council. The  $q - 1$  would just change from a majority to a super-majority. However, the comparison with council-manager would change because the  $q$  used would be majoritarian. It seems likely that such a change would make it harder to approve projects under mayor-council and hence strengthen the result.

him/her the agenda-setting ability to focus resources on the projects and programs that he/she supports. The fact that the council has to approve the budget gives it the ability to strike out programs from the mayor's wish list. Even when the council can, in principle, add new programs, its ability to do so is likely to be somewhat constrained.<sup>29</sup> Council-members will typically have little time to devote to crafting their own budgetary programs. Not only is there a limited time period in which to respond to the mayor's budget, but, in the vast majority of cities, council-members work only part-time (e.g., Bernard H. Ross and Myron A. Levine 2006). In addition, council-members will also have much less information than the executive about the costs of different budgetary options and such information that they do have will typically be provided by the executive. Finally, mayors often have powers of impoundment, in which they can unilaterally withhold funds for projects that have been approved in the budget.<sup>30</sup>

### III. Evidence

This section investigates the theoretical prediction that *ceteris paribus* public spending will be lower under mayor-council than council-manager. It begins by describing the data and then turns to the econometric analysis of the relationship between government form and public finances.

#### A. Data

Our empirical analysis uses information on political institutions, government finances, and city demographics. These three pieces of information are derived from three separate data sources. Our data on political institutions come from the Municipal Form of Government survey, which is conducted by the International City/County Management Association (ICMA) every five years. In particular, we have data from survey years 1981, 1986, 1991, 1996, and 2001. In each year, surveys are sent to roughly 7,000–8,000 municipalities with response rates in any given year ranging from 50 to 70 percent. This incomplete response rate makes the panel unbalanced. While ICMA mails surveys to all cities with population greater than 2,500, they only send surveys to a select set of cities with population below 2,500. Given that this set may not be representative of all small cities, we focus only on those cities with population in excess of 2,500.

For the cross-sectional analysis, we rely on the survey question regarding whether the city has a mayor-council or council-manager form of government.<sup>31</sup> There are

<sup>29</sup>In the words of Dye and MacManus (2003): "Council members do *not* usually serve as either general policy innovators or general policy leaders. The role of the council is largely passive, granting or withholding approval in the name of the community when presented with proposals from a leadership outside of itself." (p. 380 italics in the original).

<sup>30</sup>While these powers are designed to be used only in emergency situations, such as midyear budget shortfalls, they have sometimes been used in order to block projects supported by the council but not the mayor. For example, Mayor Giuliani attempted to block spending on council priorities during a 1994 budget shortfall in New York City (*New York Times*, December 2, 1994).

<sup>31</sup>In addition to mayor-council and council-manager forms, a smaller number of municipalities have either a commission, town meeting, or representative town meeting form. Given that over 90 percent of municipalities have either council-manager or mayor-council forms, our analysis will ignore these other forms of government.

two related issues associated with interpreting responses to this survey question. First, some council-manager cities have adopted features of mayor-council form and vice-versa (Victor S. DeSantis and Tari Renner 2002). Thus, the distinction between these two forms of government is somewhat less stark than laid out in our theoretical model. Second, due to this cross-adoption, there may be measurement error associated with survey respondents misclassifying their form of government.<sup>32</sup> Both of these issues, cross-adoption and misclassification, may lead us to understate the true spending differences between traditional mayor-council and council-manager forms of government.

The panel analysis uses information on changes in government form for specific cities over time. There are two possible measures of such changes in the ICMA data. One measure compares the form of government reported in the current survey to that in the previous survey. The other relies on separate survey questions in which respondents are asked whether or not their city changed its form of government in the past five years.<sup>33</sup> For two reasons, we choose the latter measure over the former. First, the panel is unbalanced due to an incomplete response rate, and we thus cannot compare the current to the prior form of government for many observations in the data. Second, according to our contacts at ICMA, the former measure overstates the true degree of switching in government form over the past twenty years; this overstatement may be due to measurement error associated with the misclassification by respondents described above.<sup>34</sup> The latter measure, by contrast, provides a more realistic account of the recent degree of switching in government form.

Given that we are using different measures of government form in the cross-sectional and panel analyses, we delete observations in which these two measures are inconsistent with one another. In particular, for those cities included in the prior survey, we delete those observations in which the respondent reported that the city changed their form of government, say, from  $x$  to  $y$  in the previous five years, but whose form of government did not change from  $x$  in the prior survey to  $y$  in the current survey. Likewise, we also delete observations in which the form of government changed from  $x$  in the prior survey to  $y$  in the current survey but in which the respondent did not report a change in the form of government over the prior five years. For purposes of clarification, note that we cannot check for internal inconsistency if the city was not included in the prior survey, and we thus include these cities in the analysis.<sup>35</sup> Also, since we cannot check the prior survey for the first year of the

<sup>32</sup>In the 2001 ICMA survey, for example, mayor-council is described as "Elected council or board serves as the legislative body. The chief elected official is head of government, with significant administrative authority, generally elected separately from the council." Council-manager is described as "Elected council or board and chief elected official (e.g., mayor) are responsible for making policy. A professional administrator appointed by the board or council has full responsibility for the day-to-day operations of the government." While these definitions are certainly correct, the fact that many council-manager cities now separately elect a mayor does create the possibility for confusion.

<sup>33</sup>If so, they are also asked to report the previous and current form of government.

<sup>34</sup>Direct evidence of this overstatement comes from the large number of cases in which cities report to be, say, form  $x$  in survey  $t - 1$ , form  $y$  in survey  $t$ , and form  $x$  in survey  $t + 1$ . In particular, we found over 200 cases in the ICMA data of such double switching, and we suspect that this is evidence of confusion rather than instances in which the city actually changed their government form twice in 10 years.

<sup>35</sup>As a robustness check, we also undertook the analysis with a more conservative measure of switching which excludes such cities. This yields very similar results.

sample, 1982, we exclude these observations from our cross-sectional analysis.<sup>36</sup> This process removes roughly 4,000 observations from 1982 plus about 1,000 post-1982 observations, which represents about 7 percent of the original post-1982 dataset.

Given that historical movements towards council-manager form were often associated with broader reforms in municipal political institutions, it is important to control for other political institutions in order to isolate the effect of government form. In particular, we include in our cross-sectional analysis three other key measures in the ICMA data: the size of the city council, the fraction of council members elected on an at-large basis, and an indicator for voter access to the citizen initiative. While these measures are included in the cross-sectional regressions, we exclude them from the panel analysis since our key variables are measured in first differences. Due to the incomplete response rate in the ICMA data and the lack of consistent survey questions regarding recent changes in these three other political institutions, including these measures would significantly reduce our sample sizes in the panel analysis.

Our data on government finances come from the Census of Governments for fiscal years 1982, 1987, 1992, 1997, and 2002. We assume that the government in place during 1981 was responsible for setting the budget for fiscal year 1982, the 1986 government was responsible for the 1987 budget, etc. Our measure of public spending is general expenditure per capita, which excludes government spending on utilities, liquor stores, and insurance trusts.<sup>37</sup> In order to make the measures comparable across time, we convert all spending to 2002 dollars by using the CPI deflator.

Finally, city demographics, which are used as control variables, come from the decennial Census. In our baseline analysis, we employ five measures of citizen preferences for public spending: per capita income, the fraction of residents with a high school degree, the fraction over age 65, the fraction of residents who are black, and income inequality, as proxied by the ratio of mean to median income. To construct city-level measures of these demographic variables, we use GeoLytics CDs. We match the 1980 Census demographics with the 1981 political institutions, the 1990 Census demographics with the 1991 political institutions, and the 2000 Census demographics with the 2001 political institutions.<sup>38</sup> For the 1986 political institutions, we average the Census demographics from 1980 and 1990, and we use an analogous procedure for computing demographics to match with the 1996 political institutions.

Tables 1, 2, and 3 provide summary statistics for our dataset. Table 1 provides a breakdown of government form for the different years of our sample. As shown, the fraction of mayor-council cities in the data fell from about 47 percent in 1987 to about 39 percent in 2002. As shown in Table 2, however, switching between government form by specific cities according to our measure is relatively rare. In particular,

<sup>36</sup>This choice does not substantively affect our cross-sectional results. In particular, the 1982 results are qualitatively similar to those in the other years of our analysis. Note also that the 1982 observations are implicitly included in our panel analysis, since the first set of observations is based upon changes between 1982 and 1987.

<sup>37</sup>In addition to spending measures, we have also analyzed revenue measures at the city level and find broadly similar results. This suggests that any spending differences between mayor-council form and council-manager form are not driven by differences in budget deficits.

<sup>38</sup>Similarly to the government spending measures, we convert all income to 2002 dollars using the CPI deflator.

TABLE 1—PREVALENCE OF GOVERNMENT FORM OVER TIME

	Mayor-council cities ( <i>n</i> )	Council-manager cities ( <i>n</i> )	Fraction mayor-council form
1987	1,570	1,740	47.43 percent
1992	1,623	1,768	47.86 percent
1997	1,269	1,695	42.81 percent
2002	988	1,551	38.91 percent

TABLE 2—SWITCHES BETWEEN GOVERNMENT FORM

	Number of cases	Fraction of cases
Mayor-council to council-manager	71	0.58 percent
No change	12,135	99.16 percent
Council-manager to mayor-council	32	0.26 percent

TABLE 3—SAMPLE AVERAGES

	Mayor-council cities	Council-manager cities	Difference
Government spending per capita	870.61	1,032.32	-161.71
Population	24,333	28,786	-4,453
Fraction HS grad	0.748	0.770	-0.022
Income per capita	17,414.91	19,610.62	-2,195.71
Fraction over age 65	0.144	0.138	0.006
Fraction black	0.085	0.081	0.004
Income inequality	1.236	1.258	-0.022
Council size	6.568	6.133	0.435
Fraction elected at-large	0.534	0.742	-0.208
Citizen initiative indicator	0.296	0.546	-0.250

we have 71 city-year observations, or less than one percent of the sample, switching from mayor-council to council-manager, and only 32 city-year observations switching from council-manager to mayor-council. There are two possible explanations for this discrepancy between Tables 1 and 2. First, as noted above, our measure of switching reflected in Table 2 is conservative and may not capture some switches. Second, the decline in the prevalence of mayor-council form documented in Table 1 may be due to changes in the composition of the sample. For example, the trend away from council-manager form may reflect the fact that newly incorporated cities are more likely to be council-manager form. Indeed, when restricting the sample to those municipalities included in the sample in all of the survey years, we see only a very small trend in the direction of council-manager form.

As shown in Table 3, mayor-council cities in our dataset do indeed spend about 16 percent less on a per capita basis than do council-manager cities, and this difference is statistically significant at conventional levels, providing preliminary support for the theoretical prediction. Regarding population, mayor-council cities average about 24,000 residents and are smaller than council-manager cities, which average almost 29,000 residents. In terms of demographics, citizens in mayor-council cities are on average older, poorer, less educated, and more likely to be black than their counterparts in council-manager cities. In terms of other political institutions, mayor-council cities tend to have somewhat larger councils, have fewer members elected on an at-large basis, and are less likely to use the citizen initiative.

### B. Cross-Sectional Analysis

For the cross-sectional analysis, we estimate the parameters of the following regression model:

$$(8) \quad \ln(S_m/N_m) = \alpha_1 \ln(N_m) + \alpha_2 MC_m + \alpha_3 \mathbf{X}_m + \alpha_s + e_m.$$

Here  $S_m$  represents government spending in municipality  $m$ ,  $N_m$  represents municipal population,  $MC_m$  indicates the presence of mayor-council form relative to council-manager form, and  $\mathbf{X}_m$  represents a vector of municipality characteristics.<sup>39</sup> We also include a set of state fixed effects ( $\alpha_s$ ), which are designed to capture both regional patterns in form of government as well as the responsibilities of municipal governments relative to other localities.<sup>40</sup> Finally,  $e_m$  represents unobserved determinants of municipal spending. We measure the per capita spending variable in logs in order to reduce the influence of outliers and to provide a percentage change measure of the effects of government form.

In order to interpret our results from this cross-sectional analysis as a test of the *ceteris paribus* prediction regarding government spending from the theoretical model, the key identifying assumption is that unobserved determinants of public spending ( $e_m$ ) are independent of government form; that is,  $E(e_m | MC_m = 1) = E(e_m | MC_m = 0)$ . As will be shown below, this identifying assumption is different from that in the panel analysis.

Table 4 reports the results from this cross-sectional analysis separately by year. As shown, mayor-council form is associated with lower government spending per capita, and this result is statistically significant at the 99-percent level in each year. This result is of large magnitude from an economic perspective, with mayor-council being associated with a difference in government spending of between 7 and 15 percent.<sup>41</sup> Given the summary statistics in Table 3, this represents a difference in government spending of roughly \$70 to \$150 per capita on an annual basis. Regarding city demographics, per capita spending is increasing in population, per capita income, the fraction of the population over age 65, the fraction black, and income inequality. In terms of other political institutions, we find, similarly to Baqir (2002), that government spending is increasing in the size of the city council. Finally, we find that access to the citizen initiative tends to increase spending. This finding is at odds with John G. Matsusaka (1995), who finds that the initiative reduces government spending by 4 percent at the state level.

<sup>39</sup> While we assume here a log-linear relationship between spending and population, we have also estimated specifications that include dummy variables for population quintiles. Results from these specifications, which account for any non-linearities in the relationship between spending and population, are similar to those presented in Table 4.

<sup>40</sup> As noted in Section IIA, it is well established that there are significant regional differences in the adoption of the council-manager form.

<sup>41</sup> Interestingly, the measured effects of government form on public spending are stronger in magnitude in the early years of the analysis, 1987 and 1992, relative to the final year of the analysis, 2002. One possible explanation for this involves a convergence in the forms of government over time. As noted above, some mayor-council cities have adopted features of council-manager form and vice-versa, and, according to H. George Frederickson, Gary Alan Johnson, and Curtis Wood (2004), this cross-adoption has increased over time.

TABLE 4—CROSS-SECTIONAL ANALYSIS

	1987	1992	1997	2002
Mayor-council form	-0.1431*** (0.0227)	-0.1547*** (0.0231)	-0.1246*** (0.0225)	-0.0690*** (0.0250)
Log population	0.1290*** (0.0104)	0.1152*** (0.0105)	0.0970*** (0.0103)	0.0704*** (0.0105)
Fraction HS grad	-0.1457 (0.1357)	-0.2458* (0.1444)	-0.2318 (0.1482)	-0.1207 (0.1592)
Log income per capita	0.2175*** (0.0494)	0.2651*** (0.0464)	0.2573*** (0.0459)	0.1957*** (0.0457)
Fraction over age 65	1.5098*** (0.2080)	1.1201*** (0.1970)	1.4059*** (0.1948)	0.9145*** (0.1933)
Fraction black	0.1847** (0.0911)	0.3221*** (0.0892)	0.1501* (0.0776)	0.1216 (0.0882)
Income inequality	0.5841*** (0.0920)	0.3854*** (0.0738)	0.6655*** (0.0804)	0.6139*** (0.0781)
Log council size	0.1772*** (0.0439)	0.1716*** (0.0427)	0.1558*** (0.0448)	0.2132*** (0.0491)
Fraction elected at-large	0.0118 (0.0252)	-0.0265 (0.0219)	-0.0056 (0.0245)	0.0414 (0.0274)
Citizen initiative indicator	0.0752*** (0.0219)	0.0716*** (0.0230)	0.0551** (0.0219)	0.0661*** (0.0224)
$R^2$	0.3673	0.3719	0.3740	0.3075
Observations	3,310	3,391	2,964	2,539
State indicators	Y	Y	Y	Y

Note: Standard errors in parentheses, dependent variable in logs.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

### C. Panel Analysis

We next conduct a panel analysis focusing on changes in government form within cities over time. Given that our switching measure is in first differences, our panel analysis is based upon taking first differences of the key variables in equation (8) above and estimating the following regression specification:

$$(9) \quad \Delta \ln(S_{mt}/N_{mt}) = \alpha_1 \Delta \ln(N_{mt}) + \alpha_2 \Delta MC_{mt} \\ + \alpha_3 \Delta \mathbf{X}_{mt} + \alpha_s + \alpha_t + \Delta e_{mt},$$

where  $t$  indexes time and  $\alpha_t$  is a series of survey year dummies.<sup>42</sup>

In order to interpret results from this panel analysis as causal, the key identifying assumption is that changes in unobserved determinants of public spending ( $\Delta e_{mt}$ ) are independent of changes in government form over time; that is,  $E(\Delta e_{mt} | \Delta MC_{mt} = 1) = E(\Delta e_{mt} | \Delta MC_{mt} = 0) = E(\Delta e_{mt} | \Delta MC_{mt} = -1)$ .

<sup>42</sup>We include state fixed effects in this specification in order to control for differential trends in spending across states. We have also estimated panel specifications without state fixed effects, and the results are robust to this change.

This differs from the cross-sectional identifying assumption, which requires that unobserved determinants of public spending are independent of government form at a given point in time. Thus, relative to the cross-sectional analysis, the panel analysis controls for all time-invariant city characteristics but requires cases in which cities change their form of government and that these changes are unrelated to other trends in unobserved city characteristics. Given the differences in both these identifying assumptions and the associated sources of variation, we view the cross-sectional and panel analyses as complementary.

As reported in the first column of Table 5, we find that switches to mayor-council (council-manager) form are associated with a reduction (increase) in spending of just over 9 percent, relative to jurisdictions with no change in government form in that year. Again, these effects are statistically significant at conventional levels and are large in magnitude.<sup>43</sup> In contrast to the cross-sectional results above, we find that increases in population and income inequality are associated with declines in per capita spending.<sup>44</sup>

The regression model in equation (9) implicitly assumes that switches from council-manager to mayor-council ( $\Delta MC_{mt} = 1$ ) have equal and opposite effects of switches from mayor-council to council-manager ( $\Delta MC_{mt} = -1$ ), relative to jurisdictions experiencing no change in government form ( $\Delta MC_{mt} = 0$ ). We next relax this symmetry assumption by estimating the following panel-data regression model:

$$(10) \Delta \ln(S_{mt}/N_{mt}) = \alpha_1 \Delta \ln(N_{mt}) + \alpha_3 I[\Delta MC_{mt} = 1] \\ + \alpha_4 I[\Delta MC_{mt} = -1] + \alpha_5 \Delta \mathbf{X}_{mt} + \alpha_s + \alpha_t + \Delta e_{mt}.$$

As shown in the second column of Table 5, we find that, as hypothesized, switches to mayor-council are associated with lower government spending and that switches to council-manager are associated with higher government spending; the latter coefficient, however, is not statistically different from zero at conventional levels. Again, both of these results should be considered relative to jurisdictions with no changes in government form in that year ( $\Delta MC_{mt} = 0$ ). Also, we can reject the null hypothesis that spending changes in similar ways following switches to and from mayor-council form (i.e., that  $\alpha_3 = \alpha_4$ ) at conventional significance levels. We fail to reject, however, the symmetry assumption implicitly imposed in equation (9) (i.e., that  $\alpha_3 = -\alpha_4$ ) at conventional significance levels.

In interpreting these results, it should be noted that, if our identifying assumption is not satisfied, then these results may reflect changes in unobserved determinants of public spending rather than the true effect of government form. One potential reason that our assumption may be violated involves trends in unobserved determinants of public spending. Suppose, for example, that, relative to cities not

<sup>43</sup> We have also estimated specifications accounting for potential clustering in spending growth within cities over time, and the standard errors are similar to those presented in Table 5.

<sup>44</sup> As noted above, given the unbalanced nature of the ICMA data and the lack of questions regarding recent change in other political institutions, we do not include these measures in the panel analysis. Note that including these measures only strengthens the effects of government form on public spending. These results are available from the authors.

TABLE 5—PANEL ANALYSIS

Change in mayor-council form	−0.0919** (0.0395)	
Change to mayor-council form		−0.1220* (0.0710)
Change to council-manager form		0.0782 (0.0477)
Change in log population	−0.3308*** (0.0306)	−0.3310*** (0.0306)
Change in fraction HS grad	−0.1189 (0.1762)	−0.1187 (0.1762)
Change in log income per capita	0.7011*** (0.0635)	0.7013*** (0.0635)
Change in fraction over age 65	0.2720 (0.2874)	0.2689 (0.2875)
Change in fraction black	0.1748 (0.2093)	0.1739 (0.2094)
Change in income inequality	−0.2816*** (0.0747)	−0.2814*** (0.0748)
$R^2$	0.0325	0.0325
Observations	12,238	12,238
State indicators	Y	Y
Year indicators	Y	Y

Note: Standard errors in parentheses, dependent variable in logs.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

changing their form of government, cities switching to mayor-council form tend to have unobserved determinants that are trending downwards over time and that cities switching to council-manager form tend to have unobserved determinants that are trending upwards. Then, our panel specification, which compares cities with switches to cities without switches, will suggest that spending is lower (higher) following a switch to mayor-council (council-manager) form even if government form has no true effect of public spending.

To address this possibility of differences in trends, we first estimate a panel specification similar to that in equation (9) but with city-specific indicators as controls. This specification compares changes in government spending within cities over time. That is, the effect of government form is identified by comparing the change in spending following a change in the form of government to changes in spending in the same city during periods in which the form of government did not change. Assuming that these underlying differences in trends are linear in nature, then including these controls will drive our key coefficients to zero if there is no true effect of government form. As shown in column 1 of Table 6, however, the key coefficient is similar to that in column 1 of Table 5 when including these city-specific indicators. While the standard error is larger, reflecting the large number of additional parameters to be estimated, the coefficient remains statistically significant at the 90 percent level. As shown in the second column, which relaxes the symmetry assumption, the results are again similar to those in Table 5, and the differences between the two key coefficients remain statistically significant at the 90 percent level.

TABLE 6—ADDITIONAL PANEL SPECIFICATIONS

Change in mayor-council form( <i>t</i> )	-0.1056*				-0.0919***	
	(0.0585)				(0.0395)	
Change to mayor-council form( <i>t</i> )	-0.1006				-0.1227*	
	(0.0999)				(0.0710)	
Change to council-manager form( <i>t</i> )	0.1083				0.0777	
	(0.0722)				(0.0477)	
Change in mayor-council form( <i>t</i> + 1)			0.0248			
			(0.0514)			
Change to mayor-council form( <i>t</i> + 1)			0.0454			
			(0.1074)			
Change to council-manager form( <i>t</i> + 1)			-0.0186			
			(0.0588)			
Failed change in mayor-council-form( <i>t</i> )					0.0394	
					(0.0318)	
Failed change to mayor-council form( <i>t</i> )					0.0050	
					(0.0455)	
Failed change to council-manager form( <i>t</i> )					-0.0729	
					(0.0449)	
Change in log population	-0.5805***	-0.5805***	-0.2540***	-0.2538***	-0.3311***	-0.3312***
	(0.0511)	(0.0511)	(0.0366)	(0.0367)	(0.0306)	(0.0306)
Change in fraction HS grad	-0.1481	-0.1480	-0.3603*	-0.3602*	-0.1198	-0.1178
	(0.3127)	(0.3127)	(0.2137)	(0.2137)	(0.1762)	(0.1762)
Change in log income per capita	0.5848***	0.5848***	0.7214***	0.7210***	0.7003***	0.6999***
	(0.1017)	(0.1017)	(0.0759)	(0.0759)	(0.0635)	(0.0635)
Change in fraction over age 65	1.0294*	1.0293*	-0.0937	-0.0922	0.2710	0.2696
	(0.5577)	(0.5578)	(0.3447)	(0.3447)	(0.2874)	(0.2875)
Change in fraction black	-0.3936	-0.3928	0.3934	0.3930	0.1717	0.1711
	(0.5516)	(0.5518)	(0.2614)	(0.2614)	(0.2093)	(0.2094)
Change in income inequality	-0.3155***	-0.3155***	-0.2556***	-0.2554***	-0.2818***	-0.2822***
	(0.1101)	(0.1102)	(0.0904)	(0.0904)	(0.0747)	(0.0748)
City indicators	Y	Y	N	N	N	N
<i>R</i> <sup>2</sup>	0.0295	0.0295	0.0297	0.0297	0.0326	0.0327
Observations	12,238	12,238	9,044	9,044	12,238	12,238

Notes: Standard errors in parentheses, dependent variable in logs. All regressions include year indicators and columns 3–6 include state indicators.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

As a second attempt to address possible differences in trends in unobserved determinants of public spending, we examine changes in public spending for cities that are about to undergo a change in government form. That is, we conduct a placebo test in which we replace  $\Delta MC_{mt}$  in equation (9) with  $\Delta MC_{mt+1}$ . If our baseline panel results are simply capturing trends in unobserved determinants of public spending, then we would expect to see a correlation between current changes in spending and future changes in government form. As shown in column 3 of Table 6, we find that future changes in government form are uncorrelated with current changes in government spending. Similarly, as shown in column 4, where we break out future changes to mayor-council form from future changes to council manager form, we again find no correlations.

As a final attempt to address concerns regarding violations to our key identifying assumption in the panel analysis, we examine cities that considered, but did not implement, a change in form of government. We refer to these cases as failed changes. The idea behind this placebo analysis is that these cities with failed changes may be more comparable to cities with actual changes than those cities that did not even consider

a change since, in the cities with failed changes, there were at least some elements within the city that preferred a change in form of government. That is, if changes in government form are driven by changes in unobserved determinants of public spending, then failed changes should be as well. To identify these cities that considered, but did not implement, changes, we use survey questions from ICMA regarding attempts to change the form of government within the city.<sup>45</sup> Then, we code cities that attempted, but did not implement, a change in form of government as failed changes.

As shown in column 5 of Table 6, we find that cities with failed changes in government form experienced no changes in government spending, relative to cities that did not attempt a change in government. Moreover, the coefficient on actual changes remains similar to that in Table 5, and the differences in the coefficients between failed changes and actual changes is statistically significant at the 99 percent level. The results in column 6 tell a similar story, with neither failed changes to mayor-council form nor failed changes to council-manager form having a statistically significant effect on government spending, and the coefficients on the actual changes are similar to those in the baseline panel analysis, as reported in Table 5.

#### D. Comparison to MacDonald

As noted in Section I, MacDonald (2008) uses a similar dataset and set of techniques, but reaches the conclusion that there are no significant differences in public spending across the two forms of government. In Appendix D, we attempt to reconcile the results from these two analyses. We find that the differences in the cross-sectional results appear to be driven by differences in the population threshold. While MacDonald excluded cities with population below 10,000, we excluded cities with population below 2,500. Regarding the panel analysis, the differences appear to be driven by differences in the switching measure used. While MacDonald used a measure based upon comparison of reported government form across survey years, we use a more conservative measure based upon a reported change in form of government.

### IV. Conclusion

This paper has made two contributions. The first is to offer a theory of fiscal policy determination under the two main forms of government found in US cities: mayor-council and council-manager. This theory offers a simple vision of how government form matters. It implies that expected public spending will be lower under mayor-council. It also implies that either system could be chosen by voters in a referendum. This means that the theory is consistent with the co-existence of both government forms.

The second contribution of the paper is to empirically investigate the prediction of the theory as regards spending. Our findings support the theory. This is a major

<sup>45</sup>For example, in the ICMA 1991 survey, cities were asked "Since January 1, 1987, have there been any attempts to change your municipality's structure of government?" Cities then check items that describe the changes that were proposed, with one of the possibilities being a change in the form of government. Unfortunately, the data lack information on why these attempts failed whereas other attempts were successful.

departure from prior work, which has come to the conclusion that there is no difference in size of government under the two forms. Independently of the forces that might be generating this result, the finding suggests an important revision to the conventional wisdom about urban public finance in the United States. It is also notable that the finding is consonant with Persson and Tabellini's empirical findings concerning the difference between size of government across countries with presidential and parliamentary forms of government.

#### APPENDIX A: PROOF OF PROPOSITION 1

We consider only the case in which moderates prefer candidates of signal type  $\alpha$  ( $G > L$ ) so that  $x = 0$  under council-manager and  $(x, j) = (0, \alpha)$  under mayor-council. The argument for the case in which  $G < L$  is similar. Using (1) and (2), we can write the difference between expected spending under the two forms as:

$$(A1) \quad S_C(0) - S_M(0, \alpha) = \left[ \Pr\left(\# \frac{h+m}{n} \geq \frac{q}{n} \mid 0\right) - (1 - \pi_l^\alpha) \Pr\left(\# \frac{h+m}{n-1} \geq \frac{q-1}{n-1} \mid 0\right) \right] \sum_{i=p_l+1}^{p_m} C_i + \left[ \Pr\left(\# \frac{h}{n} \geq \frac{q}{n} \mid 0\right) - \pi_h^\alpha \Pr\left(\# \frac{h}{n-1} \geq \frac{q-1}{n-1} \mid 0\right) \right] \sum_{i=p_m+1}^{p_h} C_i.$$

Now observe that

$$(A2) \quad \Pr\left(\# \frac{h+m}{n} \geq \frac{q}{n} \mid 0\right) = (1 - \pi_l^\alpha) \Pr\left(\# \frac{h+m}{n-1} \geq \frac{q-1}{n-1} \mid 0\right) + \pi_l^\alpha \Pr\left(\# \frac{h+m}{n-1} \geq \frac{q}{n-1} \mid 0\right),$$

and that

$$(A3) \quad \Pr\left(\# \frac{h}{n} \geq \frac{q}{n} \mid 0\right) = \pi_h^\alpha \Pr\left(\# \frac{h}{n-1} \geq \frac{q-1}{n-1} \mid 0\right) + (1 - \pi_h^\alpha) \Pr\left(\# \frac{h}{n-1} \geq \frac{q}{n-1} \mid 0\right).$$

Substituting (A2) and (A3) into (A1) and using the assumptions that  $\pi_l^\alpha = \underline{\pi}$  and that  $\pi_h^\alpha = \bar{\pi}$ , we obtain

$$S_C(0) - S_M(0, \alpha) = \underline{\pi} \Pr\left(\# \frac{h+m}{n-1} \geq \frac{q}{n-1} \mid 0\right) \sum_{i=p_l+1}^{p_m} C_i + (1 - \bar{\pi}) \Pr\left(\# \frac{h}{n-1} \geq \frac{q}{n-1} \mid 0\right) \sum_{i=p_m+1}^{p_h} C_i.$$

Both terms in this expression are positive since, by assumption,  $\underline{\pi}$  and  $1 - \bar{\pi}$  are positive numbers.

#### APPENDIX B: EXAMPLE

Suppose that  $n = 3$  and  $q = 2$ . Then, as shown in the proof of Proposition 2, if

$$\frac{G}{L} \in \left( \frac{\underline{\pi}(2 - \underline{\pi})}{1 - \underline{\pi}^2}, \frac{\underline{\pi}(1 - \underline{\pi})}{(1 - \bar{\pi})\bar{\pi}} \right),$$

$x_C = 3$  and  $(x_M, j_M) = (2, \alpha)$ . The probability that projects  $p_l + 1$  through  $p_m$  are approved under council-manager is

$$\Pr\left(\frac{\#l + m}{3} \geq \frac{2}{3} \mid 3\right) = (1 - \bar{\pi})^3 + 3(1 - \bar{\pi})^2\bar{\pi}$$

and the probability that projects  $p_m + 1$  through  $p_h$  are approved is

$$\Pr\left(\frac{\#l}{3} \geq \frac{2}{3} \mid 3\right) = \underline{\pi}^3 + 3\underline{\pi}^2(1 - \underline{\pi}).$$

Under mayor-council, the two probabilities are respectively

$$(1 - \pi_l^\alpha) \Pr\left(\frac{\#l + m}{2} \geq \frac{1}{2} \mid 2\right) = (1 - \underline{\pi})[(1 - \bar{\pi})^2 + 2(1 - \bar{\pi})\bar{\pi}]$$

and

$$\pi_h^\alpha \Pr\left(\frac{\#l}{2} \geq \frac{1}{2} \mid 2\right) = \bar{\pi}[\underline{\pi}^2 + 2\underline{\pi}(1 - \underline{\pi})].$$

Let  $\bar{\pi} = 0.25$ ,  $\underline{\pi} = 0.05$ , so that

$$\frac{\underline{\pi}(1 - \underline{\pi})}{\bar{\pi}(1 - \bar{\pi})} = \frac{(0.05)(0.95)}{(0.25)(0.75)} = 0.253,$$

and

$$\frac{\underline{\pi}(2 - \underline{\pi})}{1 - \underline{\pi}^2} = \frac{(0.05)(2 - 0.05)}{1 - (0.25)^2} = 0.104.$$

The probability that projects  $p_l + 1$  through  $p_m$  are approved under council-manager is

$$\Pr\left(\frac{\#h + m}{3} \geq \frac{2}{3} \mid 3\right) = (0.75)^3 + 3(0.75)^2(0.25) = 0.844,$$

and the probability that projects  $p_m + 1$  through  $p_h$  are approved under council-manager is

$$\Pr\left(\frac{\#h}{3} \geq \frac{2}{3} \mid 3\right) = (0.05)^3 + 3(0.05)^2(0.95) = 0.007.$$

Under mayor-council, the two probabilities are respectively

$$(1 - \pi_l^\alpha)\Pr\left(\frac{\#h + m}{2} \geq \frac{1}{2} \mid 2\right) = (0.95)((0.75)^2 + 2(0.75)(0.25)) = 0.891,$$

and

$$\pi_h^\alpha\Pr\left(\frac{\#h}{2} \geq \frac{1}{2} \mid 2\right) = (0.25)((0.05)^2 + 2(0.05)(0.95)) = 0.024.$$

Observe that both the probabilities that projects  $p_l + 1$  through  $p_m$  and projects  $p_m + 1$  through  $p_h$  are approved are significantly *higher* under mayor-council.

#### APPENDIX C: PROOF OF PROPOSITION 3

From (3) and (4) and using (A2) and (A3), we obtain

$$\begin{aligned} U_C(0) - U_M(0, \alpha) &= \underline{\pi}\Pr\left(\#\frac{h + m}{n - 1} \geq \frac{q}{n - 1} \mid 0\right)G \\ &\quad - (1 - \bar{\pi})\Pr\left(\#\frac{h}{n - 1} \geq \frac{q}{n - 1} \mid 0\right)L, \end{aligned}$$

and

$$\begin{aligned} U_C(n) - U_M(n - 1, \beta) &= \bar{\pi}\Pr\left(\#\frac{h + m}{n - 1} \geq \frac{q}{n - 1} \mid n - 1\right)G \\ &\quad - (1 - \underline{\pi})\Pr\left(\#\frac{h}{n - 1} \geq \frac{q}{n - 1} \mid n - 1\right)L. \end{aligned}$$

The Proposition then follows from the discussion in the text.

#### APPENDIX D: COMPARISON WITH MACDONALD (2008)

There are two important differences between our cross-sectional analysis and that of MacDonald (2008). The first is that she does not include state fixed effects. The second is that she focuses on cities with population above 10,000, whereas we use a lower population threshold of 2,500.

In the first row of Appendix Table 1, we present results from a specification similar to MacDonald's baseline analysis. In particular, we exclude state fixed effects and use

the higher population threshold. To simplify the presentation of the results, we only display the coefficient on mayor-council form.<sup>46</sup> As shown, our specification yields results that are qualitatively similar to those of MacDonald, and mayor-council form is associated with a reduction in government spending only in the 1987 sample.

To isolate which of these two differences in our specifications is driving the differences in results, we next present results from two specifications in which we begin with our baseline model and then modify it to reflect each of the differences between our specification and MacDonald's. As shown in the second row, when we exclude state fixed effects but use our lower population threshold, we find effects that are similar to our baseline results. Next, as shown in the third row, we do find weaker effects of government form on spending when using MacDonald's population threshold but including state fixed effects. With the exception of the 1992 analysis, the results are similar to those in the first row, and mayor-council form is associated with a reduction in government spending in only two out of the four years. Note that this statistical insignificance reflects not only the smaller coefficients but also the reduction in power associated with focusing on this subsample of the dataset.

Our panel analysis also differs from that of MacDonald in two ways. In addition to differences in the population threshold, she uses a measure of switching that is based upon comparisons of reported government form across survey years. As noted above, we use a more conservative measure based upon whether or not cities explicitly reported a change in form of government.<sup>47</sup> In the first row of Appendix Table 2, we present results from a fixed effects regression in levels that is similar to MacDonald's baseline panel analysis. Again, to simplify the presentation of the results, we only display the coefficient on mayor-council form.<sup>48</sup> As shown, we too find no effects of government form on public spending when running a fixed effects panel data regression similar to MacDonald.

To isolate which of these three differences in specification is driving the difference in results between our panel analyses, we again present two specifications in which we begin with our baseline model and then modify it to reflect each of the differences between our specification and MacDonald. As shown in the second row, when we use her measure of switching but our lower population threshold, we find that mayor-council form is associated with a statistically significant reduction in government spending. But the magnitude is much smaller than in our baseline panel analysis, which suggested a larger reduction of around 9 percent. As shown in the third row, running our specification with her higher population threshold also serves to strengthen the panel results.<sup>49</sup>

In summary, the differences in the cross-sectional results between the two papers seem to be driven largely by differences in the population threshold. This suggests that the effect of form of government is larger in smaller cities. However, in the

<sup>46</sup>The full set of results is available from the authors.

<sup>47</sup>Note that her panel analysis includes municipality fixed effects and thus state fixed effects are implicitly included. We should also note that she presents an alternative specification with no population threshold. This is different from our analysis, which uses a 2,500 population threshold.

<sup>48</sup>The full set of results is available from the author.

<sup>49</sup>This final finding is consistent with MacDonald's analysis, where she finds somewhat stronger effects of council-manager form when using the 10,000 population threshold, relative to a specification with no population threshold, although neither of these coefficients are statistically significant in her analysis.

APPENDIX TABLE 1—CROSS-SECTIONAL RECONCILIATION

State FE	Population threshold	1987	1992	1997	2002
No	10,000	-0.0579** (0.0283)	-0.0423 (0.0293)	0.0081 (0.0291)	0.0288 (0.0296)
No	2,500	-0.1300*** (-0.0218)	-0.1239*** (0.0223)	-0.1088*** (0.0218)	-0.0294 (0.0227)
Yes	10,000	-0.0493* (0.0294)	-0.0746** (0.0307)	-0.0345 (0.0299)	-0.0277 (0.0328)

Notes: each cell represents the coefficient on mayor-council form from a different regression. Standard errors in parentheses, dependent variable in logs.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

APPENDIX TABLE 2—PANEL RECONCILIATION

Switching measure	Population threshold	Coefficient
Comparison across years	10,000	-0.0228 (0.0190)
Comparison across years	2,500	-0.0357*** (0.0134)
Reported change	10,000	-0.1362*** (0.0479)

Notes: Each cell represents the coefficient on mayor-council form from a different regression. Standard errors in parentheses, dependent variable in logs.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

panel analysis, our results are strengthened by focusing on the set of larger population cities, casting doubt on this conclusion. While we do not have any definitive explanation for these population-related differences between the cross-sectional and panel analyses, it is nonetheless reassuring that our results are not entirely driven by these small cities. Relative to MacDonald, the differences in the panel results seem to be largely driven by differences in the switching measure. Her reported switching rates are much higher than ours, and, as argued above, our measure more accurately reflects the recent degree of switching in government form. Moreover, any measurement error associated with this measure of switching may bias her estimated effects of government form towards zero.

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