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POLITICAL COMPETITION, CAUSAL RELATIONSHIPS BETWEEN TAXES AND SPENDING, AND THEIR INFLUENCE ON GOVERNMENT SIZE: EVIDENCE FROM STATE-LEVEL DATA

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Abstract

Theories of fiscal illusion and political competition have different implications for (i) the causal relationships between taxes and spending, and (ii) government size. These are tested using data from U.S. states from 1950 to 1990. We find evidence that greater political competition generally encourages bigger government, the Democratic Party is associated with bigger government, and state governments which "tax first, spend later" are more likely to be large. Other factors related to the fiscal illusion and political competition theories also appear to be important determinants of government size.

Political Competition, Causal Relationships Between Taxes and Spending, and Their Influence on Government Size: Evidence From State-Level Data

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I. Introduction

State governments are playing an increasingly important role in the tax and spending activities of the U.S. economy. State tax revenues as a fraction of total tax revenues have increased from less than 15 percent in the mid-1950s, to over 25 percent in the mid-1980s.[2] While federal expenditures as a percentage of personal income have shown modest growth (from 23 percent in 1957 to 29 percent in 1989), state and local government expenditures have shown much larger relative increases (13 percent in 1957 and over 20 percent in 1989). While it is clear that the importance of state governments as a whole has grown, it is also true that some state governments have grown faster than others, and that there is tremendous across-state variation in the size of state governments. For example, Table 1 indicates that over the 1950-90 period, state government expenditures as a percentage of state personal income ranged from a low of 6.25% for New Jersey up to 14.9% for New Mexico. Meanwhile, expenditures per person ranged from a low of $455.60 for Texas to $1,019.30 for Wyoming (consideration of Alaska and Hawaii produces an even larger variation). How can these differences in the sizes of state governments be explained?

While a reasonable story might be that fiscal policy decisions can be characterized purely from economic fundamentals, as in Barro's (1979) study of the determination of the optimal stock of government debt, public choice economists have hypothesized that such decisions are not simply a

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[2]All statistics mentioned in the introduction are based on figures from the Advisory Commission on Intergovernmental Relations, Significant Features of Fiscal Federalism, Vol. 2, 1993.

reflection of some social welfare maximum. Part of the literature emphasizes that politicians are vote-maximizers who, in trying to attract votes by catering to special interests, are likely to propose new programs which make government bigger. Another part of the literature suggests that bureaucrats are budget-maximizers, and this leads to bigger governments.[3] These two conceptions of the state are quite different. The "political competition" hypothesis suggests a more classical theory of the democratic state, where the state acts to carry out the will of (at least a subset of) the people. On the other hand, "fiscal illusion" suggests that the preferences of the individuals in government are decisive, because citizens can be fooled into accepting the budget-maximizing behavior. Mueller (1989) emphasizes that both conceptions might be correct to some degree, so that factors reflecting both political competition and fiscal illusion might help to explain the size of governments.

The tale of the vote-maximizing politician [Buchanan and Wagner (1977)] suggests that expenditure increases are much more attractive than tax increases, so that budget deficits are a natural consequence of political competition. New or expanded expenditure and transfer programs might be regarded as more desirable than tax cuts, because the benefits are more visible and more likely to accrue to powerful special interest groups.[4] Government growth is therefore encouraged whenever politicians compete for votes. This suggests an intertemporal pattern of taxes and spending: governments with greater political competition are more likely to spend now, tax later (or less likely to tax now, spend later). State-level evidence of tax-policy and debt-policy cycles, consistent with this political-competition story, can be found in Mikesell (1978) and Baber and Sen (1986). More recently, Besley and Case (1993) focus on the effects of gubernatorial term limits and find mixed support for the political-competition theory, as state governors ineligible to stand for reelection are more likely to raise taxes, but are also more likely to increase spending. Our paper is closely related

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[3]This literature is well surveyed in Chapters 14, 15, and 17 of Mueller (1989).

[4]Mueller and Murrell (1986) find empirical evidence that interest groups affect the size of government. "Favors" to such groups often take the form of goods targeted to those specific interest groups, but with some spillover benefits to other groups, so that government growth is encouraged.

to Besley and Case, in that we construct two types of indices of state-level political competition, one which reflects the tightness of gubernatorial elections and another reflecting the party-distribution of the state House. We use these measures to test the hypotheses that states with greater political competition are more likely to be "spend-first" states and also more likely to be bigger governments.

The tale of the budget-maximizing bureaucrat suggests that if government is allowed to become larger than socially optimal, the bureaucracy must be able to persistently deceive citizens about the true size of government. Oates (1988) describes several ways in which such "fiscal illusion" could take place, dividing them into debt sources, grant sources, and tax sources. First, "debt illusion" suggests that individuals are more likely to perceive the true costs of government programs if they must pay for them through current taxes rather than future liabilities (debt). Thus, government can grow faster through deficit finance. Second, grants can have an effect on government size through the "flypaper effect", where governments' marginal propensities to spend are greater when the revenue comes in the form of inter-governmental grants rather than increases in private income. Money thus "sticks where it hits," and governments receiving larger grants will be bigger governments. Finally, citizens might be unable to perceive the level of tax revenues correctly for several reasons: (i) because the tax structure is too complex, (ii) because the economic incidence is too hard to perceive, or (iii) because tax revenues are growing automatically through base (rather than rate) increases. Thus, governments with more elusive tax growth will be bigger governments.

For state governments, fiscal illusion through debt-illusion seems unlikely, since virtually all state governments are required to have balanced budgets. With respect to tax sources, the literature on fiscal illusion has focused on the idea that a complex or elastic tax structure would allow a government's revenues to expand unnoticed, thus allowing subsequent increases in government spending that seem painless to the electorate. This suggests an intertemporal aspect to fiscal illusion that is not addressed in the existing literature: **this sort of illusion is more likely to work when taxes pull along spending**. If expenditures were instead to rise before or concurrently with revenues,

the increase in government size would be more obvious, since new public programs are more visible than elusive increases in taxes. Thus, states that tax first, spend later should be more successful at fiscal illusion and more likely to become big governments.

The discussion above reveals that the alternative theories of political competition and fiscal illusion suggest different causal relationships between taxes and spending, and have different implications concerning the factors that lead to larger government size.[5] In section II, we perform Granger-causality tests to characterize each state as a "tax-first", "spend-first", "jointly-causal", or "no-linkage" state. The states are widely distributed across these types. We also examine whether some differences across states in their economic, political, or institutional characteristics can explain the different causal relationships. In general we find that they do not, although there is evidence that political competition discourages "tax-first" behavior, at least among Republicans. In section III we take up our main focus, the determinants of state government size, allowing for the influence of political competition and including a test of the proposition that state governments which tax first, spend later are more likely to be successful at fiscal illusion and thus more likely to be large. We find some support for both the political competition and fiscal illusion theories. Section IV concludes.

II. Causal Relationships Between Spending and Revenues

We use the well-known tests of Granger (1969) to assess the causal relationships between revenues and expenditures on a state-by-state basis from 1950-90 (data sources are described in the Appendix). For each state, the tests allow four possible outcomes: (1) spending and revenues are causally independent ("no linkage"); (2) spending causes revenues, but revenues do not cause spending ("spend first"); (3) revenues cause spending, but spending does not cause revenues ("tax

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[5]We do not address issues related to the optimal size of government, even though these are relevant for the fiscal illusion hypothesis, as noted above. Instead, our more modest effort is aimed at testing several implications of the fiscal illusion hypothesis. There is a separate literature on the intertemporal linkages between taxes and spending, but the literature has focused on either the federal government or aggregate measures of lower-level governments. These include Von Furstenberg, Green, and Jeong (1986), Holtz-Eakin, Newey, and Rosen (1989), and Hoover and Sheffrin (1992).

first"); and (4) spending and revenues each cause the other ("jointly causal"). We take a long-run perspective and assume that we can categorize each state throughout the period. Because the states' budget cycles are at most two years, two lags are used in all tests. The final classifications are:[6]

(1) The "No-Linkage" States: Arizona, California, Delaware, Michigan, New York, and Texas;

(2) The "Spend-First" States: Colorado, Maine, Maryland, Nevada, Ohio, and Pennsylvania;

(3) The "Tax-First" States: Arkansas, Connecticut, Florida, Georgia, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Massachusetts, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Washington, West Virginia, and Wyoming;

(4) The "Jointly-Causal" States: Alabama, Alaska, Indiana, Louisiana, Minnesota, Montana, New Mexico, Oklahoma, Utah, Vermont, and Wisconsin.

Given the above, it is natural to ask: can we identify characteristics that may explain these causal relationships? Do budgetary, political, or institutional factors affect the intertemporal linkages? Or, instead, do these causal relationships appear to be exogenous to such factors?

In order to investigate possible determinants of the causal relationships between state government revenues and expenditures, we estimate a probit model of the form:

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[6]We checked the sensitivity of these results to (i) deflating expenditures and revenues by population, and (ii) different lag lengths. The results are not at all sensitive to deflating by population. Unsurprisingly, the results are somewhat sensitive to the choice of lag length. In an earlier version of this paper, we went to some length to examine the effect of different lag lengths on a state's classification. However, a lag length of two is most appropriate for our application because of states' budget cycles. All results are available from the authors on request.

$$z_i = \phi' x_i + \nu_i, \quad \nu_i \sim N(0,1), \tag{1}$$

where z_i measures the likelihood of the particular relationship. We estimate the likelihood of spend-first and tax-first behavior separately, using the probit specification. For the spend-first (tax-first) equation, SPEND1ST (TAX1ST) = 1 if $z_i > 0$, and SPEND1ST (TAX1ST) = 0 if $z_i \leq 0$.[7]

Because we define the causal relationships to be constant over the 1950-90 sample period for each state, we effectively have 50 observations for the probits. The explanatory variables, x_i, include measures of political concentration and other characteristics of state government budgets that might be expected to influence the timing of revenues and expenditures. Some of these variables are invariant over time for a given state, while others vary over time. Any explanatory variables which vary over time are specified at their mean value for each state. The full set of variables employed in this and the next section are described in Table 2, with descriptive statistics found in Table 3.

First, to estimate the importance of the political competition theories described above, we create two alternative indices of "political concentration" (the antonym for political competition). The first measure of political concentration, POLCONC1, uses the percentage of the popular vote won by the current governor, and the other, POLCONC2, is a measure of the one-sidedness of the Lower House of each state legislature. More specifically:

$$POLCONC1 = \frac{\%VOTE - 50}{50}, \tag{2}$$

and

[7]We also estimated a multinomial logit model, not shown in this paper, distinguishing among "no-causal", "spend-first", "tax-first", and "jointly-causal" behavior. The results were qualitatively and quantitatively similar to those of the probit model discussed here, with the best fit in the equation explaining tax-first behavior, and the worst fit in the equation explaining jointly-causal behavior.

$$POLCONC2 = |(2 \times DEMSHARE) - 1|, \quad (3)$$

where %VOTE is the percentage of popular vote won by the state's current governor in the most recent election, and DEMSHARE is the share of each state's Lower House members affiliated with the Democratic party.[8]

Theories of political competition suggest that election time encourages a spend-first, tax-later behavior (or discourages tax-first, spend-later behavior), as candidates promise new programs to win votes. On the other hand, a high degree of political competition may suggest a lack of political mandate, with the resulting political gridlock stifling the ability to spend-first, tax-later. We also consider the possibility that the effects of political competition might depend on whether the governor is a Democrat or Republican. If the Democratic party sells itself through new programs (and bigger government) while the Republican party favors lower taxes (smaller government), then this would suggest that political competition encourages spend-first behavior on the part of Democratic governors, but tax-first (through tax reduction) behavior on the part of Republicans.[9] It is worthwhile noting the complementarity between our use of these political competition proxies and the

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[8]Nebraska is not included in this measure, as House members are chosen on a non-partisan basis. Note that both indices of political concentration will typically range from a minimum of zero to a maximum of one, although POLCONC1 can be negative when more than two candidates compete in the gubernatorial election (and the governor wins with less than 50 percent of the vote). There are several very interesting cases, including the strength of the Southern Democrats. From 1950-65, the average percentage share of the vote for Governor going to the Democratic in Alabama, Georgia, Louisiana, Mississippi, and South Carolina was 87.3, 99.6, 84.8, 92.4, and 100, respectively.

[9]Even though expenditures and revenues are positively correlated in the Granger tests, as they must be for intertemporal budget balance, the tests do not in principle allow us to distinguish increases in taxes or spending from decreases. This could potentially affect interpretation of the results of this section. For example, Republicans might be less likely to tax first if the tax changes are positive, but more likely to tax first if the tax changes are negative. This precautionary remark might be more relevant, however, if there were approximately equal numbers of spending (or tax) decreases as there are spending (tax) increases in the sample. This is clearly not the case, as both spending and taxes have risen steadily in all 50 states. Hence it is appropriate to interpret, e.g., "spend-first, tax-later" behavior as a situation in which, on average, spending increases are followed by tax increases in that state.

study of gubernatorial term limits in Besley and Case (1993): a binding term limit represents one form of (the absence of) political competition.

Second, we include the share of taxes collected in the form of income taxes. Income taxes are more elastic with respect to income changes than are most other types of taxes. The fiscal illusion literature suggests that elastic tax structures lead to revenue growth that often goes unperceived; government bureaucrats can then increase budgets more easily. What this story might imply about the **timing** of taxes and expenditures depends upon whether such automatic increases in revenue are anticipated or unanticipated. If the increases are unanticipated, we would expect taxes to change first, followed by spending. On the other hand, if the increases are anticipated (through revenue forecasts, for example) then spending might appear to pull along realized taxes, whenever anticipated taxes actually pull along spending.

Third, note that twenty-two states have limits on the amount that state government revenues or expenditures can grow in any year. These limits are primarily intended to prevent excessive growth of government, a proposition we test in the next section, but might have bearing on the intertemporal relationships as well. For many of these states, the limits can be exceeded only upon declaration of "emergency" situations. It might therefore be expected that states with limits on revenue growth would be less likely to tax first, spend later, while states with limits on expenditure growth would be less likely to spend first, tax later. Given the balanced budget requirements, however, it is often difficult to characterize a state's limits as being expenditure vs. revenue limits. We rely on the characterizations given by the ACIR in Significant Features of Fiscal Federalism.

Fourth, the share of state revenues coming from intergovernmental grants may also affect the timing of revenues and expenditures. Similar to the influence of income taxes, we would expect any effect of grants to depend on whether the grant monies are anticipated or not, or whether state governments can behave as if the grants are anticipated. If grant monies can be anticipated in the same way that a state's own tax revenues are, then spending can increase before revenues.

Otherwise, greater reliance on grants may reduce the ability to spend ahead and increase the likelihood that the state's spending and revenues are jointly determined.

Finally, we examine the effect of deficit carry-overs on the revenue-expenditure nexus. If a state is allowed to carry-over a deficit, we would expect it to be more likely that spending can pull taxes and/or less likely that taxes must pull spending. For the case where spending Granger-causes taxes, increased expenditures create an allowed, temporary deficit situation, requiring a subsequent increase in taxes. Or, instead, the carry-over allowances may make it less likely that taxes pull spending, because states are not forced to run surpluses to save up for future spending increases.

Results:

Tables 4 and 5 show the probit results for the determinants of spend-first and tax-first behavior, respectively. The first specification in each table uses the mean of the gubernatorial index of political concentration, PC1BAR, and the mean of the interaction of the index with DEM, PC1DEMBR, where DEM indicates whether or not the governor is a Democrat. The second specification uses the mean of the second (House) measure of political concentration, PC2BAR, and the mean of the interaction between this index and DEMSHARE, PC2DEMBR, where DEMSHARE is the share of the state's lower House made up of Democrats. Specification 3 includes both types of indices of political concentration and their interactions with the Democratic-party affiliations.

Although none of the estimated coefficients in the spend-first equation (Table 4) are statistically significant at the 10-percent level, a few of the coefficients in the tax-first equation (Table 5) are significant at the 5- or 10-percent level. In particular, the positive and significant coefficients on PC1BAR and PC2BAR indicate that the degree of political competition is negatively related to the likelihood of tax-first behavior. (Recall that the specified indices measure political **concentration**, the opposite of competition.) On the other hand, the interactions of these indices with Democratic

affiliations carry negative and significant coefficients, suggesting that the previous effect is relatively stronger for Republicans.[10]

The strongest predictor of tax-first behavior appears to be the ability of a state to carry-over a deficit (CARRY). Although in Table 4 we are unable to support the idea that deficit carry-over allowances encourage spend-first behavior, we do find in Table 5 that if states are able to carry-over a deficit, they are much less likely to tax first. In other words, states armed with such flexibility are less likely to maintain anticipatory surpluses.

The evidence on the effect of revenue or expenditure limits on the causal relationships is either weak or contradictory to expectations. The only significant coefficient is on expenditure limits in the tax-first equation; the negative sign suggests that **expenditure** limits make it less likely that a state exhibits **tax**-first behavior.

Apart from the effects of political competition and deficit carry-overs, however, the low t-ratios associated with most of the estimated coefficients in Tables 4 and 5 suggest that the causal relationships can be interpreted as largely exogenous to the specified explanatory variables. We therefore turn to explaining the size of state governments using a set of explanatory variables which includes these causal relationships.

III. Explaining Government Size

In section II we found significant differences across states in the intertemporal linkages between taxes and spending. We also found, however, that it is difficult to explain these differences (to any significant extent) as arising from differences in revenue structures, budgetary restrictions, or the extent of political competition. Given that the causal relationships appear to be largely exogenous

[10]The computed marginal effects of these explanatory variables on the probability of tax-first behavior are not shown in the text but are of the same sign as these estimated coefficients.

to such measures, can these causal relationships explain other types of government behavior? In particular, might these causal relationships have any bearing on government size?

In this section we provide a test of the fiscal-illusion hypothesis put forth in the introduction: states which tax first, spend later may be more successful in "fooling" the electorate into supporting bigger government. We also want to examine the effect of political competition on government size, considering the possibility that the effect may be through channels other than through the correlation between competition and the causal relationships found in the previous section. An interesting question is whether political competition might not only encourage "spend-first" behavior, but might also encourage "spend-more" behavior. On the other hand, it is also conceivable that political competition works as a check on government growth. Moreover, it is possible that the two types of political competition (gubernatorial and House) imply very different political climates, in the way that national elections for President and the Congress are perceived to be different, and therefore have different effects on government size. Finally, political competition might have different effects on government size depending on the party affiliations of the governor and House members.

We use two measures of government size: (i) GOVSIZE, which indicates state government expenditures relative to state personal income (x 1000), and (ii) GOVPCAP, which measures state government expenditures divided by state population. Table 1 shows that these measures can differ considerably, because, for example, some states with large spending relative to income are sparsely populated (in the West), while some states with low government spending relative to personal income are wealthy states with fairly high spending per capita (in the Northeast).

We perform simple ordinary least squares to estimate the following model:

$$G_{it} = \alpha + \beta'\mathbf{x}_{it} + \gamma'\mathbf{y}_i + \delta t + \rho t^2 + \varepsilon_{it}, \quad \varepsilon_{it} \sim N(0,1), \tag{4}$$

where G is defined as either GOVSIZE or GOVPCAP, and the $\mathbf{x}_{it}$ include the variables discussed in section II: the political party of the governor (DEM), the governor's party affiliation interacted with the political composition of the state house (DEM&DEM), the income-tax share of revenues

(ITAXSHR), limits on tax and/or expenditure growth (LIMITS), the share of revenues coming from intergovernmental grants (GRANTSHR), the two measures of political concentration (POLCONC1, POLCONC2) and their interactions with political party (PC1DEM, PC2DEM); as well as two variables which control somewhat for the tastes or nature of a state's citizenry: population density (POPPSQM) and per capita income (INCPCAP).

The fiscal illusion literature suggests that the income-tax share (a more elastic tax structure) and the grant share (via "flypaper effect") should be positively related to government size. On the other hand, income taxes are direct taxes which may be more keenly perceived than are indirect sales taxes. Limits on tax and/or expenditure growth are supposed to prevent excessive growth of government, so they should be negatively related to government size, unless they are endogenously determined. We include the governor's party affiliation and the House party composition because of the traditional labeling of the democratic party as the party of "big government." The y_i are the time-invariant, causal relationships determined in section II (SPEND1ST, TAX1ST, and JOINT). A time trend is included to account for the universal growth of state governments over time (YR, YRSQ). Four specifications of the model are estimated, using each of the alternative measures of political concentration, with and without interaction with the party affiliations.

Results

Table 6 shows the results corresponding to the GOVSIZE measure of government size, while Table 7 presents those based on GOVPCAP. There are many results in the tables, and to save space, we highlight only those most relevant to distinguishing between the fiscal-illusion and political-competition hypotheses. The results lend some support to both hypotheses, and indicate that differences in the causal relationships are significant. Importantly, both the degree of political competition (especially for governor) and tax-first behavior are positively related to government size.

In all specifications, the coefficient on TAX1ST is positive and significant, while the coefficient on SPEND1ST is negative (and significant when using the GOVSIZE measure). This is

consistent with the idea that tax changes are less obvious than spending changes, and that governments can more easily grow when elusive taxes pull spending. More difficult to interpret, given the fiscal illusion literature, is the fact that the coefficient on JOINT (where taxes and spending are jointly determined) is always more positive and more significant than that on TAX1ST. All specifications produce a negative and significant coefficient on POLCONC1, meaning that greater **concentration** (in the form of a more one-sided election for governor) is associated with smaller government. The positive and significant coefficient on PC1DEM indicates that this concentration works to restrain the growth of Republican-led governments more than Democratic ones. Hence, the results using this index of political concentration lend support to the political competition hypothesis.

The degree of political competition in the state's lower House seems to matter much less. A negative and significant coefficient on POLCONC2 is found only in specifications 2 and 4 of Table 7. In fact, the first specification in Table 6 tells the opposite story -- greater political concentration in the **House** leads to bigger government. Although this result does not hold generally, it does suggest that while competition in the governor's race may encourage new programs and bigger government, a more-divided House may make it difficult to pass new programs, perhaps due to lack of consensus.

The coefficients on the other explanatory variables bring additional evidence to bear on the fiscal illusion and political competition hypotheses. First, examining either Table 6 or Table 7, according to the first specification, where we do not interact Democratic affiliation with the political concentration variables, we find that the coefficient on DEM is insignificant, while the coefficient on DEM&DEM is positive and significant. This suggests that a Democratic governor leads to bigger government, but only when the composition of the state's lower House is largely Democratic. In all other specifications, DEM is interacted with some of the political concentration variables (but not with DEMSHARE), and we consistently find a positive relationship between DEM and government size.

Second, and contrary to the story from the fiscal illusion literature on the effects of elastic tax structures on government size, we find a negative relationship between the share of taxes collected in

the form of income taxes and government size. This seemingly contrary result might still be interpreted as consistent with the general fiscal-illusion hypothesis, however, if we view income taxes as taxes that are **more** keenly perceived than are indirect taxes. Third, limits on taxes or expenditures appear to be positively related to government size. This is likely reflecting the influence of government size on the likelihood that a state puts limits in place, and suggests that modeling such limits along political economy lines is well-founded. Fourth, the coefficients on GRANTSHR are always positive and highly significant when measuring government size relative to personal income (Table 6), suggesting that grant-illusion or the flypaper effect encourages the growth of government. On the other hand, when using the per capita measure of government size (Table 7), the coefficient on GRANTSHR is always **negative** and significant. Finally, population density, per capita personal income, and a time trend are significant determinants of government size. More densely populated states are associated with smaller governments, both relative to personal income and per capita. Higher per capita income is associated with bigger government, even when government is measured **relative** to personal income, suggesting that state government spending is a luxury good.

IV. Conclusion

In this paper we have found that there is considerable variation across states in the intertemporal linkages between expenditures and revenues. While such differences are only very weakly explained by differences in certain budgetary and political characteristics of the states, we find that these causal relationships are an important determinant of government size. In particular, state governments with "tax-first" behavior are more likely to be bigger governments, as consistent with theories of "fiscal illusion." The results in this paper also suggest a significant relationship between political competition and government size which is generally positive, although there is some evidence that greater competition in the state House discourages growth. Finally, other factors reflecting fiscal illusion and political competition are found to be important determinants of government size as well.

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APPENDIX; The Data

The data on all the types of state government expenditures and revenues used in the paper are taken from various issues of the Compendium of State Government Finances over the years 1950-1990 (the publication is in some years titled simply State Government Finances), published by the Bureau of the Census. The series used for total revenues (expenditures) is titled "total general revenues (expenditures)". For data on state personal income and for population, we use State Personal Income, 1929-82, published by the Census Bureau for the years 1950-1982, and update the series from issues of State Government Finances. The data used for our political competition measures are taken from various issues of the Statistical Abstract of the United States, also published by the Bureau of the Census.

Table 1: Government Size
(state government expenditures as % of state personal income (GOV%INC)
and per capita (GOVPCAP), 1950-90)

STATE	GOV%INC	GOVPCAP	STATE	GOV%INC	GOVPCAP
Alaska*	27.9	3244.2	Wisconsin	9.93	698.97
Hawaii*	15.6	1218.1	Rhode Island	9.87	744.63
New Mexico	14.9	824.74	New York	9.25	803.26
Wyoming	14.4	1019.3	Iowa	9.25	634.23
Louisiana	13.4	682.41	California	9.21	751.14
N. Dakota	13.0	814.71	Nevada	9.20	615.33
Vermont	13.0	789.81	Michigan	9.16	681.50
Mississippi	12.7	560.17	Georgia	9.06	527.50
W. Virginia	12.2	700.03	Tennessee	8.80	479.11
Utah	11.9	664.15	Massachusetts	8.75	751.72
Delaware	11.6	900.49	Colorado	8.70	580.94
Montana	11.1	672.76	Maryland	8.28	659.12
Oklahoma	11.0	605.37	Pennsylvania	8.02	567.81
Kentucky	10.9	612.25	Virginia	7.99	563.83
Alabama	10.8	568.48	Kansas	7.94	541.06
Washington	10.7	750.27	Indiana	7.52	516.96
S. Dakota	10.7	608.09	Florida	7.49	474.27
S. Carolina	10.7	561.79	Nebraska	7.41	521.46
Arkansas	10.5	517.46	New Hampshire	7.34	486.29
Maine	10.4	640.23	Texas	7.17	455.60
Minnesota	10.3	748.16	Connecticut	7.12	673.37
Idaho	10.3	584.46	Ohio	7.04	531.25
Oregon	10.1	658.41	Missouri	7.03	466.05
Arizona	9.97	608.04	Illinois	6.64	554.86
N. Carolina	9.97	563.88	New Jersey	6.25	630.34

*Figures for Alaska and Hawaii are for the period 1958-90.

Table 2: Definition of Variables

Abbreviation	Description
YR	Year of sample minus 1949 (YR=1 for 1950 through YR=41 for 1990)
POPPSQM	State's population per square mile
INCPCAP	State's per capita personal income (state personal income/population)
SPEND1ST	=1 if Granger tests indicate this state's nominal expenditures cause nominal taxes (but not vice-versa), =0 otherwise. (Time invariant in sample)
TAX1ST	=1 if Granger tests indicate this state's nominal taxes cause nominal expenditures (but not vice-versa), =0 otherwise. (Time invariant in sample)
JOINT	=1 if Granger tests indicate this state's nominal taxes and expenditures are jointly determined, =0 otherwise. (Time invariant in sample)
GOVSIZE	government size relative to personal income, = (general expenditures/state personal income) x 1000
GOVPCAP	government size per capita, = general expenditures/population
DEM	=1 if governor affiliated with Democratic party, =0 otherwise
POLCONC1	index of "political concentration" reflecting share of popular vote won by the state's current governor, as defined in text
DEM&DEM	DEM interacted with DEMSHARE, the proportion of state's lower house made up by members of the Democratic party
POLCONC2	index of "political concentration" reflecting the party distribution of the state's lower house, as defined in text
PC1DEM, PC2DEM	= (POLCONC1 x DEM) and (POLCONC2 x DEMSHARE), respectively
ITAXSHR	(state personal income taxes + corporate income taxes)/(general revenues - grants)
CARRY	=1 if state may carry over deficit into following fiscal year(s), =0 otherwise.[1] (Time-invariant in sample)
LIMITS, REVLIM, EXPLIM	LIMITS=1 if state has some sort of limit on tax and/or expenditure levels and/or growth, =0 otherwise.[2] (Almost all of such limits were adopted after mid-1970's and continue to the present.) REVLIM and EXPLIM indicate whether the state has limits on revenues or expenditures, respectively.
GRANTSHR	grants-in-aid received from federal government as share of general revenues
PC1BAR, PC1DEMBR, PC2BAR, PC2DEMBR, ITAXBAR, REVLBAR, EXPLBAR, GRNTBAR	state's average over the entire 1950-90 sample period for the variables POLCONC1, PC1DEM, POLCONC2, PC2DEM, ITAXSHR, REVLIM, EXPLIM, and GRANTSHR, respectively.

[1]These states are: Alaska, Arizona, California, Louisiana, Massachusetts, New Hampshire, New York, Pennsylvania, and Vermont.

[2]These states are: Alaska, Arizona, California, Colorado, Delaware, Hawaii, Idaho, Louisiana, Massachusetts, Michigan, Missouri, Montana, Nevada, New Jersey, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Utah, and Washington.

Table 3: Descriptive Statistics for Sample (Period: 1950-1990; N=2008 obs.)

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
YR	21.377	11.659	1.000	41.00
POPPSQM	142.90	209.87	0.3920	1036.0
INCPCAP	6069.8	5021.4	840.00	25,480
SPEND1ST	0.12251	0.32796	0.000	1.000
TAX1ST	0.53984	0.49853	0.000	1.000
JOINT	0.21614	0.41171	0.000	1.000
GOVSIZE	101.98	40.636	26.03	486.0
GOVPCAP	696.05	786.61	52.71	8839.0
DEM	0.59861	0.49030	0.000	1.000
POLCONC1	0.15962	0.21403	-0.3380	1.000
PC1DEM	0.12310	0.21950	-0.3380	1.000
DEM&DEM*	0.41281	0.36933	0.0000	1.000
POLCONC2*	0.38911	0.29021	0.000	1.000
PC2DEM*	0.28214	0.29353	0.000	1.000
ITAXSHR	0.18955	0.13518	0.000	0.5116
CARRY	0.17829	0.38285	0.000	1.000
LIMITS	0.13695	0.34388	0.000	1.000
REVLIM	0.03287	0.17834	0.000	1.000
EXPLIM	0.10956	0.31242	0.000	1.000
GRANTSHR	0.25151	.066520	.06553	0.6146

*DEM&DEM, POLCONC2, and PC2DEM are available for 1954-1990 only, and not for all states (1777 observations).

Table 4: Determinants of "Spend-First" Behavior (SPEND1ST)
Probit Regression Results

Indep. Variable	(1)	(2)	(3)
Constant	2.3104 (1.121)	2.4721 (1.274)	3.7124 (1.479)
ITAXBAR	-2.5901 (-1.016)	-2.8103 (-1.142)	-2.5788 (-1.022)
REVLBAR	-20.025 (-0.052)	-16.143 (-0.080)	-15.171 (-0.085)
EXPLBAR	0.35928 (0.257)	-0.47943 (-0.355)	0.11451 (0.072)
GRNTBAR	-9.4025 (-1.333)	-6.6968 (-1.063)	-10.413 (-1.298)
CARRY	-0.11652 (-0.150)	-0.34243 (-0.421)	-0.51937 (-0.545)
PC1BAR	-12.629 (-1.168)		-13.642 (-1.011)
PC1DEMBR	10.418 (1.021)		15.454 (1.092)
PC2BAR		-8.1399 (-1.221)	-7.0883 (-0.950)
PC2DEMBR		6.3631 (1.003)	4.0161 (0.527)
Sample size	50	49	49
χ^2	5.5934 (7 df)	6.5527 (7 df)	7.9928 (9 df)
Log-likelihood	-15.54953	-14.94067	-14.22062

(t-statistics are in parentheses.)

Table 5: Determinants of "Tax-First" Behavior (TAX1ST)
Probit Regression Results

Indep. Variable	(1)	(2)	(3)
Constant	-1.9824 (-1.366)	-1.9707 (-1.382)	-3.1720* (-1.873)
ITAXBAR	0.52274 (0.277)	0.89606 (0.491)	0.66701 (0.344)
REVLBAR	1.7643 (0.817)	2.4942 (1.050)	3.0816 (1.257)
EXPLBAR	-2.5181* (-1.875)	-1.5480 (-1.159)	-2.1910 (-1.609)
GRNTBAR	6.3188 (1.256)	3.4345 (0.706)	4.9295 (0.914)
CARRY	-1.3682** (-2.220)	-1.2744** (-2.111)	-1.6738** (-2.226)
PC1BAR	16.793* (1.901)		18.106* (1.810)
PC1DEMBR	-14.889* (-1.824)		-16.861* (-1.685)
PC2BAR		9.2064* (1.892)	9.9853* (1.780)
PC2DEMBR		-7.9977* (-1.788)	-8.4322 (-1.531)
Sample size	50	49	49
χ^2	13.5296 (7 df)	12.8048 (7 df)	16.6273 (9 df)
Log-likelihood	-27.73237	-27.46990	-25.55869

(t-statistics are in parentheses; * and ** indicate significance at 10 and 5 percent levels, respectively.)

Table 6: Determinants of Government Size Relative to Personal Income (GOVSIZE)
OLS Regression Results

Indep. Variable	(1)	(2)	(3)	(4)
Constant	3.3153 (0.587)	5.3662 (0.944)	22.659*** (5.207)	3.3585 (0.592)
DEM	-3.2679 (-0.830)	2.5117 (0.470)	3.2679* (1.765)	2.8613* (1.727)
DEM&DEM	12.927** (2.101)	-2.0738 (-0.235)		
ITAXSHR	-15.539** (-2.549)	-16.228*** (-2.663)	-13.925** (-2.464)	-15.557** (-2.543)
LIMITS	11.792*** (4.790)	11.814*** (4.805)	11.717*** (4.973)	11.717*** (4.767)
GRANTSHR	73.841*** (5.285)	74.556*** (5.347)	77.478*** (5.995)	68.776*** (4.919)
SPEND1ST	-6.2248** (-2.002)	-6.3203** (-2.031)	-6.9083** (-2.398)	-6.2169** (-1.990)
TAX1ST	6.1245** (2.376)	6.5689** (2.540)	4.5237* (1.913)	6.4670** (2.487)
JOINT	33.035*** (11.603)	33.030*** (11.578)	30.110*** (11.518)	33.482*** (11.693)
POLCONC1	-19.246*** (-4.299)	-42.454*** (-3.529)	-24.447** (-2.391)	
PC1DEM		24.879* (1.905)	22.301** (2.065)	
POLCONC2	8.9619** (2.193)	-6.1761 (-0.738)		-6.0756 (-0.804)
PC2DEM		23.159** (2.074)		15.162** (2.037)
POPPSQM	-.043984*** (-10.708)	-.043222*** (-10.425)	-.036907*** (-9.640)	-.044139*** (-10.693)
INCPCAP	.0065874*** (9.899)	.0066740*** (10.021)	.0048282*** (7.956)	.0063978*** (9.611)
YR	5.9841*** (13.512)	5.9713*** (13.491)	4.3363*** (13.647)	6.1000*** (13.748)
YRSQ	-0.15890*** (-11.876)	-0.15917*** (-11.921)	-0.10924*** (-10.098)	-0.15923*** (-11.850)
Sample size	1777	1777	2008	1777
Adjusted R^2	.39947	.40201	.43123	.39436

(t-statistics are in parentheses; *, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.)

Table 7: Determinants of Government Size Per Capita (GOVPCAP)
OLS Regression Results

Indep. Variable	(1)	(2)	(3)	(4)
Constant	-321.10***	-290.87***	-151.60***	-317.95***
	(-4.231)	(-3.813)	(-2.658)	(-4.164)
DEM	-21.495	77.037	32.959	41.882*
	(-0.407)	(1.074)	(1.358)	(1.879)
DEM&DEM	143.89*	-98.187		
	(1.741)	(-0.828)		
ITAXSHR	-402.24***	-411.67***	-382.63***	-404.31***
	(-4.913)	(-5.033)	(-5.165)	(-4.914)
LIMITS	173.47***	173.47***	171.68***	174.23***
	(5.247)	(5.258)	(5.558)	(5.270)
GRANTSHR	-865.46***	-855.00***	-724.64***	-945.14***
	(-4.612)	(-4.569)	(-4.278)	(-5.025)
SPEND1ST	-15.596	-16.248	-25.642	-15.047
	(-0.374)	(-0.389)	(-0.679)	(-0.358)
TAX1ST	126.13***	133.65***	105.29***	131.55***
	(3.643)	(3.851)	(3.397)	(3.761)
JOINT	385.13***	385.94***	338.55***	392.11***
	(10.072)	(10.081)	(9.880)	(10.181)
POLCONC1	-295.92***	-620.52***	-477.30***	
	(-4.921)	(-3.844)	(-3.562)	
PC1DEM		343.07*	347.37**	
		(1.958)	(2.453)	
POLCONC2	35.536	-213.20*		-181.96*
	(0.648)	(-1.898)		(-1.791)
PC2DEM		380.45**		192.43*
		(2.539)		(1.923)
POPPSQM	-0.48216***	-0.47254***	-0.40810***	-0.48483***
	(-8.740)	(-8.493)	(-8.132)	(-8.733)
INCPCAP	0.19408***	0.19554***	0.18043***	0.19091***
	(21.716)	(21.878)	(22.682)	(21.324)
YR	42.752***	42.475***	26.408***	44.601***
	(7.188)	(7.151)	(6.340)	(7.474)
YRSQ	-1.5273***	-1.5317***	-1.0722***	-1.5314***
	(-8.499)	(-8.548)	(-7.562)	(-8.474)
Sample size	1777	1777	2008	1777
Adjusted R^2	.72761	.72918	.73920	.72450

(t-statistics are in parentheses; *, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.)

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