# Fiscal Policy, Legislature Size, and Political Parties: Evidence from State and Local Governments in the First Half of the 20th Century

***Abstract*** *- This paper tests whether state and local fiscal policy depended on the number of seats in the legislature in the first half of the 20th century. We find that large legislatures spent more, as implied by the "Law of 1/n" from the fiscal commons/logrolling literature. The same relation appears in the latter half of the century, and therefore seems to be systematic. We also find—again consistent with postwar evidence—that only the size of the upper house was important. We are unable to find robust evidence that expenditure depended on the partisan makeup of the legislature.*

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## INTRODUCTION

Institutions—the rules by which decisions are made—have a material affect on government tax and spending policies. That is the consensus view from an emerging empirical literature in public finance. A great deal of evidence has come from the "natural laboratory" of U.S. state and local governments. Studies have taken advantage of the cross–sectional variation in institutional arrangements to document the importance of tax and expenditure limits (Poterba, 1994), budgeting rules (Bohn and Inman, 1996; Poterba, 1994, 1995; Crain and Crain, 1998), legislative structure (Crain and Muris, 1995; Gilligan and Matsusaka, 1995), executive veto (Holtz–Eakin, 1988), suffrage (Lott and Kenny, 1999), district configuration (Crain, 1999), and initiatives (Matsusaka, 1995, 2000), among other things.[1]

Because of data limitations, almost all studies examine the period after World War II. As a consequence, we know relatively little about the effects of institutions in other time periods, and therefore do not know if documented effects are stable across time or vary according to circumstances. Our goal in this paper is to measure the effect of a particular institution—the size of the legislature—in an earlier time period, the first half of the twentieth century. There are strong theoretical reasons to expect the size of the legislature to affect

[1] This list only scratches the surface. The cited papers contain more comprehensive references.

fiscal policy, and we found significant supporting evidence in an earlier study of state and local spending during 1960–1990 (Gilligan and Matsusaka, 1995).

Legislature size is a perennial interest of policy makers. One of the earliest discussions appears in the Federalist Papers (especially Nos. 55 and 56), where it is argued that the number of representatives must be large enough to possess knowledge of the interests of numerous constituents and make collusion against the public interest difficult, but small enough to avoid the "confusion and intemperance of a multitude."[2] The continuing importance of legislature size as a policy issue is suggested by the ongoing political interest it generates. Only 11 of the 48 contiguous states had the same number of seats in their legislatures in 1990 as they did in 1902. In 28 states, the size of the upper house was altered (all but one were increased) and in 33 states, the size of the lower house was changed (expanded in 23 states).[3] A central issue in the recent charter reform process in Los Angeles was whether to increase the number of seats in the city council, and if so, by how much.[4]

Perhaps the most prominent theoretical argument for the importance of legislature size comes from the fiscal commons theory initiated by Tullock (1959) and Buchanan and Tullock (1962). This theory is based on the idea that government spending typically benefits a narrow segment of the population, while taxes are distributed broadly. In the formulation of Weingast, Shepsle, and Johnsen (1981), $b_i(x)$ is the benefit of spending $x$ dollars in district $i$ to the constituents of legislator $i$, and $c(x)$ is the cost of the spending. The efficient level of spending is the $x$ for which $b_i'(x) = c'(x)$. If there are $n$ districts and taxes are distributed equally over the districts, the constituents of legislator $i$ will pay only $1/n$th of the cost of any spending they receive. As a result, the legislator favors spending up to the point where $b_i'(x) = (1/n)c'(x)$. If legislators logroll and defer to each other on local spending projects, then total spending will be increasing in $n$ (or decreasing in $1/n$). Weingast, Shepsle, and Johnsen label this "Law of $1/n$." In our study of state and local spending between 1960 and 1990, we found a significant positive effect of legislature size ($n$) on the level of spending, as predicted by the theory.[5]

Gerrymandering provides another theoretical reason to expect the size of the legislature to influence fiscal policy. As shown in Gilligan and Matsusaka (1999), the ability to bias policy outcomes by gerrymandering—specifically, the ability to elect a median legislator whose preferences diverge from the median voter—is limited by the number of districts. As the number of seats increases, the ability to bias policy increases.[6] Thus, to the extent that those drawing district lines are seeking to achieve higher (or lower) spending, we expect them to be increasingly successful as the number of districts increases.

As noted above, a difficulty with studying pre–war behavior is the paucity of data. Aggregate numbers are not too hard to find, but disaggregated data on state and local governments are rare. This study is made possible primarily by the creation of a data set of state and local spending information by Richard Sylla, John Legler, and John Wallis.[7] The data were as-

[2] See Cooke (1961), page 374.

[3] This count omits Nebraska, which switched from a bicameral to a unicameral legislature.

[4] Two proposals were put before the voters in June 1999, one to increase the city council from 15 to 21 members, the other to increase the council size to 25 members. Both proposals were rejected.

[5] For other evidence pertaining to the fiscal commons/logrolling theory, see DelRossi and Inman (1999), Bradbury and Crain (1999), and various articles in Poterba and von Hagen (1999).

[6] This is true only to a point, but none of the states are in the range where theory predicts the opposite relation.

[7] The data are available through ICPSR. John Wallis provided the data that we use, and graciously answered our repeated inquiries.

sembled from the original volumes of the U.S. Census from 1902, 1913, 1932, and 1942. We linked these data with demographic and political variables collected from a number of other sources. Then a series of regressions were estimated with expenditure or revenue as the dependent variable, and the number of seats and various controls as the explanatory variables.

Our main finding is that the law of $1/n$ appears to hold in the earlier data as well. The number of seats in the legislature had a significantly positive effect on state and local expenditure and revenue for the sample years. The pattern is robust with respect to a variety of specifications and demographic and political controls. An interesting detail is that the number of seats in the *upper* house was determinative; the number of seats in the lower house did not have an empirically robust effect on fiscal policy. This finding is intriguing because we found the same thing in our study of postwar data. Our two studies, which together span a good part of the twentieth century, tell a fairly consistent story about the institution of legislature size: the more seats in the upper chamber of a state's legislature, the more the state will spend and tax.

A second focus of the paper is the role of political parties in determining fiscal outcomes. Whether and in what way political parties matter for fiscal policy has been an important theme of the recent literature. We address two questions that have received a fair amount of attention: (1) Does the partisan makeup of government affect the level or type of spending? (2) How does "gridlock" or divided government affect fiscal policy? A typical finding for the postwar period is that the partisan makeup of government has little effect on the overall level of government spending, but does influence the composition of spending.[8] The evidence is mixed on the consequences of divided government.[9] There is little statistical evidence from the early twentieth century on either question that might allow comparisons to be made with the contemporary evidence.

We look for effects of political parties by including dummy variables in the regressions that indicate which party controlled the legislature and governor's office, and whether control was divided or unified. While statistically significant effects can be found in particular specifications, the general pattern is an absence of robust partisan effects. It is also difficult to find robust effects of unified versus divided government. Thus, our evidence on political parties is mixed overall and suggests at best weak effects, not unlike the evidence from the postwar period. There seems to be little reason to reject the view that the partisan makeup of government is primarily a reflection of constituent preferences and not an independent explanatory factor.

Finally, we report regressions that use disaggregated measures of expenditure. These regressions should be appraised with caution because some difficulties arise when decomposing the data. Two interesting patterns emerge. One is that legislature size is associated primarily with higher spending on education and highways. Because both types of expenditure deliver geographically concentrated benefits, this lends some support to the fiscal commons interpretation of our findings. On the other hand, we find that legislature size is associated primarily with higher *local* spending, not state spending, which is not what might be expected under the fiscal commons view.

[8] For a survey of international evidence, see Blais, Blake, and Dion (1993). Evidence from the states is mixed. For example, Gilligan and Matsusaka (1995) fail to find partisan effects on total spending for 1960–90, while Crain and Muris (1995), using a different empirical model, find mixed results for 1982–86.

[9] Poterba (1994) finds that divided government slows a state's reaction to a fiscal crisis. Crain and Muris (1995) find that divided government reduces state spending, while Gilligan and Matsusaka (1995) fail to find significant effects.

The next section of the paper provides more detailed background information on the institution of legislature size and describes the data. The results are presented in the subsequent three sections: the third section contains the basic results, the fourth section introduces political variables, and the fifth section disaggregates spending into functional categories and levels of government. Concluding comments appear in the final section.

## DATA

### *Overview of Legislature Size*

We begin by providing an overview of legislature size. Table 1 lists the number of seats in both houses for each state in 1902, the first year of our sample. A substantial amount of variation can be seen. The number of seats in the upper house ranged from a low of 12 in Arizona and New Mexico (both were territories at the time) to a high of 63 in Minnesota. The range in the lower house was even greater, from a low of 24 in Arizona and New Mexico to a high of 397 in New Hampshire.

Figure 1 plots the number of seats in 1902, the first year of our sample, against the number of seats in 1942, the last year of our sample. A fair amount of variation in the number of seats across time can be seen, particularly in the upper house. The fact that so many states saw fit to change the size of their legislatures reinforces the view that this is an important institutional feature, or at least that these states perceived it to be important. It is interesting that most of the adjustments were in the upper house. Our results below and in our other paper (1995) suggest that the upper house is the important one when it comes to legislature size, so states appear to be focusing their reform efforts in the right place.

In our empirical analysis, we attempt to measure the effect of legislature size for both the upper and lower house. Of course, if chamber sizes were highly correlated within states—states that had many seats in the upper house also had many seats in the lower house—it would be difficult to identify separate effects. Figure 2 plots the number of upper house seats against the number of lower house seats for 1902, and for 1942. There appears to be a modest positive correlation, but having a large upper house does not guarantee having a large lower house, and conversely.[10]

Another concern is that the number of seats may be just a proxy for the state's population. This turns out not to be the case. Figure 3 plots the number of seats against (log of) state population in 1902. Again, we see a modest positive relation, but plenty of variation remains.[11] Indeed, the three largest legislatures were in the relatively small states of New Hampshire, Connecticut, and Rhode Island. The figure also rejects the view that the number of seats is chosen simply to keep the number of constituents per representative in some target range.[12]

### *Summary of Data and Sources*

Summary statistics are reported in Table 2. Panel A lists the fiscal variables, Panel B lists the demographic and institutional controls, and Panel C lists the political variables. Here we provide a brief overview of the data and sources. Detailed information is contained in the appendix.

[10] The correlation for 1902 is 0.32, and for 1942 is 0.17.

[11] For 1902, the correlation between upper house seats and log of population is 0.69; the correlation for lower house seats is 0.37. For the full sample, the correlation is 0.59 for upper house seats and log of population, and 0.26 for lower house seats and log of population.

[12] The more general issue of what determines the size of legislatures remains open (Stigler, 1976).

**TABLE 1**
NUMBER OF SEATS IN UPPER AND LOWER HOUSES, 1902

| State | Seats in Upper House | Seats in Lower House |
|---|---|---|
| Alabama | 33 | 100 |
| Arizona* | 12 | 24 |
| Arkansas | 32 | 100 |
| California | 40 | 80 |
| Colorado | 35 | 65 |
| Connecticut | 24 | 255 |
| Delaware | 17 | 35 |
| Florida | 32 | 68 |
| Georgia | 44 | 175 |
| Idaho | 21 | 49 |
| Illinois | 51 | 153 |
| Indiana | 50 | 100 |
| Iowa | 50 | 100 |
| Kansas | 40 | 125 |
| Kentucky | 38 | 100 |
| Louisiana | 39 | 116 |
| Maine | 31 | 151 |
| Maryland | 26 | 95 |
| Massachusetts | 40 | 240 |
| Michigan | 32 | 100 |
| Minnesota | 63 | 119 |
| Mississippi | 45 | 133 |
| Missouri | 34 | 140 |
| Montana | 24 | 70 |
| Nebraska | 33 | 100 |
| Nevada | 15 | 33 |
| New Hampshire | 24 | 397 |
| New Jersey | 21 | 60 |
| New Mexico* | 12 | 24 |
| New York | 50 | 150 |
| North Carolina | 50 | 120 |
| North Dakota | 31 | 62 |
| Ohio | 33 | 110 |
| Oklahoma* | 13 | 28 |
| Oregon | 30 | 60 |
| Pennsylvania | 50 | 204 |
| Rhode Island | 37 | 72 |
| South Carolina | 40 | 124 |
| South Dakota | 45 | 87 |
| Tennessee | 33 | 99 |
| Texas | 31 | 128 |
| Utah | 18 | 45 |
| Vermont | 30 | 245 |
| Virginia | 40 | 100 |
| Washington | 34 | 80 |
| West Virginia | 26 | 71 |
| Wisconsin | 33 | 100 |
| Wyoming | 19 | 39 |

* These states were territories in 1902.

- *Fiscal information.* Data on expenditure and revenue for state and local governments came from the Census of Governments, 1902, 1913, 1932, and 1942. Only these four Censuses contained comprehensive information on state and local spending. The data were provided to us by John Wallis, and are available as ICPSR Study No. 6304.
- *Demographic information.* Demographic information was taken from the U.S. Census. We interpolated when data for specific years were

*Figure 1.* Comparison of the Number of Legislative Seats in 1902 and 1942

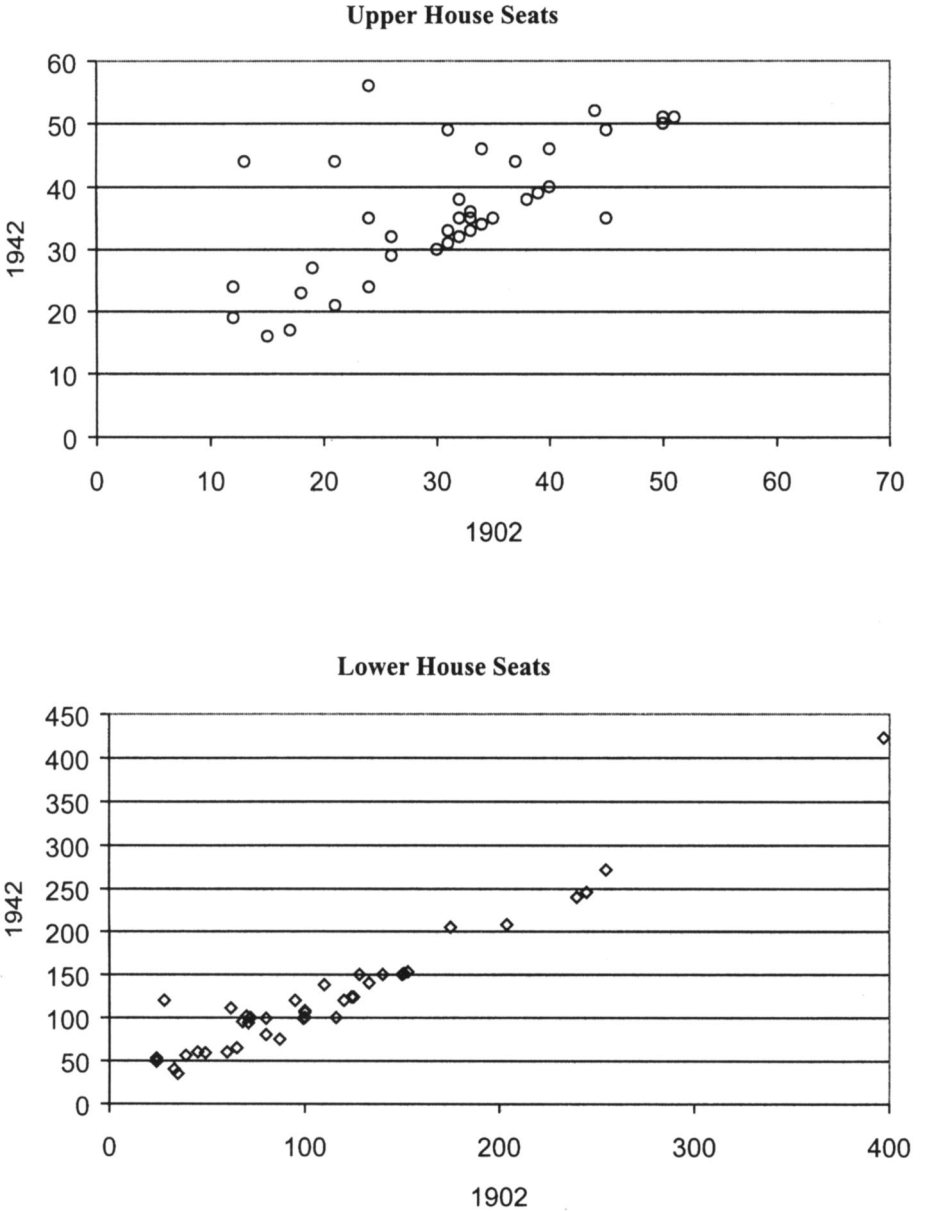

*Figure 2.* Comparison of the Number of Upper and Lower House Seats

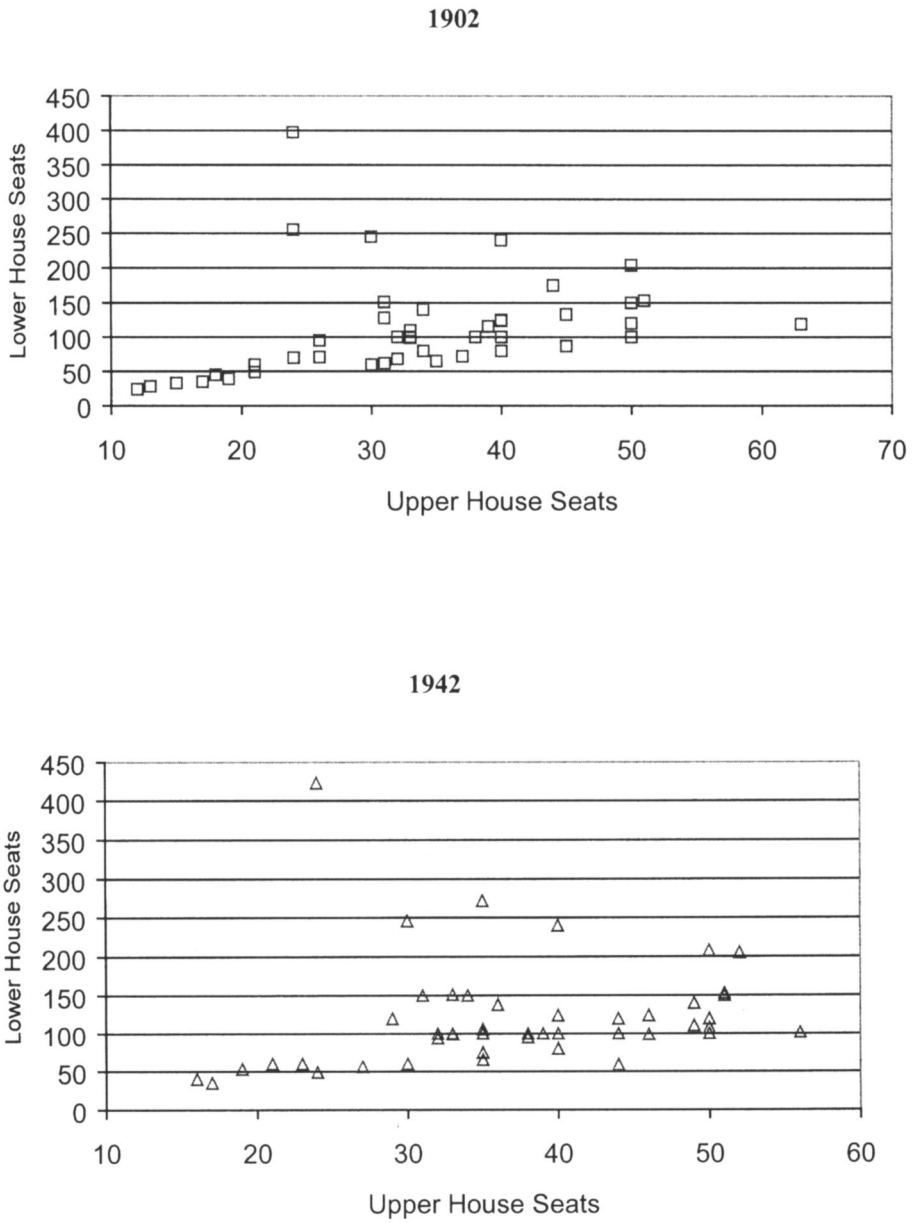

*Figure 3.* Comparison of the Number of Seats and State Population in 1902

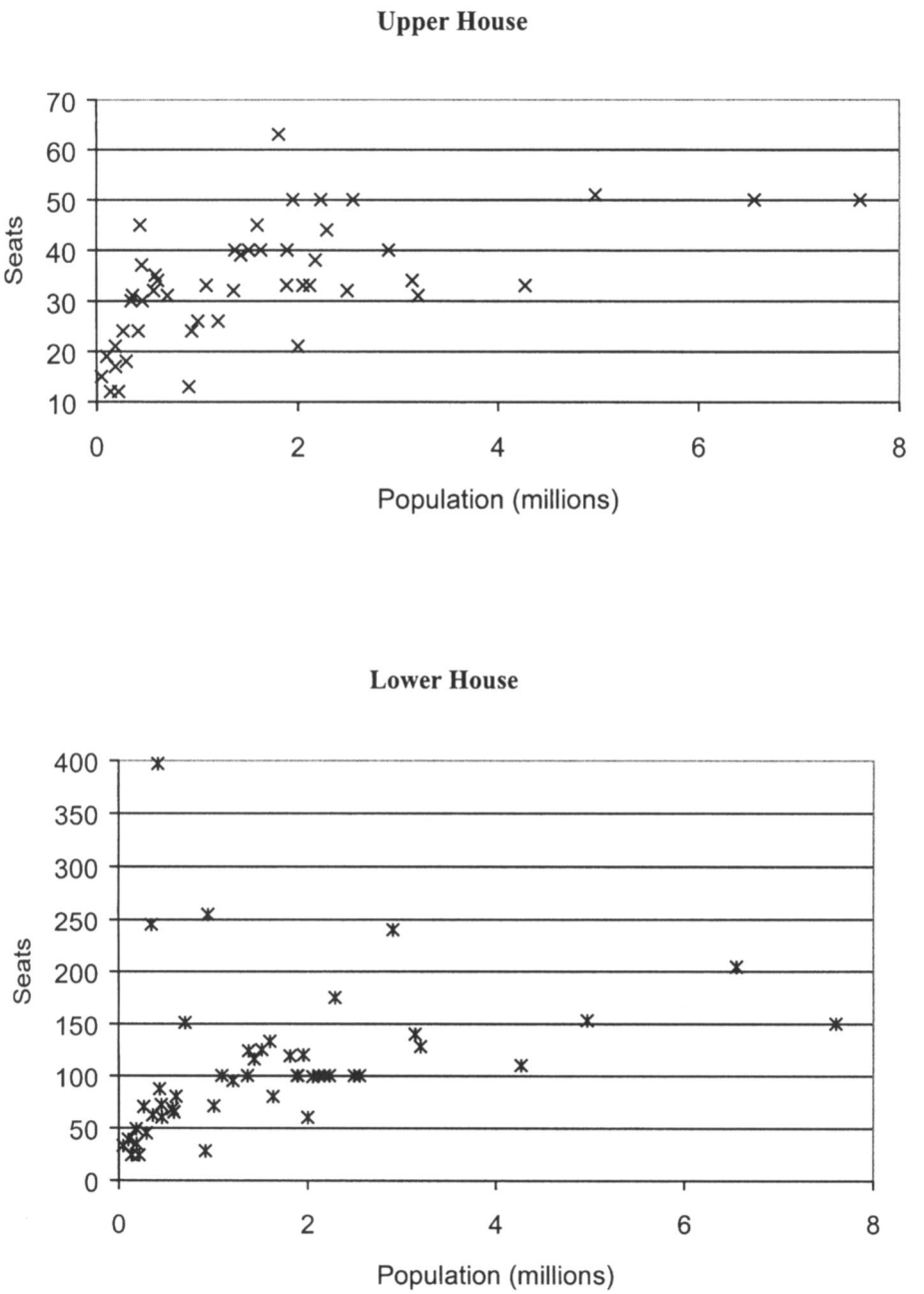

**TABLE 2**
SUMMARY STATISTICS

| | Mean | S.D. | Min | Max |
|---|---|---|---|---|
| **Panel A. Fiscal Variables** | | | | |
| Expenditure, total | 56.15 | 32.98 | 7.49 | 157.65 |
| Revenue, total | 50.63 | 29.04 | 6.27 | 120.38 |
| **Panel B. Basic Explanatory Variables** | | | | |
| Seats, upper house | 35.72 | 10.69 | 12 | 63 |
| Seats, lower house | 116.20 | 67.92 | 24 | 423 |
| Income | 534.21 | 212.24 | 155.57 | 1,201.57 |
| Federal aid | 5.97 | 6.38 | 0.13 | 39.34 |
| Population, in millions | 2.25 | 2.29 | 0.05 | 13.74 |
| Population growth rate, previous 5 years | 8.65 | 8.28 | –2.80 | 68.23 |
| Rural, fraction of population | 0.58 | 0.21 | 0.08 | 0.92 |
| Older than 65 years, fraction of population | 0.05 | 0.02 | 0.02 | 0.10 |
| Immigrant, fraction of population | 0.11 | 0.09 | 0.002 | 0.34 |
| Dummy = 1 if state allowed voter initiatives | 0.30 | 0.46 | 0 | 1 |
| NOMINATE, average for U.S. senators | –0.002 | 0.441 | –0.948 | 0.896 |
| **Panel C. Political Party Variables** | | | | |
| Dummy = 1 if governor was Republican | 0.44 | 0.50 | 0 | 1 |
| Seats held by Democrats, upper house | 18.68 | 13.87 | 0 | 51 |
| Seats held by Republicans, upper house | 16.66 | 13.28 | 0 | 47 |
| Democratic seats, lower house | 64.56 | 44.86 | 1 | 207 |
| Republican seats, lower house | 52.90 | 56.28 | 0 | 300 |
| Dummy = 1 if Democrats controlled upper house | 0.44 | 0.50 | 0 | 1 |
| Dummy = 1 if Republicans controlled upper house | 0.53 | 0.50 | 0 | 1 |
| Dummy = 1 if Democrats controlled lower house | 0.48 | 0.50 | 0 | 1 |
| Dummy = 1 if Republicans controlled lower house | 0.50 | 0.50 | 0 | 1 |
| Dummy = 1 if Democrats controlled both houses and governor was Republican | 0.04 | 0.20 | 0 | 1 |
| Dummy = 1 if Republicans controlled both houses and governor was Democrat | 0.11 | 0.32 | 0 | 1 |
| Dummy = 1 if Democrats controlled both houses and governor | 0.37 | 0.48 | 0 | 1 |
| Dummy = 1 if Republicans controlled both houses and governor | 0.34 | 0.48 | 0 | 1 |

*Notes.* All financial variables are expressed in 1942 dollars, and in per capita terms. The fiscal variables represent the combined expenditure or revenue of all governmental units in the state. There are 192 observations for the dependent variable and all variables in Panel B except for the seats and senate variables. All other variables have 189 observations.

missing. The data were provided to us by Lawrence Kenny and John Wallis.[13]

- *Initiative status.* Information on whether a state allowed citizens to initiate and approve laws by referendum came from Matsusaka (2000).
- *Voting record of U.S. senators.* To quantify the voting record of each state's U.S. senators, we used the NOMINATE numbers calculated by Poole and Rosenthal (1991). These numbers, which can be thought of as assigning each senator a location between –1 and +1 on a liberal–conservative line, are based on all roll call votes in the U.S. senate, and have the virtue of being comparable across time.
- *Number of seats and partisan makeup of state government.* Information on the number of seats, the party in con-

[13] The economic environment varied considerably across sample years—1932 was the depths of the Great Depression and 1942 was World War II. While the size and scope of the federal government changed dramatically during the sample period, the changes in state and local government were less obvious. In any event, we have no reason to expect the affect of these macro events to fall disproportionately on states with large or small legislatures.

trol of the governor's office, and the partisan breakdown of the legislature came from ICPSR Study No. 16.

## BASIC RESULTS

Our approach is to estimate a series of regressions with a fiscal variable as the dependent variable, and seats and other controls as the explanatory variables. The formal empirical model is:

$$G_{it} = \alpha + \beta S_{it} + \delta P_{it} + \gamma X_{it} + e_{it},$$

where $G_{it}$ is the fiscal variable of interest (expenditure, revenue) in state $i$ in year $t$, $S_{it}$ is a vector containing the number of seats in the upper and lower house, $P_{it}$ is a vector of political party variables, $X_{it}$ is a vector of other controls, $e_{it}$ is an error term, and $\alpha$, $\beta$, $\delta$, and $\gamma$ are unknown parameters to be estimated. Our full data set contains 48 states ($i = 1 \ldots 48$) and 4 years ($t = 1 \ldots 4$). This gives 192 observations to begin with, from which we lose a few depending on the control variables.[14] Financial variables are expressed in 1942 dollars. All reported estimates use White standard errors. Each regression includes four year–specific dummies whose coefficients we do not report.

We start by reporting a benchmark model that does not include institutional or political variables. This gives a rough idea of how much remains to be explained by legislature size and political parties. Then we present the initial results for legislature size, without controlling for political parties. Political party variables are omitted on the first pass because they introduce potential endogeneity and identification problems, and because (as will be seen) they consume degrees of freedom without offering much explanatory power. On the second pass, we introduce the political party variables.

Table 3 reports the first set of results. Each column is a regression. In columns (1)–(3), the dependent variable (indicated at the top of the column) is state and local expenditure per capita. We use the combined expenditure of state and local governments, rather than the expenditure of state governments alone, because state legislatures can and do affect fiscal policy at the local level. For example, the state can mandate or prohibit certain expenditures, provide matching funds contingent on certain policy decisions, and prohibit various revenue schemes. The large role of state government in local fiscal policy is suggested by the fact that roughly 25 percent of local government revenue was provided by the state government during the sample period. In the fifth section below, we report estimates based on data that are decomposed into state and local spending.

The regression in column (1) provides a baseline. We include only six variables, per capita income, per capita federal aid, and four year dummies. The first two variables correlate with the amount of resources available to the government. The point estimates indicate that each dollar of state income resulted in 8.4 cents of combined government spending, and that each dollar of federal aid led to $1.55 more spending. The positive relation between expenditure and income and the amplifying effect of federal aid (the so–called "flypaper effect") are well known, and the coefficients are comparable to those found in other studies.[15] As can be seen, this

[14] We lose Nebraska after 1934 when it switched to a unicameral legislature with non–partisan elections. Our data source (ICPSR 0016) stopped collecting information on Minnesota after 1913 when the state switched to non–partisan elections. Because Arizona, New Mexico, and Oklahoma were territories in 1902, they did not have U.S. senators and therefore we cannot calculate a NOMINATE score for them.

[15] We do not attempt to address the potential endogeneity of federal aid, which arises if federal grants are contingent on states providing matching funds. This problem makes it difficult to interpret the federal aid coefficient, but should not bias the seats coefficients.

**TABLE 3**
REGRESSIONS OF EXPENDITURE AND REVENUE ON SEATS AND CONTROLS

| | Dependent variable: Expenditure | | | Dependent Variable: Revenue | | |
|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) |
| Seats, upper house | — | 0.214*** | 0.151* | — | 0.221*** | 0.180** |
| | | (0.073) | (0.084) | | (0.067) | (0.074) |
| Seats, lower house | — | 0.004 | –0.014 | — | 0.010 | –0.012 |
| | | (0.010) | (0.012) | | (0.010) | (0.012) |
| Income | 0.084*** | 0.085*** | 0.049*** | 0.079*** | 0.080*** | 0.046*** |
| | (0.006) | (0.005) | (0.009) | (0.005) | (0.005) | (0.009) |
| Federal aid | 1.55*** | 1.66*** | 1.76*** | 0.66*** | 0.80*** | 0.81*** |
| | (0.13) | (0.15) | (0.14) | (0.16) | (0.17) | (0.16) |
| Population, in millions | — | — | 0.57 | — | — | 0.52 |
| | | | (0.46) | | | (0.37) |
| Population growth rate, previous 5 years | — | — | 39.40*** | — | — | 33.74*** |
| | | | (13.36) | | | (11.36) |
| Rural, fraction of population | — | — | –15.01** | — | — | –8.66 |
| | | | (6.79) | | | (5.63) |
| Immigrant, fraction of population | — | — | 42.25*** | — | — | 46.29*** |
| | | | (14.31) | | | (14.35) |
| Older than 65 years, fraction of population | — | — | 252.43*** | — | — | 305.44*** |
| | | | (67.09) | | | (61.51) |
| Dummy = 1 if state allowed initiatives | — | — | 3.09* | — | — | 4.04** |
| | | | (1.69) | | | (1.62) |
| NOMINATE, average for U.S. senators | — | — | –3.93* | — | — | –4.79** |
| | | | (2.15) | | | (1.89) |
| Dummy = 1 if southern state | — | — | –1.50 | — | — | –3.06 |
| | | | (2.37) | | | (2.09) |
| $R^2$ | 0.905 | 0.909 | 0.927 | 0.889 | 0.897 | 0.923 |
| Adjusted $R^2$ | 0.902 | 0.906 | 0.920 | 0.886 | 0.893 | 0.917 |
| Observations | 192 | 189 | 186 | 192 | 189 | 186 |

*Notes.* Each column is a regression. The dependent variables, income, and federal aid are expressed in 1942 dollars per capita. The main entries are the coefficient estimates. White standard errors are in parentheses. The regressions also include 4 year dummies whose coefficients are not reported. Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

simple specification can account for 90 percent of the variation in expenditure. This underscores that although institutions appear to be important for fiscal policy, they are not the primary determinants of the observed variation.

The regression in column (2) introduces the two seats variables. The coefficient on the number of seats in the upper house is positive and significantly different from zero at better than the 1 percent level. The coefficient on the number of seats in the lower house is close to zero, and cannot be distinguished from zero statistically. The point estimate on the upper house coefficient indicates that an increase of one seat was associated with 21.4 cents more spending per capita. This implies, to put it in perspective, that a one standard deviation increase in the number of upper house seats (10.69) was associated with 2.29 dollars per capita more spending. This is a 4.1 percent increase compared to the mean expenditure level of 56.15 dol-

lars. A one standard deviation increase in the size of the lower house increased expenditure by 0.5 percent according to the point estimate.

It is interesting to note that the magnitude of the effect in this sample is very similar to the effect we found in the 1960–90 period. For example, in column (2) we estimate that a one seat increase in the upper house is associated with a 0.38 percent increase in total spending. We found for 1960–90 that a one seat increase in the upper chamber resulted in an increase of roughly 0.43 percent compared to the mean.[16] The insignificant estimate on the lower house coefficient was a characteristic of the 1960–90 period as well.

The regression in column (3) introduces eight more control variables. The variables are (1) state population, (2) growth rate of population over the previous five years, (3) fraction of the population living in a rural area, (4) fraction of the population that was born outside the United States, (5) fraction of the population older than 65 years, (6) a dummy variable equal to one if a state provided for voter initiatives, (7) the average NOMINATE score of the state's U.S. senators, and (8) a dummy variable for the 11 southern states that formed the Confederacy. There are *a priori* theoretical reasons to include these controls—some more convincing than others—and all of them have been used in other studies. In brief, state population may affect the marginal product of government spending if there are scale economies for certain projects (such as sewers). Growing areas may have a higher marginal product for spending on items such as roads or sewers. Rural voters, immigrants, and the elderly may have a different demand for government services than other voters. The initiative alters the agenda control in law making, and potentially alleviates agency problems. The voting record of a state's U.S. senators is presumably correlated with constituent desires, and thus may capture elements of citizen preferences that the other controls omit. Finally, the southern dummy incorporates in a crude way various alleged unobserved differences between the south and other areas of the country.[17] In any case, our focus here is not on the control variables per se, but on how these variables affect the seat coefficients. We want to know if the seats variables are proxying for some other variable.

Inclusion of the controls reduces the coefficient on the upper house variable by about a third, but it remains positive and statistically significant at conventional levels. The lower house coefficient remains small and insignificant.

Columns (4)–(6) repeat the regressions in columns (1)–(3) but use combined state and local *revenue* per capita as the dependent variable. Expenditure and revenue are highly correlated in practice. Many states have balanced budget requirements, and in any event the budget must balance in the long run.[18] Nevertheless, there are year–to–year divergences between expenditure and revenue. We might expect expenditure to be more discretionary in this period than later years because of the relative unimportance of entitlement programs.

[16] We are using the "best fit" estimate from column (2) of Table III in Gilligan and Matsusaka (1995) for this comparison.

[17] We ran exploratory regressions with other variables, which did not effect the coefficients of interest and were generally insignificant. These variables were excluded from the final regressions in order to reduce clutter and preserve degrees of freedom. The list of variables we tried and excluded includes (1) fraction of males in the population, (2) population density, (3) fraction of blacks in the population, and (4) fraction of population living in a city with more than 50,000 persons.

[18] Revenue is less than expenditure in our formulation because we subtract federal aid from state revenue in the revenue regressions.

It is not too surprising then that the revenue equations tell the same story as the expenditure equations. If anything, the results are stronger. The upper house coefficient is always positive and significantly different from zero. According to the point estimate in column (5), a one standard deviation increase in the size of the upper house was associated with 2.36 dollars more spending, or 4.7 percent more compared to the mean. The lower house coefficient remains small and insignificant.

The basic conclusion from Table 3 is that variation in the size of legislatures appears to have a measurable affect on the spending and taxing policies of state and local governments. In particular, the more seats in the upper house of the legislature, the more the government spends and the more revenue it collects. The size of the lower house does not have an empirically reliable affect on fiscal policy, and the estimated magnitudes appear to be small.

The contrast between the upper house and lower house coefficients is a bit unexpected from a theoretical viewpoint so it seems natural to wonder about its robustness. We address this issue next by re-estimating the basic equations under several alternative specifications. The results appear in Table 4. Each column of Panel A presents estimates from a regression with expenditure as the dependent variable, and each column of Panel B presents estimates from a revenue regression. In column (1), expenditure and revenue are expressed as a percentage of income instead of per capita.[19] Expenditure averaged 10.3 percent of income during the sample period, and revenue averaged 9.2 percent of income. As in Table 3, we see that spending was higher when the upper house was large and it was unrelated to the size of the lower house. The upper house coefficients in this specification are both different from zero at better than the 1 percent level.

Another common specification in the literature is logarithmic. The regressions in column (2) express expenditure and revenue (and income and federal aid) as logarithms of their per capita values. Again, this specification only strengthens the effect of the upper house and has no effect on the lower house effect.

One might wonder if the small lower house coefficients are caused in some way by collinearity between the upper house and lower house variables. Figure 2 suggests this is not likely to be a problem, but to provide a more direct check, we estimated regressions that included only the number of upper house seats (column (3)) and only the number of lower house seats (column (4)). As can be seen, the coefficients hardly change at all.

Another issue is that our regressions use the number of seats as explanatory variables while some theories (notably, the fiscal commons and gerrymandering theories) suggest that what really matters is the number of *districts*. The number of seats differs from the number of districts when a state has multimember districts. It is not easy to get concrete information on the number of multimember districts used during the sample period, but we know from Klain (1955) that in 1954, 12 percent of legislators in upper houses and 45 percent of lower house members were elected from multimember districts. The number of multimember districts was probably higher in our sample period. The extensive use of multimember districts for lower house elections is particularly relevant for our study because it implies that the number of lower house seats is an especially poor measure of the number of districts. Could this explain why the lower house coefficients are small and insignificant?

[19] Federal aid is also expressed as a percentage of income, and income itself is removed from the explanatory variables.

**TABLE 4**
REGRESSIONS OF EXPENDITURE AND REVENUE ON SEATS AND CONTROLS: ALTERNATIVE SPECIFICATIONS TO EXAMINE ROBUSTNESS

| Variable | (1-A) | (2-A) | (3-A) | (4-A) | (5-A) | (6-A) |
|---|---|---|---|---|---|---|
| | PANEL A. Dependent variable: Expenditure | | | | | |
| Seats, upper house | 0.054*** | 0.418*** | 0.418*** | — | 0.293*** | 1.620*** |
| | (0.014) | (0.116) | (0.116) | | (0.105) | (0.303) |
| Seats, lower house | –0.001 | –0.010 | — | –0.011 | 0.021 | –0.055 |
| | (0.002) | (0.021) | | (0.021) | (0.028) | (0.039) |
| $R^2$ | 0.860 | 0.945 | 0.945 | 0.942 | 0.944 | 0.950 |
| Adjusted $R^2$ | 0.849 | 0.940 | 0.940 | 0.938 | 0.939 | 0.916 |
| | PANEL B. Dependent Variable: Revenue | | | | | |
| | (1-B) | (2-B) | (3-B) | (4-B) | (5-B) | (6-B) |
| Seats, upper house | 0.061*** | 0.486*** | 0.486*** | — | 0.342*** | 1.673*** |
| | (0.014) | (0.136) | (0.136) | | (0.116) | (0.357) |
| Seats, lower house | –0.001 | –0.016 | — | –0.016 | 0.006 | –0.073 |
| | (0.002) | (0.020) | | (0.020) | (0.024) | (0.048) |
| $R^2$ | 0.828 | 0.946 | 0.946 | 0.942 | 0.944 | 0.944 |
| Adjusted $R^2$ | 0.814 | 0.941 | 0.941 | 0.937 | 0.939 | 0.907 |
| | PANEL C. Specifications | | | | | |
| Expenditure, revenue, and federal aid expressed as a percentage of income? | Yes | No | No | No | No | No |
| Expenditure, revenue, income, and federal aid expressed per capita in logs? | No | Yes | Yes | Yes | Yes | Yes |
| Number of districts used instead of number of seats? | No | No | No | No | Yes | — |
| States with multimember districts excluded? | No | No | No | No | No | Yes |
| Control variables | Same as Table 3 without income | Same as Table 3 | Same as Table 3 | Same as Table 3 | Same as Table 3 | Same as Table 3 |
| Observations | 186 | 186 | 186 | 186 | 186 | 36 |

*Notes.* Each column in Panel A and B reports estimates from a regression. Specifications vary by regression, as indicated in Panel C. The dependent variables, income, and federal aid are expressed in 1942 dollars. The main entries are the coefficient estimates. White standard errors are in parentheses. Coefficients and standard errors are multiplied by 100 except in column (1). Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

To investigate this possibility, we attempted to identify the use of multimember districts by each state in our sample period based on information in Klain (1955). We were able to determine that the number of seats and districts was the same for 57 percent of the upper house observations, and 25 percent of lower house observations. For the remaining observations, we imputed the number of districts by assuming that the ratio of districts to seats was the same as in 1954.[20]

[20] The implied ratio of districts to seats in the sample averaged 0.91 in the upper house and 0.73 in the lower house.

Based on fragmentary information about the evolution of multimember districts over time, we believe this gives reasonably accurate estimates of the number of districts during the sample period. The regressions in column (5) use the imputed number of districts in place of the number of seats. The magnitude of the upper house coefficient declines but remains significant at the 1 percent level. The lower house coefficient is still small and insignificant. In column (6), we estimate the regressions after deleting all observations with multimember districts. For this sample, the number of seats is equal to the number of districts. The coefficients increase in magnitude and the basic pattern remains intact. Although the much smaller sample size in column (6) prevents strong inferences, the coefficients suggest that multimember districts mute the seats–spending relationship. Why this should be so seems like an interesting question for future research.

To summarize, the basic pattern survives the tests in Table 4 and appears to be robust. Spending and revenue are higher in states with large upper houses, and are not correlated with the size of lower houses.[21]

## MORE RESULTS: THE ROLE OF POLITICAL PARTIES

Our regressions to this point have ignored political parties. Implicitly, we have been assuming that political parties are pure intermediaries between voters and outcomes, as would be the case in a median voter world. Here we consider the possibility that political parties exert an independent effect on outcomes, as suggested by a variety of models in which median voter outcomes do not attain.[22] Our procedure will be to introduce a series of dummy variables that capture configurations of partisan representation in the state government.

Table 5 contains the first set of results. As before, each column is a regression, and the dependent variable is indicated at the heading of the column. The regressions include the full set of controls from Table 3, but only the seats and party coefficients are reported. The dependent variable is expenditure in Panel A and revenue in Panel B. Results turn out to be sensitive to specification, so we report both the logarithmic (columns (1)–(3)) and levels regressions (columns (4)–(6)).

In columns (1) and (4) we capture political party control with five dummy variables. The first dummy is equal to one if the governor was a Republican and zero if he was a Democrat.[23] The other four dummies are equal to one if (1) the Democrats had a majority in the upper house, (2) the Democrats had a majority in the lower house, (3) the Republicans had a majority in the upper house, and (4) the Republicans had a majority in the lower house. The omitted category is that no party had a majority. This occurred when members of a third party or independents were the swing voters, and happened in the upper house in 3 percent of the observations, and in the lower house in 9 percent of the observations (see Table 2).

Consistent party effects do not appear. With the logarithmic specification, none of the party coefficients can be distinguished from zero in either the expenditure or revenue regression. Moreover, we cannot reject the hypothesis that the party

[21] We also estimated the regressions with state fixed effects. The coefficients of interest shrank in magnitude and tended to be statistically insignificant. It is hard to know what to make of this since legislature size is essentially fixed for many states, meaning that the fixed effects may be stripping out the economic effect we are trying to measure. One thing this does tell us, however, is that our findings are driven primarily by the cross–sectional rather than time series variation in the data.

[22] For instance, see Ingberman and Villani (1993) and Baron (1994).

[23] There were three cases that did not fit exactly into this scheme. See the appendix.

**TABLE 5**
REGRESSIONS OF EXPENDITURE AND REVENUE ON SEATS, DEMOGRAPHICS, AND POLITICAL PARTY VARIABLES

| | PANEL A. Dependent Variable: Expenditure | | | | | |
|---|---|---|---|---|---|---|
| | Logarithmic Specification | | | Levels Specification | | |
| Variable | (1-A) | (2-A) | (3-A) | (4-A) | (5-A) | (6-A) |
| Seats, upper house | 0.395*** | 0.390*** | 0.393*** | 0.116 | 0.126 | 0.147* |
| | (0.115) | (0.112) | (0.111) | (0.079) | (0.080) | (0.082) |
| Seats, lower house | –0.011 | –0.016 | –0.016 | –0.011 | –0.013 | –0.014 |
| | (0.021) | (0.021) | (0.021) | (0.012) | (0.012) | (0.013) |
| Dummy = 1 if governor was Republican | –1.61 | — | — | –4.06** | — | — |
| | (3.32) | | | (1.88) | | |
| Dummy = 1 if Democrats controlled upper house | 0.59 | — | — | 2.92 | — | — |
| | (5.02) | | | (3.55) | | |
| Dummy = 1 if Democrats controlled lower house | –0.19 | — | — | 1.77 | — | — |
| | (5.69) | | | (4.65) | | |
| Dummy = 1 if Republicans controlled upper house | 3.63 | — | — | 8.04*** | — | — |
| | (5.05) | | | (2.86) | | |
| Dummy = 1 if Republicans controlled lower house | –2.01 | — | — | 4.04 | — | — |
| | (5.29) | | | (3.55) | | |
| Dummy = 1 if Democrats controlled both houses and governor was Republican | — | –3.25 | — | — | –2.59 | — |
| | | (5.56) | | | (3.89) | |
| Dummy = 1 if Republicans controlled both houses and governor was Democrat | — | 1.35 | — | — | 6.99** | — |
| | | (4.79) | | | (3.12) | |
| Dummy = 1 if Democrats controlled both houses and governor | — | 3.13 | 3.33 | — | –1.20 | –2.95 |
| | | (3.87) | (3.54) | | (2.43) | (2.00) |
| Dummy = 1 if Republicans controlled both houses and governor | — | 1.51 | 1.24 | — | 2.17 | –0.72 |
| | | (3.85) | (3.62) | | (2.89) | (2.18) |
| $R^2$ | 0.947 | 0.947 | 0.947 | 0.932 | 0.930 | 0.927 |
| Adjusted $R^2$ | 0.940 | 0.941 | 0.941 | 0.924 | 0.923 | 0.920 |
| | PANEL B. Dependent Variable: Revenue | | | | | |
| | Logarithmic Specification | | | Levels Specification | | |
| Variable | (1-B) | (2-B) | (3-B) | (4-B) | (5-B) | (6-B) |
| Seats, upper house | 0.458*** | 0.417*** | 0.460*** | 0.145** | 0.148** | 0.177** |
| | (0.129) | (0.132) | (0.132) | (0.071) | (0.073) | (0.075) |
| Seats, lower house | –0.023 | –0.020 | –0.022 | –0.010 | –0.008 | –0.010 |
| | (0.020) | (0.020) | (0.020) | (0.011) | (0.011) | (0.012) |
| Dummy = 1 if governor was Republican | –3.90 | — | — | –4.59*** | — | — |
| | (3.38) | | | (1.84) | | |
| Dummy = 1 if Democrats controlled upper house | –0.73 | — | — | 1.99 | — | — |
| | (4.89) | | | (3.05) | | |
| Dummy = 1 if Democrats controlled lower house | –2.76 | — | — | –1.67 | — | — |
| | (5.62) | | | (4.67) | | |

**TABLE 5** (continued)
REGRESSIONS OF EXPENDITURE AND REVENUE ON SEATS, DEMOGRAPHICS, AND POLITICAL PARTY VARIABLES

| | PANEL B. Dependent Variable: Revenue | | | | | |
|---|---|---|---|---|---|---|
| | Logarithmic Specification | | | Levels Specification | | |
| Variable | (1-B) | (2-B) | (3-B) | (4-B) | (5-B) | (6-B) |
| Dummy = 1 if Republicans controlled upper house | -2.95<br>(4.56) | — | — | 5.29*<br>(2.72) | — | — |
| Dummy = 1 if Republicans controlled lower house | 3.69<br>(5.46) | — | — | 4.72<br>(4.32) | — | — |
| Dummy = 1 if Democrats controlled both houses and governor was Republican | — | -1.76<br>(6.06) | — | — | -2.51<br>(4.03) | — |
| Dummy = 1 if Republicans controlled both houses and governor was Democrat | — | 7.33<br>(4.66) | — | — | 9.25***<br>(2.44) | — |
| Dummy = 1 if Democrats controlled both houses and governor | — | 5.16<br>(3.99) | 3.13<br>(3.79) | — | -2.34<br>(2.05) | -4.84**<br>(1.98) |
| Dummy = 1 if Republicans controlled both houses and governor | — | 3.68<br>(4.03) | 0.54<br>(3.81) | — | 2.56<br>(2.45) | -1.35<br>(2.13) |
| $R^2$ | 0.949 | 0.949 | 0.948 | 0.933 | 0.933 | 0.926 |
| Adjusted $R^2$ | 0.942 | 0.943 | 0.943 | 0.925 | 0.926 | 0.918 |

*Note.* Each column in Panel A and B reports estimates from a regression. "Logarithmic Specification" means the dependent variable, income, and federal aid are expressed as logarithms of their per capita values, while "Levels Specification" means these variables are expressed simply in per capita terms. The dependent variables, income, and federal aid are expressed in 1942 dollars. The main entries are the coefficient estimates. White standard errors are in parentheses. The regressions also include the control variables from Table 3 (coefficients not reported)—income, federal aid, population, population growth, rural, older than 65, immigrants, initiative dummy, South dummy, and senator NOMINATE average—as well as four year dummies. All regressions have 186 observations. Coefficients and standard errors are multiplied by 100 in the logarithmic specification. Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

coefficients are jointly zero in either regression ($p = 0.957$ for expenditure, and $p = 0.573$ for revenue). With the levels specification, the dummies for Republican governor and Republican control of the upper house are statistically significant in both the expenditure and revenue regressions, but go in contradictory directions. The point estimate indicates that spending was $4.59 per capita lower under a Republican governor but $8.04 per capita higher when the GOP controlled the upper chamber. It is interesting that the legislature effect appears in the upper chamber and not in the lower chamber because this echoes the pattern for seats, where the upper house appears to have been decisive. However, we hesitate to make too much of these party results since they appear only with the levels specification.

The basic story concerning legislature size is robust to inclusion of the party variables. The coefficient on upper house seats remains positive and significant (except for the expenditure regression in levels) and the coefficient on lower house seats remains small and negative.

In columns (2) and (5) we search for political party effects using a specification motivated by Alt and Lowry (1994). The four dummy variables are (1) Democratic control of both houses and a Republican governor, (2) Republican control of both houses and a Democratic governor, (3)

Democratic control of the legislature and the governor's office, and (4) Republican control of the legislature and the governor's office. The omitted category is a divided legislature, which occurs in 15 percent of the observations.[24] Here again we do not see robust party effects. With the logarithmic specification, none of the party coefficients are statistically significant, and we cannot reject the hypothesis that all of them are zero ($p = 0.693$ in the expenditure equation and $p = 0.310$ in the revenue equation.) With the levels specification, the only coefficient that can be distinguished from zero is the dummy for Republican control of the legislature coupled with a Democratic governor. The decisive element of this pairing appears to be the legislature: spending is significantly higher under a Republican legislature with a Democratic governor than a Democratic legislature with a Democratic governor ($p = 0.004$ in the expenditure equation and $p < 0.001$ in the revenue equation.) The tendency of Republican legislatures to spend and tax more is at odds with contemporary descriptions of the parties, but is not too surprising given the GOP's association with the Progressive movement early in the century.

Inclusion of these political party variables does not have much effect on the seats coefficients. The upper house coefficient remains positive and statistically significant except in the expenditure levels equation. The lower house coefficient remains small and insignificant.

The regressions in columns (3) and (6) include two political variables, a dummy equal to one if the Democrats controlled both houses of the legislature and the governor's office, and a dummy equal to one if the Republicans controlled the government. Again the coefficients are individually and jointly insignificant in the logarithmic specifications (for the hypothesis that both are zero, $p = 0.628$ in the expenditure equation and $p = 0.710$ in the revenue equation.) The results are also weak in the levels specification. The only significant coefficient appears in the revenue equation, which suggests that unified Democratic governments spent less than other party configurations.

Perhaps more important for our purposes are the coefficients on the seat variables. The upper house coefficient is positive and significantly different from zero in all regressions. The lower house coefficient continues to be small and indistinguishable from zero.

Two conclusions emerge from Table 5. First, the evidence is weak that the partisan composition of state government independently affected spending and tax policy. It is possible to find political party effects, and where present they suggest that Republican control of the legislature led to higher spending. However, the overriding message seems to be that party effects are not robust to alternative specifications.[25] One reason we present the results for alternative specifications is to demonstrate how fragile such results can be and to call attention to the need for robustness checks when searching for party effects. Second, an independent effect of the number of seats remains even after controlling for partisan makeup of the government. And the data continue to suggest that it was the number of seats in the upper house that mattered, not the size of the lower house.

The evidence here and elsewhere suggests that divided government does not exert a strong independent effect on fis-

[24] We experimented with finer divisions of the omitted category, but there were no significant differences.

[25] It is often argued that the country underwent a significant partisan realignment following the Great Depression. How this might play out in the states is unclear, but it raises the possibility that partisan effects might be different in the early and later years of our sample. To test for this, we re–estimated the regressions separately for 1902–13 and 1932–42. There were still no partisan effects under the logarithmic specification, and those in the levels specification weakened.

cal policy. However, we might suspect that divided government has an *indirect* effect on fiscal policy, perhaps by disrupting the ability of legislators to logroll. Table 6 investigates the possibility that the effect of legislature size is conditional on unified or divided government by estimating the effect of seats separately for unified governments and divided governments. As before, each column of each panel contains information from a regression, and we report estimates for both the logarithmic and levels specifications. All coefficients are suppressed except for those on the number of seats.

Two patterns emerge. First, the upper house seats coefficient is positive and significant when government is unified but mixed when government is divided. The magnitude of the coefficient is always larger under unified than divided government, and in the levels specification the upper house coefficients are insignificant under divided government. To the extent that logrolling underlies the seats coefficients, there is some evidence, albeit weak,

**TABLE 6**
FISCAL REGRESSIONS CONDITIONAL ON UNIFIED OR DIVIDED GOVERNMENT

PANEL A. Logarithmic Specification

| | Dependent Variable: Expenditure | | Dependent Variable: Revenue | |
|---|---|---|---|---|
| | One party control | Divided government | One party control | Divided government |
| Variable | (A-1) | (A-2) | (A-3) | (A-4) |
| Seats, upper house | 0.498*** | 0.298* | 0.523*** | 0.471** |
| | (0.152) | (0.163) | (0.177) | (0.185) |
| Seats, lower house | –0.001 | –0.044 | –0.007 | –0.071 |
| | (0.026) | (0.039) | (0.023) | (0.046) |
| $R^2$ | 0.943 | 0.937 | 0.944 | 0.933 |
| Adjusted $R^2$ | 0.935 | 0.911 | 0.937 | 0.905 |
| Observations | 134 | 52 | 134 | 52 |

PANEL B. Levels Specification

| | Dependent Variable: Expenditure | | Dependent Variable: Revenue | |
|---|---|---|---|---|
| | One party control | Divided government | One party control | Divided government |
| Variable | (B-1) | (B-2) | (B-3) | (B-4) |
| Seats, upper house | 0.241*** | –0.019 | 0.215** | 0.110 |
| | (0.084) | (0.134) | (0.084) | (0.113) |
| Seats, lower house | –0.008 | –0.070*** | –0.004 | –0.068*** |
| | (0.014) | (0.022) | (0.014) | (0.022) |
| $R^2$ | 0.926 | 0.946 | 0.920 | 0.940 |
| Adjusted $R^2$ | 0.916 | 0.924 | 0.910 | 0.915 |
| Observations | 134 | 52 | 134 | 52 |

*Notes.* Each column in Panel A and B reports estimates from a regression. "Logarithmic Specification" means the dependent variable, income, and federal aid are expressed as logarithms of their per capita values, while "Levels Specification" means these variables are expressed simply in per capita terms. The dependent variables, income, and federal aid are expressed in 1942 dollars per capita. "One party control" at the heading of a column means that the regression was estimated for the sample of states where one party had a majority in both houses and controlled the governor's office; "Divided government" means that the sample included all of the other observations. The regressions also include the control variables from Table 3 (coefficients not reported)—income, federal aid, population, population growth, rural, older than 65, immigrants, initiative dummy, South dummy, and senator NOMINATE average—as well as four year dummies. Coefficients and standard errors are multiplied by 100 in the logarithmic specification. White standard errors are in parentheses beneath the coefficient estimates. Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

that vote trading is easier under a one party government. We also see a consistent negative coefficient on the number of lower house seats, and the coefficient is different from zero at conventional significance levels in the levels specification. On the face of it, this is inconsistent with the logrolling/fiscal commons theory under divided government. One interpretation of the evidence is that the effect of legislature size depends on whether the government is unified of divided, but in our view caution is warranted since the estimates seem dependent on specification.[26]

## WHY LEGISLATURE SIZE MATTERS: DISAGGREGATED EXPENDITURE REGRESSIONS

It seems clear that larger upper houses were associated with higher spending and taxes. The reason for this relation is open to debate. Perhaps the natural conjecture is that we are observing the outcome of logrolling as predicted by the fiscal commons theory. Here we try to shed light on the causes of the legislature size effect by estimating separate regressions for disaggregated spending.

We begin by studying the behavior of (functional) categories of spending. We focus on (1) education, (2) highways, (3) public safety and welfare, and (4) all other expenditure. The first three categories account for about 70 percent of all spending in the sample. By measuring exactly what type of spending is stimulated by legislature size, we can gain some insight into how the previous results are translated into actual spending.

Detailed descriptions of the components of each of the categories of spending are reported in Panel A of Table 7, and summary statistics appear in Panel B. Some unavoidable deficiencies in this classification scheme originate from the way the Census Bureau collected the information. In particular, capital outlays appeared as a separate category; they were not apportioned to the functional categories (schools to the education category, road construction to the highways category, etc.) Since roughly 80 percent of capital outlays went to highways, we assigned outlays to the highways category. There is also a large residual category that grew over time. It includes interest payments, expenditure of public enterprises, and contributions to trust funds, among other things. In addition, the categories are not exactly comparable over time. These considerations introduce noise into the data that will make it difficult to draw strong conclusions.

The regressions are reported in Table 8. The explanatory variables are the same as Table 3.[27] The most robust pattern is that the size of the upper house had a positive and statistically significant effect on education expenditure. The upper house also had a positive effect on highways spending that is significant in the logarithmic specification. The coefficients on public safety and welfare expenditure are also positive, but cannot be distinguished from zero. The effect of legislature size on highways spending is entirely consistent with the fiscal commons view, since that kind of spending is the archetype of a particularistic project. Education is not typically envisioned as pork barrel spending, but state expenditures in this area are likely to be highly particularistic. During the sample period, state education spending was responsible for almost the entire public higher education budget, and there was also a significant state contribution to elementary and secondary school spend-

[26] Our results, which suggest that the effect of divided government is conditional, echoes Poterba (1994), which shows for the postwar period that divided governments respond more slowly to fiscal shocks.

[27] The regressions were also estimated using the political variables of Table 5 as explanatory variables. The results were essentially the same.

**TABLE 7**
DESCRIPTIONS AND SUMMARY STATISTICS FOR EXPENDITURE CATEGORIES

Panel A. Descriptions

| Expenditure Category | Description |
|---|---|
| Education | Title: Education (1902), Schools, Libraries (1913, 1932), Schools (1942). Excludes capital outlays |
| Highways | Titles: Street Lighting, Other Highway Expenditures, Capital Outlay, Investment Expenses (1902), Highways, Capital Outlays (1913, 1932), Highways, Outlays (1942). |
| Public Safety and Welfare | Titles: Health Conservation, Parks and Recreation, Agriculture, Sewers, Drainage, Other Sanitation, Penal Institutions, Military and Police, Fire Department, Miscellaneous Protection of Life and Property, Charities, Insane (1902), Recreation, Conservation of Health and Sanitation, Protection to Person and Property, Charities, Hospitals, and Corrections (1913), Health and Sanitation, Development and Conservation of Natural Resources, Recreation, Protection to Person and Property, Charities, Hospitals, and Corrections (1932), Health and Hospitals, Sanitation, Police, Fire, Other Public Safety, Public Welfare (1942). |
| All Other Expenditure | Titles: Legislature and Legislative Offices, Chief Executive Officer, Law Offices and Accounts, Miscellaneous General Government, Courts, Industries, All Other, Interest (1902), General Government, Expenses of Public Service Enterprises, Miscellaneous and General, Apportionments Education, Apportionments All Other, Interest (1913), General Government, Operation and Maintenance of Public Service Enterprises, Miscellaneous, All General Departments, Interest (1932), General Control, Contributions to Trust Funds and to Enterprise, Other and Undistributed, Aid Paid to Other Governments, Interest (1942). |

Panel B. Summary Statistics

| Expenditure Category | Mean | S.D. | Min | Max |
|---|---|---|---|---|
| Education | 14.67 | 9.29 | 1.35 | 48.54 |
| Highways | 16.67 | 11.96 | 1.30 | 56.17 |
| Public Safety and Welfare | 10.43 | 8.02 | 0.73 | 36.56 |
| All Other Expenditure | 17.81 | 13.39 | −11.77 | 59.59 |

*Notes.* For Panel A, the left column gives the title of the expenditure category used in the paper. The right column lists the titles used in the original Census documents as described by Sylla, Legler, and Wallis. In Panel B, all numbers are expressed in 1942 dollars per capita, and represent the combined expenditure or revenue of all governmental units in the state. There are 192 observations for each variable. Negative values for "All Other Expenditure" reflect (uncorrectable) errors in the original Census documents.

ing.[28] The size of the lower house does not exert a measurable effect on any of the three specific spending categories, but has a negative and significant effect on the residual category of spending. In other regressions that we do not report, we attempted to disaggregate the residual category. The negative coefficient appears both for general government expenses and for the remaining residual expenditure.

Another way to assess the causes of the seats effect is to study the determinants of state and local expenditure separately. The best available measure of expenditure by level of government corresponds to general expenditure, that is, it includes both direct purchases of goods and services by the government as well as intergovernmental aid payments. The sample average of state expenditure is $20.89 per capita, and the sample

[28] For example, state governments contributed 16.5 percent of elementary/secondary school funds in 1920 and 31.4 percent in 1942 (see U.S. Department of Education, *Digest of Education Statistics*.)

**TABLE 8**
REGRESSIONS OF EXPENDITURE CATEGORIES ON SEATS AND DEMOGRAPHICS

| | PANEL A. Logarithmic Specification | | | |
|---|---|---|---|---|
| Variable | Education (A-1) | Highways (A-2) | Public Safety and Welfare (A-3) | All Other Expenditure (A-4) |
| Seats, upper house | 0.785*** | 0.546** | 0.313 | 0.177 |
| | (0.211) | (0.249) | (0.209) | (0.212) |
| Seats, lower house | –0.001 | 0.039 | 0.011 | –0.110*** |
| | (0.031) | (0.044) | (0.037) | (0.038) |
| $R^2$ | 0.892 | 0.829 | 0.871 | 0.881 |
| Adjusted $R^2$ | 0.883 | 0.814 | 0.859 | 0.870 |
| | PANEL B. Levels Specification | | | |
| Variable | Education (B-1) | Highways (B-2) | Public Safety and Welfare (B-3) | All Other Expenditure (B-4) |
| Seats, upper house | 0.088** | 0.043 | 0.031 | –0.010 |
| | (0.036) | (0.052) | (0.030) | (0.051) |
| Seats, lower house | –0.007 | –0.001 | 0.007 | –0.022*** |
| | (0.004) | (0.009) | (0.005) | (0.007) |
| $R^2$ | 0.842 | 0.735 | 0.809 | 0.806 |
| Adjusted $R^2$ | 0.828 | 0.711 | 0.792 | 0.789 |

*Notes.* Each column of each panel reports estimates from a regression. White standard errors are reported in parentheses beneath the coefficient estimates. The dependent variable is indicated at the top of each column. In addition to the indicated variables, the regressions include the following variables whose coefficients are not reported (see Table 3): income, federal aid, population, population growth, rural, older than 65, immigrants, initiative dummy, South dummy, senator NOMINATE average, and four year dummies. "Logarithmic Specification" means the dependent variable, income, and federal aid are expressed as logarithms of their per capita values, while "Levels Specification" means these variables are expressed simply in per capita terms. The dependent variables, income, and federal aid are expressed in 1942 dollars per capita. Coefficients and standard errors are multiplied by 100 in the logarithmic specification. All regressions have 186 observations. Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

average of local expenditure is $39.07 per capita.

Table 9 reports estimates from regressions in which the dependent variable is either state or local expenditure. As usual, we report both logarithmic and levels specifications. We exclude political party variables from the reported regressions, but the results do not change if they are included. The regressions indicate that state expenditure was negatively related to legislature size (although the effect is significant only in the logarithmic specification) while local expenditure was positively related to legislature size. This pattern is difficult to reconcile with the fiscal commons view, at least in its simplest version. If logrolling was driving up spending, we expect to see higher expenditure in the state budget, not at the local level. However, we believe these results are not conclusive for several reasons. First, we cannot account for state grants to local governments (which, as noted above, comprise about 25 percent of local government revenue during the sample period) so we cannot rule out the possibility that heavy local spending was driven by state aid.[29] We are (and for the same reason) unable to separate direct state expen-

[29] Although it is difficult to separate intergovernmental aid from direct expenditure in the sample, we can get good approximations for two sample years. Regressions at that level of aggregation suggest that intergovernmental aid is, if anything, smaller for states with large legislatures.

**TABLE 9**
SEPARATE REGRESSIONS FOR STATE AND LOCAL GENERAL EXPENDITURE

| | Logarithmic Specification | | Levels Specification | |
|---|---|---|---|---|
| | State GE (1) | Local GE (2) | State GE (3) | Local GE (4) |
| Seats, upper house | –0.397** | 0.689*** | –0.069 | 0.221*** |
| | (0.188) | (0.146) | (0.046) | (0.078) |
| Seats, lower house | –0.053* | –0.021 | –0.002 | –0.021* |
| | (0.030) | (0.027) | (0.006) | (0.012) |
| $R^2$ | 0.940 | 0.916 | 0.917 | 0.859 |
| Adjusted $R^2$ | 0.935 | 0.908 | 0.909 | 0.846 |

*Notes.* Each column reports estimates from a regression. White standard errors are reported in parentheses beneath the coefficient estimates. The dependent variable is indicated at the top of each column. In addition to the indicated variables, the regressions include the following variables whose coefficients are not reported (see Table 3): income, federal aid, population, population growth, rural, older than 65, immigrants, initiative dummy, South dummy, senator NOMINATE average, and four year dummies. "Logarithmic Specification" means the dependent variable, income, and federal aid are expressed as logarithms of their per capita values, while "Levels Specification" means these variables are expressed simply in per capita terms. The dependent variables, income, and federal aid are expressed in 1942 dollars per capita. Coefficients and standard errors are multiplied by 100 in the logarithmic specification. All regressions have 186 observations. Significance levels are indicated as follows: * is 10 percent, ** is 5 percent, and *** is 1 percent.

diture from intergovernmental aid, so we cannot rule out a positive seats effect on direct expenditure at the state level. We are also unable to decompose revenue in a meaningful way, which limits our ability to check for robustness.

## CONCLUSION

The goal of this paper is to document the effect of a particular institution, the size of the legislature, on state and local fiscal policy during the first half of the twentieth century. This institution has long commanded the attention of policymakers, is central to the prominent logrolling/fiscal commons literature, and was found to be an empirically important determinant of fiscal policy for the postwar period. Our main finding is that legislature size appears to have had a positive and significant effect on state and local expenditure and revenue in the first half of the century as well, and the magnitude of the effects is comparable to those from later in the century. Thus, legislature size appears to have been an empirically significant determinant of fiscal policy throughout the century.

A second finding that is somewhat surprising to us is that only the size of the upper house matters consistently for fiscal policy. This is interesting because the same pattern appears in the postwar data. We do not have an obvious explanation. The Law of $1/n$ predicts that the demand for spending would be greater in the lower house than the upper house because the upper house always has fewer seats. One explanation, then is that the outcome of inter–house bargaining is to choose the lesser of the two proposals, making the upper house decisive. Unfortunately, we lack a compelling model that predicts this as the bargaining outcome. In the end, we view the cause of this apparently robust empirical relation as a challenge for future research.

We also attempt to discover effects of political parties on fiscal outcomes. While statistically significant effects are observed in certain specifications, the main sense of the estimates is that these effects are quite fragile. It seems defensible to argue that political parties did not exert an independent effect on fiscal policy during the sample period; that is, they functioned primarily as intermediaries as predicted by, say, the median voter theory. The fra-

gility of the political party results also suggests that other researchers may want to focus attention on robustness issues.

Finally, we attempt to assess why legislature size affects fiscal policy. The evidence indicates that large legislatures increased spending primarily for education and highways. Both types of spending generate particularistic benefits and thus fit the sense of the fiscal commons/logrolling theory. However, we find that legislature size appears to have reduced state expenditure and increase local expenditure, a pattern not obviously consistent with the logrolling view. We view this last evidence as tentative, but it does raise questions about the fiscal commons theory that merit further investigation.

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## *Appendix: Data Construction and Sources*

*Fiscal Data*—The data were assembled from the Censuses of 1902, 1913, 1932, and 1942, by Richard E. Sylla, John B. Legler, and John Wallis and can be found in ICPSR Study No. 6304. In what follows, parentheses indicate terms that follow directly from the ICPSR documentation by Sylla, Legler, and Wallis (SLW) that accompanies the data, entitled "State and Local Government: Sources and Uses of Funds Twentieth Century Statistics." "ISO" corresponds to their classification codes. Federal aid was subtracted from revenue.

*1902*—Combined state and local numbers are those classified as TGG in SLW. This double–counts state aid to local governments, but there is no simple way to correct the problem.

*1913*—State–only numbers correspond to SSS in SLW. Local numbers were calculated by summing "Counties" (CCC) and "Incorporated Places over 2,500" (L11) and multiplying by the 1902 ratio of LTT/(LTT – L03). This corrects for the fact that the 1913 Census did not include local governments with populations less than 2,500. Combined state and local numbers were calculated by adding the state and local numbers. We then subtracted state apportionments for education (ISO 3931) and other state apportionments (ISO 3932) to get the final numbers. State aid to local governments must be subtracted from the total to avoid double counting since it implicitly also appears in local government expenditure.

*1932*—Combined state and local numbers correspond to TGG in SLW. This double–counts state aid to local governments, but there is no simple way to correct the problem.

*1942*—The combined numbers are those classified as TGN. "Provision for Debt Repayment" (ISO 4100) was subtracted from expenditure to make the numbers comparable to the other years.

*Categories of Expenditure*—The 1913 numbers were rescaled as described above under Fiscal Data except for two cases. For Rhode Island, the local number for "General Government" is

not rescaled because the scale factor would be infinite. For Nevada, the local education numbers are not rescaled because the scale factor would be 48. For 1932, combined state and local expenditure was calculated directly instead of using the reported numbers because the two are different. The spending categories are Education (ISO 31), Highways (ISO 33 and ISO 42), and Public Safety and Welfare (ISO 32, ISO 34, and ISO 35). "All other" is total expenditure minus the sum of the listed individual categories. Capital outlays (ISO 42) were included in the Highways category.

*Price Level*—Nominal values were converted to real values using the Consumer Price Index as reported in *Historical Statistics of the United States*.

*Revenue from Federal Government*—The numbers came from SLW, and were constructed in the same way as the fiscal data. For 1902, 1913, and 1932, the numbers are "Subventions and Grants" (ISO 2300). For 1942, the category is ISO 2350, revenue "From Federal Government."

*Income*—Personal income per capita for each state in 1900 and 1920 came from the Census. Values for 1930 and 1940 came from *Survey of Current Business*. Numbers for 1910 were interpolated so that the 20-year change was allocated in the same share as nominal GNP changed (22 percent). These numbers were then interpolated geometrically to find per capita income in the sample years, and converted to 1942 dollars using the CPI. Lawrence Kenny and John Wallis kindly provided the data by decades.

*Population Demographics*—Population, rural population, and population over the age of 65 for each state in years ending in "0" were taken from the Census and provided by John Wallis. Lawrence Kenny provided rural and immigrant (foreign-born) population data, taken from the Census. Values for sample years were calculated by geometric interpolation.

*South Dummy*—The dummy is equal to one for Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

*Initiative Dummy*—The variable is equal to one if the state adopted the voter initiative at least six years prior to the fiscal year of the data. The rationale for this specific and the data sources are in Matsusaka (2000).

*Mean NOMINATE Score*—The number for each state is the average first dimension score for all of the state's U.S. senators for the congress that met in the same calendar year as the fiscal year of the data.

*Political Party Variables*—The variables were constructed using information from ICPSR 0016, "Partisan Division of American State Governments, 1834–1984."

*Dummy for Party of the Governor*—The dummy was set equal to one if the governor was Republican (ICPSR party code 200.) When the dummy was equal to zero, the governor was a Democrat (party code 100) with four exceptions: an Independent (party code 328), a Silver Democrat (party code 510), a Fusion governor (party code 843), and a Democrat–People's–Silver–Republican (party code 980).

*Dummy for Party Control of Houses*—The Democrats were classified as controlling a house if they held at least half the seats, and held more seats than the Republicans held. Republican control was defined analogously.

*Seats*—The number of seats was taken from ICPSR 0016. Numbers were unavailable for states that had nonpartisan elections.