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Uppal, Yogesh and Glazer, Amihai

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Legislative Turnover, Fiscal Policy, and Economic Growth: Evidence from U.S. State Legislatures

Yogesh Uppal*[†] Amihai Glazer[‡]

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Abstract

An examination of how increased turnover among legislators in the fifty U.S. states affects fiscal policy and economic growth finds that it makes legislators short-sighted. Turnover increases the size of government by increasing the shares of both total spending and taxes in income. In particular, turnover increases capital expenditure and income taxes, both of which may cause long-run distortions in the economy. Further, increased turnover, by resulting in inefficient fiscal policy, reduces long-term economic growth.

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[†]Department of Economics, Youngstown State University, Youngstown, OH 44555, USA. Email: yuppal@ysu.edu

[‡]Department of Economics, University of California, Irvine, CA 92697, USA. Email: aglazer@uci.edu

1 Introduction

Elections allow voters to affect policy. A survey conducted by the National Election Study of 2004 asked voters whether elections make government pay attention to what people think. About fifty-five percent of respondents said a good deal, and only seven percent said not much. Forty percent strongly agreed that it makes a difference who is in power, while only five percent thought it does not. Almost forty-five percent strongly agreed that who people vote for makes a difference; only 7.5 percent strongly disagreed.

Elections could affect policy by several channels. One such channel is partisan changes (Hibbs 1977, Garand 1988, Rogers and Rogers 2000, Brauning 2005). The main argument is that elections may lead to changes in policy because of differences in the ideological preferences of the ruling party. Another channel is political competition and conflict between the political players. Political competition may result in efficient policy-making (Stigler 1972, Wittman 1989), with some evidence supporting that idea: low competition in the U.S. states leads to higher taxes, lower capital spending, lower likelihood of right-to-work laws, and weaker economic growth (Besley and Case 2003, and Besley et al. 2010). Political competition, however, may induce excessive rent-seeking and result in inefficient policy (Tullock 1967, Krueger 1974, McCormick et al. 1984, Polo 1998, Svensson 1998, Lizzeri and Persico 2005).

Our study of political competition examines how legislative turnover affects government fiscal policy and growth in the fifty U.S. states over the years 1980-2007. The decline in turnover over time in the U.S. is studied by many authors (see, for example, Rosenthal 1974a, Shin and Jackson 1979, Niemi and Winsky 1987, and Moncrief et al. 2004, 2008). Also well studied is how policy outcomes affect electoral outcomes, such as the likelihood of re-election and turnover (see Chubb 1988, Besley and Case 1995, Brender 2003, Brender and Drazen 2008). In contrast to such work, turnover is used in our paper as an explanatory variable which can affect policy outcomes. We exploit the exogenous variation in legislative turnover induced by the laws

enacted in many states to restrict the number of terms their representatives could serve, and by implementation of state redistricting plans. Despite varying stringency of term limits in the states, legislative turnover has increased dramatically in term-limited states compared to non-term-limited states. The average rates of turnover for the two types of states are plotted in Figure 1. Until the mid-1990s the rate of turnover is similar in the two sets of states. In the mid-1990s, however, when term limits started taking effect in many states, the rate of turnover in term-limited states increased dramatically compared to the non-term-limited states. Also, Figure 1 suggests that legislative turnover is generally higher in years immediately following the implementation of decennial redistricting plans than in other years.

How turnover affects policy is not clear. On one hand, infrequent turnover and long tenure of elected officials can entrench them and establish a culture of spending (Payne 1991, Hibbing 1991). Longer tenure of elected officials can strengthen their hold on office and allows them to collude with other officials to increase spending on programs they favor (Adam and Kenny 1986). A longer tenure also allows an incumbent to accumulate brand-name capital, which serves as a barrier to entry to challengers and allows incumbents to shirk (Lott 1986, 1987). But short tenures have their disadvantages. High turnover in legislative committees affects legislators' performance (Rosenthal 1974b, p. 170). High turnover can be costly to the electorate by substituting inexperienced politicians for experienced ones (Adams and Kenny 1986), and by weakening reelection constraints (Crain 1977). High turnover could force incumbents to extract maximum rent today. The higher extraction relates to the "stationary bandit" theory (see McGuire and Olson 1996) which argues that an incumbent who expects to stay in power for a long time has an incentive to promote economic development because he will then increase his private consumption through increased tax revenues resulting from economic growth. Evidence for such an effect is given by Bejar (2012), who finds that a coalition government will spend more the greater the hazard rate that the coalition will fall. Additionally, an increase in the hazard rate of coalition governments by one

standard deviation above its mean reduces the rate of economic growth by 1.5 percent.

Commitment to a policy may be made difficult when turnover is high.¹ In the absence of credible commitments, an incumbent government has an incentive to use debt to influence the policies of a successor whose policy preferences are different (Alesina and Tabellini 1990). To illustrate, suppose one party prefers spending on education, and dislikes spending on the poor, whereas the other party has the opposite preferences. Suppose the incumbent party favors education spending, but fears losing power after the next election. The incumbent would then spend much on education, and issue debt so that if the opposing party wins power, it would have to service the debt and would be able to spend little on the poor.² Persson and Svensson (1989) also argue that a conservative government may accumulate more debt when it expects to be replaced by a liberal government than when it expects to stay in power. Indeed, empirical work finds that the volatility of fiscal policy increases with legislative turnover (Crain and Tollison 1993).

Though aggregate fiscal variables (such as total spending, taxes, and public debt) are commonly studied in the literature, an incumbent may manipulate the composition rather than only the aggregate values of these variables. It is not entirely clear, however, what these compositional effects may be. On one hand, some evidence suggests that lack of commitments between current and future majorities encourages public consumption over public investment (Leblanc et al. 2000). Data also show that legislative turnover in states in India distorts government expenditures: high turnover increases the size of government and increases public consumption at the expense of public investment, reflecting legislators who are more shortsighted (Uppal 2011). On the other hand, voters or legislators who fear losing power may fa-

¹ For discussions of commitment, see Alesina and Tabellini 1990, Tabellini and Alesina 1990, and Persson and Svensson 1989.

² Other effects can also appear. A legislator who fears losing office may favor policies which, in the long run, may increase his electoral prospects. For example, he may favor inefficient policies which induce voters who oppose his policies to move elsewhere (Glaeser and Shleifer 2005, and Brueckner and Glazer 2008).

vor durable, capital-intensive projects over more efficient, smaller, projects, intending to constrain the policy set of future governments (Glazer 1989). Some empirical evidence supports these ideas. State governments in India manipulate fiscal policy in the form of tax breaks for some producers and higher spending on public investment projects around elections (Khemani 2004). Investment increases and some components of current spending decline in Columbian municipalities during election years (Drazen and Eslava 2010).

A related question regards how a change in government affects policy. Examining a panel of 71 democracies over 1972-2003, Brender and Drazen (2009) find that the replacement of a leader tends to have no significant effect on expenditure composition in the short run, and small changes after four years, mostly in developed countries. Within states in the U.S., a change in who is governor may change policy: Bunce (1981) finds that who rules makes a difference, but reanalysis of Bunce's data by Brunk and Minehart (1984) casts doubt on that. The issue studied below is not what happens immediately after a change, but instead the effects of the frequency of change. For example, a change in leadership may differ when changes are common than when changes are rare. Our work complements Besley, Persson, and Sturm (2010), who examine how political competition affects fiscal policy and economic growth in U.S. states. They find that increased competition (as measured by the difference between Democrat and Republican vote shares) reduces taxes and increases capital spending. Our findings about the effect of turnover on capital spending resemble theirs. We find, however, that increased turnover increases taxes. And whereas they find that increased competition increases economic growth, we find that increased turnover reduces growth.

The remainder of the paper is organized as follows. Section 2 discusses the historical pattern of turnover in the U.S. Section 3 explains the empirical method and describes the data. Section 4 presents the results, and Section 5 concludes the paper.

2 Historical patterns of turnover

Limited turnover and long legislative tenures in the United States are documented in much research. The pattern holds for legislatures both at the federal and state levels, though turnover is slightly higher at the state level than at the federal level. Legislative careers, however, were not always long. Turnover in state legislatures during 1925-35 was high; on average, over half of the legislators were first-time members, and only a handful of legislators served more than three or four terms. Election defeats were only partially responsible for this turnover, with inadequate compensation an important factor in voluntary retirements (Hyneman 1938a and 1938b).

Turnover in U.S. states began to decline steadily after the 1930s. It dropped from about 50% during 1931-40 to about 35% during 1971-76 (Shin and Jackson 1979). It further declined to below 25% in the late 1970s and 1980s (Niemi and Winsky 1987). The overall decline, however, hides much variation among states and across legislative chambers. Some southern states such as Alabama, Mississippi, North Carolina, and Louisiana, and a few non-southern states such as Maine and Maryland had consistently high rates of turnover, whereas some urban, industrial states such as New York, California, Illinois, and Massachusetts showed consistently lower rates of turnover (Shin and Jackson 1979). Turnover is generally lower in upper chambers than in lower chambers, in chambers with staggered terms (Shin and Jackson 1979), and in single-member districts than in multi-member districts (Niemi and Winsky 1987).

Among the many factors that contributed to the decline in turnover are frequency of elections, reapportionment, the size of the chamber, the length of a legislative session, and professionalization of legislatures (Rosenthal 1974a). Components of legislative compensation that contributed to a decline in turnover and a corresponding increase in the length of tenure include bureaucratic resources available to incumbents (Fiorina 1977), operating budgets available to legislators (Berry, Berkman and Schneiderman 2000), and salary (Carey, Neimi and Powell 2000).

The decline in turnover and the resultant lengthening of legislative careers has raised concerns about too many career politicians and too little “fresh blood,” about legislatures unresponsive to changing public interests, and about legislatures unrepresentative of the population (Nye, Zelikow, and King 1997, Patterson and Magleby 1992). Limits on the number of terms legislators could serve were enacted by 21 states starting in the 1990s.³ (Most of these limits were enacted through voter initiatives to change state constitutions.) Term limits were later repealed in six states—Idaho, Massachusetts, Oregon, Utah, Washington, and Wyoming. So currently, term limits on legislators are found in fifteen states. Table 1 lists the states with term limits on their legislatures, the year in which term limits were adopted, and the year in which term limits first became binding (which is when the first set of legislators are termed out).⁴

Term limits are the most significant institutional change in American legislatures in recent times, with the varying stringency of term limit laws making the effects of term limits on turnover vary across states.⁵ Some states, such as Arizona, Florida, Louisiana, Maine, Ohio, and South Dakota, have eight-year consecutive term limits, requiring members to sit out for at least one term before running again. The following states have lifetime term limits: Arkansas, California, Michigan, Missouri, Nevada and Oklahoma, limiting legislators from serving a specified number of terms in each chamber or over both chambers. The following states’ term limits are a time-out of four years or longer: Colorado, Montana, and Wyoming. Starting in 1996, 65 members were term-limited in both California and Maine. Term limits gained full steam in 1998 when many states termed out as many as 204 legislators. The turnover rate declined after the initial implementation “hit,” though the level remains well above what it was before term limits were adopted (Moncrief, Neimi and Powell 2004).

³ Many states approved similar limits on their congressional delegations. However, the Supreme Court ruled such limits unconstitutional (U.S. Term Limits v. Thornton 1995).

⁴ Data are from *www.us1l.org*, first accessed in June 2009.

⁵ Kurtz, Niemi, and Cain 2007, p. 1.

3 Method and Data

We estimate the following empirical model:

$$Y_{it} = \alpha_i + \gamma_t + \beta \times TURNOVER_{it} + \delta \times X_{it} + \mu_{it}, \quad (1)$$

where Y_{it} is a fiscal policy variable or else the long-run growth rate in state i in year t ; α_i are the state fixed effects, which control for any state-specific, time-invariant, factors; γ_t are the time fixed effects, which account for any secular changes common across states; X_{it} is a vector of control variables; and μ_{it} is a random error term.

More specifically, in the above regression models, the aggregate fiscal policy measures used as the dependent variables are the percentage share of total state government spending in state personal income, and the percentage share of state tax revenues in state personal income. Because elected officials may have incentives to manipulate the composition of aggregate spending and taxes,⁶ it is also useful to examine disaggregated measures of fiscal policy as the dependent variables. The ones we use are various components of total spending by the state government, and state tax revenues, such as shares of current spending, capital spending, total sales taxes, and total income taxes. The analysis of disaggregated components of fiscal policy identifies how changes in a state's fiscal policy may affect its long-run growth. State and local finance data are used to compute our measures of aggregated and disaggregated fiscal policy at the state level.⁷

The explanatory variable that most interests us is legislative turnover, $TURNOVER_{it}$, defined as the percentage of new legislators in state i in election year t . This measure of turnover reflects the simple probability that a legislator will not serve in the next term of a legislature. The turnover data we use were collected by Moncrief, Niemi and Powell (2008), who compare legislative membership at the beginning of the session immediately after

⁶ See Brender 2003, and Drazen and Eslava 2010.

⁷ This data is available from the tax policy center at [http : //www.taxpolicycenter.org/](http://www.taxpolicycenter.org/), first accessed in May 2010.

the election in year t with membership immediately after the election, in year $t + 1$. Since general elections for state legislatures are commonly held in November, turnover observed in an election year is assumed to affect the fiscal policy next year. Since turnover is only observed for election years, we assume it to be constant between any two elections. The most recent observed value of turnover is assumed to estimate the rate of turnover for a current legislator, who then adjusts his fiscal behavior based on that observation. Because all states but Nebraska have bicameral legislatures, the aggregate measure of turnover consists of the simple average of turnover rates in the two legislative chambers in each state.

The vector X_{it} consists of various economic, demographic, and political control variables. The economic and demographic variables are the natural logarithm of state personal income, the natural logarithm of state population, the proportion of the population that is black, and the proportion of the population aged 65 and over. We also control for various political factors. The preferences of the majority party in a legislature, and hence party control of a legislature, may affect public policy (Garand 1988, Alt and Lowry 1994, Rogers and Rogers 2000, Besley and Case 2003). For example, Democratic control of the House is associated with higher government spending (Alt and Lowry 1994, and Rogers and Rogers 2000). Democratic control of a legislature is associated with significantly higher taxes and a redistribution of spending in favor of family assistance (Besley and Case 2003). Accordingly, we control for the strength of the majority party in each chamber: the variable *Democratic Legislature* is 1 if the Democratic party controls both the state house and senate; *Republican Legislature* is 1 if the Republican party controls the legislature. We account for divided control of the state government, which is also found to affect policy (Alt and Lowry 1994, 2000, and Besley and Case 2003); for example, divided government leads to larger deficits (Alt and Lowry 1994). We create a dummy variable, *Divided*, which is 1 if different parties control the House, Senate, and the governorship; the variable is 0 if a single party controls the state government. We control for term limits on governors with a dummy variable, which is 1 if the governor

is term-limited and is 0 otherwise.

The data on state personal income and population come from the Bureau of Economic Analysis. The data on proportion of black population, proportion aged 65 and over, the majority party in the legislature, and the party of the governor up to 2000 come from Leigh (2008).⁸

A methodological problem is that turnover may be endogenous. For example, voters may more likely re-elect legislators in states with more favorable spending policy. Inclusion of state and time fixed effects would resolve the problem of endogeneity if omitted voters' preferences remain invariant over time, or change in a common fashion across states. But voters' preferences likely evolve over time. Also, common changes across states are unlikely if state-specific shocks affect voters' preferences over time. To identify the effect of turnover on policy variables, we use an instrument variable (IV) method.

The two instruments for the rate of turnover we use are term limit provisions in various states (discussed above), and years in which states redistrict. The variable regarding the redistricting instrument is an indicator variable for the year in which a state adopted its final redistricting plan. The redistricting can increase turnover, but need not affect policy in a particular direction.

The term-limit instrument is a dummy variable which is 1 for the year term limits became effective in that state and after, and 0 otherwise. A justification for using this instrumental variable is that term limit laws vary in their restrictiveness across states and take effect in different years.

For an instrument to be valid, it must fulfill two important conditions. First, it should be highly correlated with legislative turnover. This indeed holds for term limits. As discussed above, average turnover jumps dramatically in term-limited states when the term limit laws take effect starting in the mid-1990s (see Figure 1), implying a strong correlation between term limit laws and turnover. As shown in Table 2, average turnover is much higher

⁸ The data are available at <http://people.anu.edu.au/andrew.leigh>, which was accessed in September, 2009. The data was extended to 2007 from *The Book of the States*.

in term-limited states than in non-term-limited states, and the difference is statistically significant. A similar correlation appears between redistricting and turnover (see Moncrief, Niemi and Powell 2008). As seen in Figure 1, average turnover over the period 1980-2007 increases following the decennial redistricting. And Table 2 suggests that average turnover in redistricted years is significantly higher than in non-redistricted years. We also find that the first-stage F-statistics checking for the strength of the instruments are much higher than the critical values suggested by Staiger and Stock (1997).

Second, a valid instrument must not be directly correlated with the policy variables, though it could affect policy indirectly through turnover. This exclusion restriction means that the instrument is included in the turnover equation, but excluded from the equation which has a policy variable on the left-hand side. We support this claim using two pieces of evidence. First, the overidentification tests consistently do not reject the hypotheses that the two instruments are excluded from the policy equation. Second, the instrumental variables appear to be exogenous.

Regarding term limits, states do not adopt them selectively, with states having the lowest turnover rates especially likely to adopt term limits. As seen in Figure 1, the plots of average turnover in both term-limited and non-term-limited states are similar before the mid-1990s, suggesting that the term limit laws were not a response to lower turnover in term-limited states. Ansolabehere and Snyder (2004) use term limit laws in the U.S. states to instrument for strategic retirements by legislators, concluding that term-limited states are comparable to non-term-limited states on many dimensions. Mooney (2009) also provides evidence that term-limited states are comparable to non-term-limited states on various demographic, economic and political variables.⁹

⁹ On one dimension, however, states with term limits differ from states without term limits. All states with term limits, excepting Louisiana, allow voter initiatives to reform their state constitution. Though it is plausible that states with voter initiatives may differ systematically from states without such initiatives, the evidence does not support such a conclusion. First, many states passed laws allowing voter initiatives almost a century ago (Matusaka 1995). Second, Smith and Fridkin (2008) argue that the factors that were associated with term limits were transitory.

Regarding redistricting, there is a similar concern with exogeneity of the indicator variables for the year in which the final redistricted plan is implemented. Nevertheless, others have used redistricting as an instrument. Ansolabehere, Snyder and Stewart (2000) so use it when estimating the incumbency advantage in the U.S. House elections. We also draw upon Besley and Case (2003) who suggest using term limits and redistricting as major institutional changes for dealing with endogeneity of political factors. And to address the possibility that political parties create safe districts for themselves, we include indicator variables for partisan controls of legislature.

We end this section with Table 3, which compares means and standard deviations for all the variables for the whole sample, term-limited and non-term-limited states, and years of election after redistricting and otherwise.

4 Results

4.1 Legislative turnover and fiscal policy

We begin by examining the effect of legislative turnover on total spending and on the composition of spending. Results are in Table 4. Column (1) shows OLS estimates: increased turnover increases total government spending as a share of personal income. The effect is statistically significant at the 1% level. Results using the two instrumental variables discussed above are shown in column (2). Turnover continues to increase government spending. The coefficient on turnover under the IV method is almost twice the size of the OLS coefficient, and is statistically significant at the 5% level. Substantively, an increase in turnover by about 25 percentage points, which is the typical increase in term-limited states with lifetime term limits over the sample period, results in about a 0.5 percentage points increase in the share of spending, compared to the sample average share of about 13%. The increase of government spending with turnover is consistent with the

results of Tabellini and Alesina (1990) who study national governments.¹⁰

In theory, higher turnover can have opposing effects on capital spending. On one hand, high turnover can make a legislator care little about future services, and so favor current spending over capital spending. On the other hand, a legislator who expects to leave office soon may want to commit future policy, and so favor capital-intensive, durable, projects (see Glazer 1989). The effects of turnover on components of spending, (namely current and capital spending) are shown in the remaining columns of Table 4. Turnover has a negative, albeit statistically insignificant, effect on current spending as a percent of income, in both columns (3) and (4). The effect of turnover on capital outlays as a percent of state income is shown in columns (5)-(6). Though turnover has an insignificant effect on capital outlays using OLS estimation in column (5), the effect is positive and statistically significant at the 1% level in column (6) where we use IV estimation. So, we find evidence consistent with the commitment hypothesis.

The instruments we use appear not to suffer from weakness: as discussed above, average turnover rates differ significantly between states with and without term limits, and between years in which final redistricted plans were and were not implemented. A formal test for weak instruments, based on the proportion of variation in the endogenous variable explained by the instruments in the first stage, is given by Staiger and Stock (1997) and Kleibergen and Paap (2006). Staiger and Stock (1997) and Baum, Schaffer and Stillman (2006) suggest a cutoff value of 10 for the first-stage F-statistic, below which the instruments may be weak. The value of the first-stage F-statistic (Kleibergen-Paap rk statistic) in the specification used in Table 4 is 57.0, implying that our instruments strongly identify the variation in turnover rates.

The validity of overidentifying restrictions can be examined using the Hansen J test. The null hypothesis states that our instruments are properly excluded from the model. Thus, a high value of the test statistic would lead

¹⁰ We also run all the results using the IV-GMM method and get similar results. These results are available upon request.

to a rejection of overidentifying restrictions and imply that the instruments are directly related to the error term in our model. The p-values of the test statistics from this regression, given in Table 4, are higher than the conventionally used levels of significance. We do not reject the null hypothesis that the instruments are valid.

The effect of turnover on tax revenue and its components is shown in Table 5. Increased turnover increases taxes as a share of income; in both columns (1) and (2) the effect is statistically significant at the 1% level. In terms of magnitude, the effect of a typical increase in turnover in states with lifetime term limits (about 25 percentage points) on the share of taxes ranges between 0.3-0.6 percentage points relative to a sample average of 7%. Turnover can also affect the composition of taxes. In column (3), turnover significantly increases sales tax revenue as a share of personal income. However, the coefficient on turnover loses statistical significance in column (4), where we use the IV estimation. Increased turnover also increases state income tax revenues as a share of personal income, as seen in column (6), which uses IV estimation. The coefficient on turnover is significant at the 5% level.

Table 6 further disaggregates tax revenues into general sales taxes, selective sales taxes, individual income taxes, and corporate income taxes. In column (3), turnover significantly increases general sales tax revenues as a share of personal income. Among income taxes, turnover significantly increases revenue from individual income taxes rather than from corporate income taxes.

4.2 Alternative specifications and fiscal policy

Fiscal policy can differ under different political parties in power. The majority party may push for levels of government spending that accord with its ideology. Also, the partisan effects on policy may differ depending on whether a party controls only the legislature, or the governorship, or both. Such partisan effects are studied in this subsection. Added to our basic

specification are an indicator variable (*Democratic Legislature*) that is 1 if a legislature is controlled by the Democratic party and 0 otherwise, and an indicator variable (*Republican Legislature*) that is 1 if a legislature is controlled by the Republican party and 0 otherwise. The excluded category is divided control of a legislature. We also include an indicator variable (*Divided*) which is 1 if control of the legislature and the governorship is divided and is 0 if a single party controls both the legislature and the governorship, and another indicator variable for whether the governor cannot stand for reelection.

As seen in columns (1) and (2) of Table 7, control of a legislature by either Democrats or Republicans has an insignificant effect on spending as a share of income. Total government spending as a share of income is significantly higher when control of the legislature and governorship is divided than when a single party controls both branches of state government. A state with divided government spends about 0.15% more than does a state controlled by a single party. The result is roughly consistent with the findings by Poterba (1994) and by Alt and Lowry (1994) that U.S. states with divided government delay fiscal adjustment, thereby generating deficits. A term-limited governor spends significantly less than does a non-term-limited governor. Total spending as a share of income is 0.14-0.18% lower for a state in which the governor cannot stand for election than for a state in which he can.

Inclusion of these additional covariates does not change our findings on the effect of turnover: the effect remains positive and statistically significant at the 1% level. Also, the effect of turnover on disaggregated spending is similar to the findings above. Turnover has no significant effect on current spending, but increased turnover increases capital outlays significantly. The party control variables do not significantly affect the composition of spending, except in columns (5) and (6), where Republican control of a legislature significantly increases capital spending. A reelection constraint on the governor significantly affects the composition of spending. Whereas a term-limited governor has significantly lower current spending than a non-term-limited governor in both columns (5) and (6), capital spending is

significantly higher in column (6).

The effects of turnover on tax revenues, after including party control variables, are shown in Table 8. As seen in columns (1) and (2), increased turnover significantly increases tax revenue as a share of income. Turnover significantly increases sales taxes in column (3), where we use OLS estimation. As seen in column (6), turnover also significantly increases the share of income taxes in state income. Thus, the signs and magnitudes of the effects of turnover on fiscal policy variables are broadly consistent with what we find above. In columns (1) and (2), the coefficient on Democratic legislature is positive, implying higher taxes under a Democratic legislature than under a divided legislature, though the effect is statistically insignificant. A Republican legislature, in contrast, has significantly lower taxes than a divided legislature; the share of taxes is about 0.3% less. As seen in columns (5) and (6), Democratic control of a state legislature increases income taxes; Republican control reduces income taxes. This result is consistent with Rogers and Rogers (2000) and Besley and Case (2003), who find significant partisan effects on fiscal policy. The variables indicating divided control of the state government and whether a governor faces a binding term limit do not significantly affect the revenue variables. The results are similar in Table 9, which considers the disaggregated categories of tax revenues, after including the additional covariates. Turnover increases general sales taxes in column (3), and increases individual income taxes in column (6). Under Democratic legislatures individual income taxes are significantly higher. Under Republican legislatures selective sales taxes and corporate income taxes are significantly lower, and general sales taxes are higher. A state government with divided control has lower selective sales taxes than does a government with the same party control. Also, in column (8), a term-limited governor has significantly higher corporate income taxes compared to a governor who is not term-limited.

The effect of turnover on fiscal variables may vary with partisan control of a legislature. More specifically, a legislature with a Democratic majority may behave differently from a legislature with a Republican majority when

faced with high turnover. In Table 10, we find some evidence of varying effects of turnover with partisanship. In column (1), we interact our turnover measure with indicator variables for a legislature with Democratic control (*Democratic Legislature*) and a legislature with Republican control (*Republican Legislature*). A Republican legislature has lower spending compared to a divided legislature. However, increased turnover increases spending more under Republican legislatures than under divided legislatures. In column (2), we interact the indicator variable for term limits with indicator variables *Democratic Legislature* and *Republican Legislature* and use these variables as additional instruments. Using the IV method, we find that a Democratic legislature has significantly lower spending compared to a divided legislature. Turnover increases spending significantly more under Democratic legislatures than under divided legislatures. The coefficient on the interaction variable for turnover and Republican legislature is not significant. There are interesting effects on the composition of spending. In columns (3)-(6), under a Democratic legislature compared to a divided legislature, current spending is significantly lower, whereas capital spending is the same. However, the effect of turnover on current spending is larger under a Democratic legislature than under a divided legislature.

In columns (1) and (2) of Table (11), states with a Republican legislature are seen to have lower taxes compared to states with a divided legislature. Higher turnover increases taxes significantly more under Republican legislatures and Democratic legislatures than under divided legislatures. As seen from column (6), this effect on total tax revenues arises from the tendency of both Republican and Democratic legislatures to increase income taxes when faced with increased turnover. Table 12 shows a difference in the type of taxes Republicans and Democrats increase when faced with increased turnover. Turnover increases individual income taxes for Democratic legislatures, but Republican legislatures respond by increasing selective sales and corporate income taxes.

We create three dummy variables to test for a non-linear effect of turnover: $\text{turnover} \geq 45$ indicates if turnover is greater than or equal to 45%; $30 \leq \text{turnover} < 45$ indicates if turnover is between 30% and 45%; and $\text{turnover} < 30$ indicates if turnover is less than 30%.

turnover < 45 indicates if turnover is greater than or equal to 30 but less than 45; and $15 \leq \text{turnover} < 30$ indicates if turnover lies between 15 and 30. The excluded category is turnover less than 15. In Table 14, the aggregate policy variables, namely the share of expenditure in column (1), and tax revenue as a share of income in column (4), show some non-linearities with respect to turnover. Spending is only slightly lower for extreme values of turnover. The share of taxes in income, however, shows no decline even at higher levels of turnover. These results suggest that high turnover does not discipline legislators. We find no significant non-linearities in the disaggregated variables.

Policy may also be affected by political competition. One empirical finding is that tighter gubernatorial races produce less governmental spending (Rogers and Rogers 2000). Large electoral majorities in the U.S. states lead to higher taxes, lower capital spending, lower likelihood of right-to-work laws, and weaker economic growth (Besley and Case 2003, and Besley, Persson, and Sturm 2010). These findings contrast with the effects of turnover, an aspect of political competition, discussed above. To make sense of our results in light of the existing literature, we include a direct measure of political competition in our regression model. This measure of competition, based on Besley and Case (2003), is computed as follows:

$$POLCOMP_{it} = -abs(DHOUSE_{it} - 0.5) \times abs(DSENATE_{it} - 0.5) \quad (2)$$

where $DHOUSE_{it}$ is the Democratic share of seats in a state's lower house, and $DSENATE_{it}$ is the Democratic share of seats in a state's upper house. The larger the value of $POLCOMP_{it}$, the closer are the party strengths in a legislature, and so the more intense the competition. The effects of political competition, estimated by OLS regression, are reported in Table 14. The effects of turnover stay as found above: political competition has a significantly positive effect on total spending. There are contrasting effects on the composition of spending. Whereas political competition increases the share of current spending, it reduces capital spending as a share of income.

Political competition has no significant effect on taxes.

4.3 Economic growth

Increased turnover is associated with increased spending, increased taxes, and increased spending on capital projects, which may be designed to constrain the policy choices of future office holders, whose policy preferences the incumbents may not like. Such induced inefficiency in fiscal policy may reduce long-run economic growth. Moreover, the theory of “stationary bandits,” described above, suggests that legislators who may soon leave office care less about future economic growth than do legislators who expect to remain long in office.

To test for such effects, we measure long-run growth in each state with a five-year moving average of the annual rate of growth of personal income. As seen in column (1) of Table 16, growth declines significantly with turnover. The coefficient on turnover remains negative and statistically significant in column (2), using IV estimation. Substantively, an increase in turnover by about 25 percentage points, which is the typical increase in term-limited states with lifetime term limits over the sample period, results in about an 0.3-0.6 percentage points decrease in the long-run growth rate, compared to a sample average of about 2.8%.

Regression results including partisan controls and other political variables are shown in columns (3) and (4). Long-run growth is lower under a Republican legislature by about 0.4 percentage points. Growth is slightly lower if control of the state government is divided between parties. Unified control of state government leads to lower spending, which may promote long-run growth. However, contrary to the finding in Besley and Case (1995), whether the governor is term-limited or not has no statistically significant effect on growth. Additionally, turnover reduces growth, with the effect statistically significant even after inclusion of these additional variables. Columns (5) and (6) report on the effect of interaction between turnover and partisan control variables on economic growth. Increased turnover increases

growth under a Democratic legislature significantly more than under a divided legislature, though the effect is not significant in column (6) when we use the IV method.

Lastly, we examine the effect of political competition on growth. Whereas high turnover continues to reduce growth, political competition significantly increases growth. The result is consistent with Besley, Persson, and Sturm (2010), though we find that a mix of higher current spending and lower capital spending achieves this result. One possible reason is that whereas some investment may be driven by a desire to increase growth (as Besley, Persson, and Sturm (2010) argue), legislators who fear losing power may favor capital-intensive projects not because the projects will increase growth, but because legislators want to constrain future governments. Not all investment is efficient. We also find that high turnover alone is not sufficient to increase competition. Increased turnover unaccompanied by increased competition may skew legislators' incentives toward short-term behavior.

5 Conclusions

This paper studied the effects of increased turnover on fiscal policies adopted by states. Broadly speaking, the results suggest that increased turnover increases the willingness of legislators to favor policies with long-term costs, or at the least that increased turnover is associated with different fiscal choices. Increased turnover increases capital spending, which is consistent with the idea that legislators fearing loss of office aim to constrain future policy. That hypothesis is also consistent with our finding that increased turnover increases spending. A negative effect of turnover on long-run economic growth supports the hypothesis that increased turnover induces long-term distortions in the economy via suboptimal fiscal policy.

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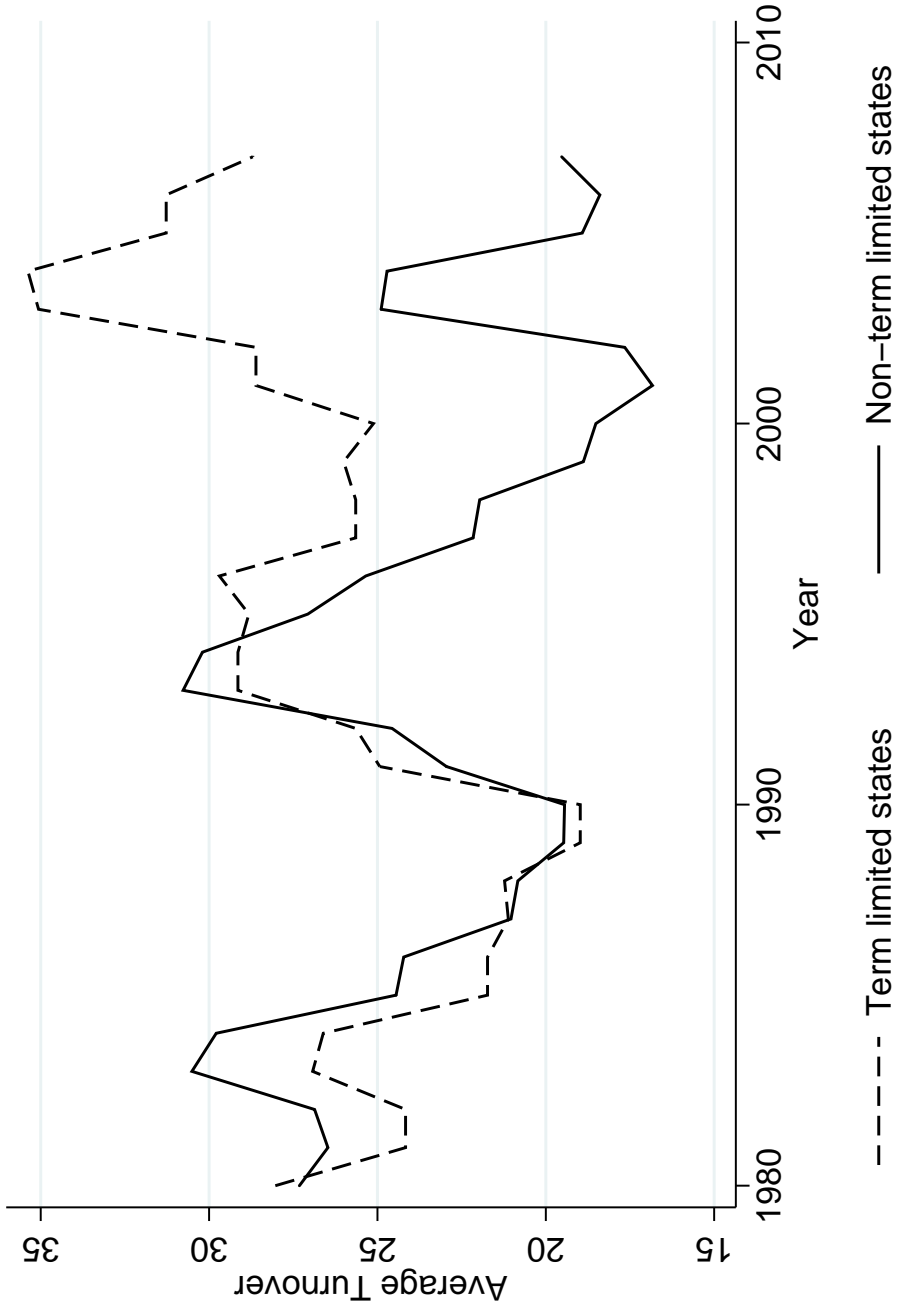
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Figure 1: Turnover in state legislatures



Notes: Most of the states implement their final redistricting plans in years ending in 2 or 3 for those that hold elections in odd years. In a few cases, final plans may be implemented later due to court challenges.

Table 1: State legislative term limit laws in the United States

<i>State</i>	<i>Year</i>	<i>Limited: terms (total years allowed)</i>	<i>Year law takes effect</i>
Arizona	1992	House: 4 terms (8 years) Senate: 4 terms (8 years)	House: 2000 Senate: 2000
Arkansas	1992	House: 3 terms (6 years) Senate: 2 terms (8 years)	House: 1998 Senate: 2000
California	1990	Assembly: 3 terms (6 years) Senate: 2 terms (8 years)	House: 1996 Senate: 1998
Colorado	1990	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 1998 Senate: 1998
Florida	1992	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 2000 Senate: 2000
Louisiana	1995	House: 3 terms (12 years) Senate: 3 terms (12 years)	House: 2007 Senate: 2007
Maine	1993	House: 4 terms (8 years) Senate: 4 terms (8 years)	House: 1996 Senate: 1996
Michigan	1992	House: 3 terms (6 years) Senate: 2 terms (8 years)	House: 1998 Senate: 2002
Missouri	1992	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 2002 Senate: 2002
Montana	1992	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 2000 Senate: 2000
Nebraska	2000	Unicameral: 2 terms (8 years)	Senate: 2008
Nevada	1994	Assembly: 6 terms (12 years) Senate: 3 terms (12 years)	House: 2006 Senate: 2006
Ohio	1992	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 2000 Senate: 2000
Oklahoma	1990	12 year combined total for both houses	State Legislature: 2004
South Dakota	1992	House: 4 terms (8 years) Senate: 2 terms (8 years)	House: 2000 Senate: 2000
Wyoming	1992	House: 6 terms (12 years) Senate: 3 terms (12 years)	House: 2004 Senate: 2004

Table 2: Test of differences in turnover due to term limits and redistricting

	Term limits		Redistricting	
	Term limits=1	Term limits=0	Redistricting=1	Redistricting=0
Average turnover	35.3 [1.19]	23.5 [0.26]	28.6 [0.89]	23.7 [0.28]
p-value ($H_a: \mu_1 > \mu_0$)	0.00		0.00	
Obs.	84	1284	138	1230

Notes: Term limits is 1 for the year term limits became effective in a state and after, and 0 otherwise. Redistricting is 1 for the year in which a state adopted its final redistricting plan and 0 is other years. Standard errors of mean are given in parentheses.

Table 3: Descriptive statistics: Term limits and redistricting

Variable	Term-limited states			Non-term limited states			Redistricted years			Non-redistricted years		
	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD
Total expenditure in state income (%)	84	14.28	2.59	1316	13.99	4.50	151	14.43	4.83	1249	13.96	4.36
Current expenditure in state income (%)	84	7.28	1.90	1316	6.97	2.66	151	7.17	2.65	1249	6.96	2.62
Capital expenditure in state income (%)	84	0.99	0.43	1316	1.21	0.64	151	1.20	0.74	1249	1.20	0.62
Tax revenue in state income (%)	84	6.19	1.21	1316	6.62	1.89	151	6.46	1.74	1249	6.61	1.87
Sales tax revenue in state income (%)	84	3.00	0.82	1316	3.16	1.11	151	3.12	1.10	1249	3.15	1.10
General sales tax revenue in state income (%)	84	2.05	0.84	1316	2.02	1.01	151	1.99	1.00	1249	2.03	0.99
Selective sales tax revenue in state income (%)	84	0.94	0.29	1316	1.14	0.36	151	1.13	0.36	1249	1.12	0.36
Income tax revenue in state income (%)	84	2.35	1.09	1316	2.32	1.23	151	2.20	1.16	1249	2.34	1.22
Individual income tax revenue in state income (%)	84	2.02	1.02	1316	1.87	1.08	151	1.80	1.08	1249	1.89	1.08
Corporate income tax revenue in state income (%)	84	0.33	0.15	1316	0.45	0.60	151	0.40	0.51	1249	0.45	0.59
State personal income per capita	84	34965	3733	1316	30583	6124	151	29939	5890	1249	30955	6114
Population ('000)	84	8738	10351	1316	4990	5178	151	5148	5698	1249	5222	5689
Proportion aged 65 and over	84	0.13	0.02	1316	0.12	0.02	151	0.12	0.02	1249	0.12	0.02
Proportion of black population	84	0.07	0.06	1316	0.10	0.10	151	0.10	0.09	1249	0.10	0.09
Average turnover	84	35.27	10.89	1284	23.48	9.36	138	28.65	10.48	1230	23.71	9.68
Democratic legislature	84	0.33	0.47	1316	0.51	0.50	151	0.50	0.50	1249	0.49	0.50
Republican legislature	84	0.52	0.50	1316	0.26	0.44	151	0.27	0.45	1249	0.28	0.45
Same party control	84	0.52	0.50	1316	0.42	0.49	151	0.46	0.50	1249	0.43	0.49
Governor is term-limited	84	0.35	0.48	1316	0.27	0.44	151	0.26	0.44	1249	0.27	0.45

Table 4: Turnover and state spending

	(1)	(2)	(3)	(4)	(5)	(6)
	Total expenditure as a % of state income		Current expenditure as a % of state income		Capital outlays as a % of state income	
Average turnover	0.011† [0.004]	0.02† [0.009]	-0.001 [0.002]	-0.001 [0.005]	-0.001 [0.001]	0.006† [0.002]
Log income per capita	-0.44 [1.79]	-0.21 [1.73]	-2.87† [0.58]	-2.87† [0.59]	2.06† [0.54]	2.20† [0.52]
Log Population	-2.53† [0.40]	-2.57† [0.39]	-1.81† [0.23]	-1.81† [0.22]	-0.40† [0.11]	-0.42† [0.11]
Proportion black	-7.74 [7.09]	-7.09 [6.99]	-5.28 [3.99]	-5.26 [3.86]	-0.01 [1.79]	0.40 [1.81]
Proportion aged 65+	-7.26 [8.75]	-4.83 [8.14]	23.90† [4.32]	23.98† [4.17]	-8.82† [2.49]	-7.32† [2.34]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.56		0.71		0.76
First stage F-stat.		57.0		57.0		57.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.95	0.95	0.96	0.96	0.80	0.79

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 5: Turnover and tax revenues

	(1)	(2)	(3)	(4)	(5)	(6)
	Tax revenue as a % of state income	Sales tax as a % of state income	Income tax as a % of state income			
Average turnover	0.0119† [0.0041]	0.0232† [0.0075]	0.0027† [0.0010]	0.0032 [0.0022]	-0.0002 [0.0021]	0.0082† [0.0036]
Log income per capita	12.33† [3.07]	12.60† [3.05]	-0.91† [0.23]	-0.89† [0.23]	3.82† [1.41]	4.02† [1.40]
Log Population	-1.38† [0.63]	-1.41† [0.63]	-0.24 [0.17]	-0.24 [0.16]	-1.05† [0.32]	-1.08† [0.32]
Proportion black	9.08* [4.74]	9.89† [4.77]	1.03 [1.48]	1.07 [1.42]	-3.66* [2.17]	-3.06 [2.16]
Proportion aged 65+	-7.61 [7.33]	-4.65 [6.67]	-7.92† [2.26]	-7.80† [2.13]	-0.97 [2.56]	1.24 [2.46]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.27		0.41		0.61
First stage F-stat.		57.0		57.0		57.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.71	0.70	0.95	0.95	0.85	0.85

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 6: Turnover and disaggregated taxes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Selective sales tax as a % of state income	General sales tax as a % of state income	Individual income tax as a % of state income	Corporate income tax as a % of state income				
Average turnover	0.0002 [0.0006]	0.0014 [0.0013]	0.0025† [0.0008]	0.0018 [0.0021]	-0.0007 [0.0010]	0.0054† [0.0024]	0.0005 [0.0018]	0.0028 [0.0023]
Log income per capita	-1.00† [0.13]	-0.96† [0.13]	0.09 [0.17]	0.07 [0.16]	0.70† [0.26]	0.85† [0.26]	3.12† [1.29]	3.18† [1.29]
Log Population	-0.53† [0.06]	-0.54† [0.06]	0.29* [0.16]	0.29* [0.15]	-0.72† [0.10]	-0.74† [0.10]	-0.33 [0.28]	-0.33 [0.28]
Proportion black	1.41* [0.82]	1.50* [0.80]	-0.38 [1.34]	-0.44 [1.30]	-4.61† [2.04]	-4.17† [1.97]	0.95 [1.51]	1.12 [1.54]
Proportion aged 65+	0.19 [1.15]	0.52 [1.16]	-8.12† [1.94]	-8.32† [1.84]	-2.26 [1.76]	-0.66 [1.85]	1.30 [1.90]	1.90 [1.69]
Method	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.60		0.53		0.98		0.50
First stage F-stat.		57.0		57.0		57.0		57.0
Observations	1368	1368	1368	1368	1368	1368	1368	1368
R-squared	0.85	0.84	0.95	0.95	0.95	0.94	0.59	0.59

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 7: Turnover and state spending: Partisan control

	(1)	(2)	(3)	(4)	(5)	(6)
	Total expenditure as a % of state income		Current expenditure as a % of state income		Capital outlays as a % of state income	
Average turnover	0.0101† [0.0040]	0.0236† [0.0093]	-0.0014 [0.0021]	0.0005 [0.0054]	0.0000 [0.0011]	0.0054† [0.0019]
Log income per capita	-0.67 [1.79]	-0.35 [1.73]	-3.01† [0.58]	-2.96† [0.58]	2.13† [0.54]	2.26† [0.52]
Log Population	-2.49† [0.41]	-2.54† [0.39]	-1.76† [0.23]	-1.77† [0.22]	-0.40† [0.11]	-0.42† [0.11]
Proportion black	-9.05 [7.16]	-8.12 [7.09]	-5.79 [4.05]	-5.65 [3.92]	0.01 [1.78]	0.38 [1.79]
Proportion aged 65+	-7.82 [8.68]	-4.17 [8.02]	23.38† [4.26]	23.91† [4.10]	-8.62† [2.48]	-7.15† [2.34]
Democratic Legislature	-0.05 [0.10]	-0.05 [0.10]	0.03 [0.05]	0.03 [0.05]	-0.01 [0.03]	-0.01 [0.03]
Republican Legislature	-0.07 [0.14]	-0.08 [0.14]	-0.05 [0.06]	-0.05 [0.06]	0.08† [0.04]	0.07† [0.04]
Divided	0.14* [0.07]	0.15† [0.07]	0.06 [0.04]	0.06 [0.04]	0.004 [0.02]	0.01 [0.02]
Governor is term-limited	-0.18† [0.08]	-0.14* [0.08]	-0.09† [0.04]	-0.09* [0.05]	0.02 [0.02]	0.04* [0.02]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.60		0.78		0.69
First stage F-stat.		62.0		62.0		62.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.95	0.95	0.96	0.96	0.80	0.80

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 8: Turnover and taxes: Partisan control

	(1)	(2)	(3)	(4)	(5)	(6)
	Tax revenue as a % of state income		Sales tax as a % of state income		Income tax as a % of state income	
Average turnover	0.0135† [0.0041]	0.0228† [0.0074]	0.0027† [0.0011]	0.0029 [0.0022]	0.0007 [0.0023]	0.0076† [0.0035]
Log income per capita	12.08† [3.01]	12.30† [2.94]	-0.88† [0.23]	-0.88† [0.23]	3.68† [1.37]	3.84† [1.34]
Log Population	-1.34† [0.63]	-1.38† [0.61]	-0.24 [0.17]	-0.24 [0.16]	-1.01† [0.34]	-1.03† [0.33]
Proportion black	9.15* [4.83]	9.80† [4.82]	1.16 [1.49]	1.18 [1.43]	-3.54 [2.17]	-3.06 [2.14]
Proportion aged 65+	-7.54 [7.30]	-5.02 [6.62]	-8.00† [2.28]	-7.92† [2.15]	-1.10 [2.54]	0.77 [2.44]
Democratic Legislature	0.19 [0.15]	0.20 [0.14]	0.003 [0.03]	0.003 [0.02]	0.15† [0.07]	0.16† [0.07]
Republican Legislature	-0.27† [0.13]	-0.28† [0.13]	0.01 [0.03]	0.01 [0.03]	-0.13† [0.07]	-0.14† [0.07]
Divided	0.01 [0.06]	0.01 [0.06]	-0.02 [0.02]	-0.02 [0.02]	0.001 [0.03]	0.003 [0.03]
Governor is term-limited	0.12 [0.12]	0.15 [0.12]	-0.01 [0.02]	-0.005 [0.02]	0.07 [0.06]	0.09 [0.06]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.24		0.43		0.51
First stage F-stat.		62.0		62.0		62.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.71	0.71	0.95	0.95	0.86	0.85

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 9: Turnover and disaggregated taxes: Partisan control

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Selective sales tax as a % of state income	General sales tax as a % of state income	Individual income tax as a % of state income	Corporate income tax as a % of state income				
Average turnover	0.0001 [0.0006]	0.0012 [0.0012]	0.0025† [0.0008]	0.0017 [0.0020]	-0.0006 [0.0010]	0.0052† [0.0024]	0.0013 [0.0019]	0.0024 [0.0021]
Log income per capita	-0.99† [0.13]	-0.97† [0.13]	0.11 [0.17]	0.09 [0.17]	0.60† [0.27]	0.74† [0.26]	3.08† [1.25]	3.10† [1.23]
Log Population	-0.55† [0.06]	-0.55† [0.06]	0.31† [0.16]	0.31† [0.15]	-0.65† [0.11]	-0.67† [0.11]	-0.36 [0.28]	-0.36 [0.28]
Proportion black	1.64† [0.81]	1.72† [0.79]	-0.49 [1.36]	-0.54 [1.32]	-4.72† [1.97]	-4.32† [1.90]	1.18 [1.59]	1.25 [1.59]
Proportion aged 65+	0.11 [1.15]	0.40 [1.17]	-8.10† [1.94]	-8.32† [1.83]	-2.76 [1.71]	-1.19 [1.81]	1.66 [1.91]	1.97 [1.71]
Democratic Legislature	-0.01 [0.01]	-0.01 [0.01]	0.02 [0.02]	0.02 [0.02]	0.13† [0.03]	0.13† [0.03]	0.02 [0.06]	0.03 [0.06]
Republican Legislature	-0.04† [0.01]	-0.05† [0.01]	0.06† [0.02]	0.06† [0.02]	-0.02 [0.03]	-0.03 [0.03]	-0.11† [0.05]	-0.11† [0.05]
Divided	-0.04† [0.01]	-0.04† [0.01]	0.02 [0.02]	0.02 [0.02]	0.03 [0.02]	0.03 [0.02]	-0.03 [0.02]	-0.03 [0.02]
Governor is term-limited	-0.01 [0.01]	-0.01 [0.01]	0.01 [0.02]	0.01 [0.02]	-0.02 [0.02]	-0.001 [0.02]	0.09 [0.05]	0.09* [0.05]
Method	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.56		0.58		0.87		0.46
First stage F-stat.		62.0		62.0		62.0		62.0
Observations	1368	1368	1368	1368	1368	1368	1368	1368
R-squared	0.85	0.85	0.95	0.95	0.95	0.95	0.59	0.59

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 10: Turnover and spending: interactive effects of partisan controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Total expenditure as a		Current expenditure as		Capital outlays as	
	% of state income	a % of state income	a % of state income	a % of state income	a % of state income	a % of state income
Average turnover	0.0045 [0.0064]	-0.0231 [0.0148]	-0.0080† [0.0033]	-0.0213† [0.0070]	-0.0002 [0.0021]	0.0036 [0.0027]
Turnover x						
Democratic Legislature	0.00 [0.01]	0.09† [0.02]	0.01† [0.00]	0.06† [0.01]	-0.00 [0.00]	0.00 [0.00]
Turnover x						
Republican Legislature	0.02* [0.01]	0.03 [0.02]	0.00 [0.00]	-0.00 [0.01]	0.00 [0.00]	0.00 [0.00]
Democratic Legislature	-0.09 [0.18]	-2.10† [0.50]	-0.24† [0.11]	-1.28† [0.32]	0.01 [0.06]	-0.11 [0.09]
Republican Legislature	-0.54† [0.23]	-0.76 [0.59]	-0.15 [0.12]	0.04 [0.30]	-0.00 [0.07]	0.06 [0.13]
Log income per capita	-0.72 [1.76]	0.11 [1.75]	-2.96† [0.58]	-2.55† [0.60]	2.11† [0.54]	2.28† [0.52]
Log Population	-2.55† [0.41]	-2.90† [0.42]	-1.81† [0.23]	-1.94† [0.24]	-0.41† [0.11]	-0.44† [0.11]
Proportion black	-9.54 [7.14]	-6.67 [7.06]	-5.65 [3.98]	-3.99 [3.89]	-0.10 [1.79]	0.47 [1.81]
Proportion aged 65+	-8.36 [8.71]	-0.91 [8.48]	23.65† [4.27]	27.29† [4.40]	-8.76† [2.49]	-6.96† [2.32]
Divided	0.13* [0.07]	0.17† [0.08]	0.06 [0.04]	0.09† [0.04]	0.00 [0.02]	0.01 [0.02]
Governor is term-limited	-0.16† [0.08]	-0.07 [0.09]	-0.08* [0.04]	-0.05 [0.05]	0.03 [0.02]	0.04* [0.02]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.57		0.78		0.69
First stage F-stat.		20.0		20.0		20.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.95	0.94	0.96	0.96	0.80	0.79

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 11: Turnover and taxes: Interactive effects of partisan controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Tax revenue as a % of state income	Sales tax as a % of state income	Income tax as a % of state income			
Average turnover	0.009 [0.011]	-0.007 [0.012]	0.002 [0.002]	0.004 [0.005]	0.001 [0.007]	-0.006 [0.004]
Turnover x Democratic Legislature	0.001 [0.01]	0.03† [0.02]	-0.001 [0.002]	-0.001 [0.01]	-0.006 [0.01]	0.02† [0.01]
Turnover x Republican Legislature	0.01 [0.01]	0.04* [0.02]	0.003 [0.002]	-0.002 [0.01]	0.001 [0.01]	0.02† [0.01]
Democratic Legislature	0.16 [0.22]	-0.65 [0.43]	0.01 [0.05]	0.02 [0.14]	0.17 [0.13]	-0.23 [0.19]
Republican Legislature	-0.60* [0.32]	-1.24† [0.56]	-0.06 [0.06]	0.08 [0.15]	-0.16 [0.15]	-0.59† [0.27]
Log income per capita	12.05† [3.02]	12.34† [2.87]	-0.89† [0.23]	-0.87† [0.23]	3.67† [1.38]	3.86† [1.31]
Log Population	-1.39† [0.65]	-1.60† [0.64]	-0.25 [0.17]	-0.23 [0.16]	-1.01† [0.35]	-1.13† [0.35]
Proportion black	8.82* [4.79]	9.44† [4.69]	1.07 [1.49]	1.25 [1.45]	-3.58* [2.17]	-3.24 [2.17]
Proportion aged 65+	-7.90 [7.27]	-5.32 [6.87]	-8.10† [2.28]	-7.79† [2.15]	-1.15 [2.52]	0.61 [2.57]
Divided	-0.003 [0.06]	-0.003 [0.07]	-0.02 [0.02]	-0.01 [0.02]	-0.003 [0.03]	-0.003 [0.03]
Governor is term-limited	0.13 [0.12]	0.19 [0.12]	-0.004 [0.02]	-0.01 [0.02]	0.07 [0.06]	0.10* [0.06]
Method	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.29		0.41		0.62
First stage F-stat.		20.0		20.0		20.0
Observations	1368	1368	1368	1368	1368	1368
R-squared	0.71	0.71	0.95	0.95	0.86	0.85

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 12: Turnover and disaggregated taxes: Interactive effects of partisan controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Selective sales tax as a % of state income	General sales tax as a % of state income	Individual income tax as a % of state income	Corporate income tax as a % of state income				
Average turnover	-0.0010 [0.0009]	0.0019 [0.0026]	0.0030† [0.0013]	0.0023 [0.0031]	0.0017 [0.0021]	-0.0024 [0.0039]	-0.0009 [0.0062]	-0.0035 [0.0024]
Turnover × Democratic Legislature	0.001 [0.001]	-0.003 [0.003]	-0.001 [0.001]	0.003 [0.005]	-0.004 [0.003]	0.01† [0.01]	0.003 [0.01]	0.001 [0.003]
Turnover × Republican Legislature	0.003† [0.001]	0.002 [0.003]	-0.001 [0.002]	-0.004 [0.004]	-0.002 [0.002]	0.004 [0.01]	0.002 [0.01]	0.014† [0.006]
Democratic Legislature	-0.02 [0.03]	0.07 [0.07]	0.03 [0.04]	-0.05 [0.11]	0.22† [0.06]	-0.22 [0.14]	-0.05 [0.13]	-0.01 [0.13]
Republican Legislature	-0.13† [0.03]	-0.10 [0.08]	0.07 [0.05]	0.18 [0.12]	0.02 [0.06]	-0.12 [0.15]	-0.17 [0.14]	-0.47† [0.20]
Log income per capita	-1.00† [0.13]	-1.01† [0.13]	0.11 [0.17]	0.14 [0.17]	0.58† [0.27]	0.82† [0.27]	3.09† [1.26]	3.03† [1.21]
Log Population	-0.56† [0.06]	-0.55† [0.06]	0.31† [0.16]	0.32† [0.15]	-0.63† [0.11]	-0.73† [0.12]	-0.37 [0.30]	-0.40 [0.29]
Proportion black	1.55* [0.80]	1.55* [0.80]	-0.49 [1.37]	-0.30 [1.33]	-4.76† [1.94]	-4.03* [2.09]	1.18 [1.58]	0.80 [1.51]
Proportion aged 65+	0.01 [1.16]	0.08 [1.17]	-8.11† [1.93]	-7.86† [1.82]	-2.85* [1.70]	-0.57 [1.97]	1.71 [1.89]	1.18 [1.82]
Divided	-0.04† [0.01]	-0.04† [0.01]	0.02 [0.02]	0.03 [0.02]	0.03 [0.02]	0.03* [0.02]	-0.03 [0.02]	-0.04* [0.02]
Governor is term-limited	-0.01 [0.01]	-0.01 [0.01]	0.01 [0.02]	0.01 [0.02]	-0.02 [0.02]	0.01 [0.02]	0.09 [0.05]	0.09* [0.05]
Method	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Hansen's J (p-value)		0.57		0.55		0.93		0.57
First stage F-stat.		20.0		20.0		20.0		20.0
Observations	1368	1368	1368	1368	1368	1368	1368	1368
R-squared	0.85	0.85	0.95	0.95	0.95	0.94	0.59	0.59

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.

Table 13: Turnover and fiscal policy: Non-linear effect

	(1)	(2)	(3)	(4)	(5)	(6)
	Expenditures as a % of state income			Tax Revenues as a % of state income		Income tax
	Total	Current	Capital outlays	Total	Sales tax	
Turnover >=45	0.30* [0.154]	-0.04 [0.09]	0.006 [0.04]	0.35† [0.15]	0.042 [0.045]	-0.008 [0.07]
30<= Turnover <45	0.33† [0.11]	0.04 [0.05]	-0.04 [0.03]	0.21† [0.08]	0.01 [0.03]	-0.02 [0.05]
15<= Turnover <30	0.19† [0.07]	0.07 [0.04]	-0.04 [0.03]	0.04 [0.06]	-0.001 [0.02]	-0.01 [0.03]
Log income per capita	-0.72 [1.74]	-2.98† [0.57]	2.09† [0.53]	11.96† [2.98]	-0.88† [0.23]	3.63† [1.36]
Log Population	-2.47† [0.41]	-1.76† [0.22]	-0.38† [0.11]	-1.11* [0.59]	-0.22 [0.15]	-0.97† [0.32]
Proportion black	-6.05 [7.21]	-5.02 [4.04]	0.32 [1.75]	8.75* [4.71]	0.72 [1.47]	-4.18† [2.12]
Proportion aged 65+	-9.76 [8.67]	22.79† [4.23]	-9.35† [2.45]	-11.48 [7.33]	-9.15† [2.24]	-1.62 [2.55]
Democratic Legislature	-0.06 [0.10]	0.02 [0.05]	-0.01 [0.03]	0.18 [0.14]	0.001 [0.03]	0.15† [0.07]
Republican Legislature	-0.09 [0.14]	-0.06 [0.06]	0.08† [0.04]	-0.24* [0.13]	0.02 [0.03]	-0.13* [0.06]
Divided	0.15† [0.07]	0.06 [0.04]	0.01 [0.02]	0.02 [0.06]	-0.02 [0.02]	0.01 [0.03]
Governor is term-limited	-0.20† [0.08]	-0.11† [0.04]	0.02 [0.02]	0.08 [0.12]	-0.02 0.0418	0.06 [0.06]
Method	OLS	OLS	OLS	OLS	OLS	OLS
Observations	1400	1400	1400	1400	1400	1400
R-squared	0.95	0.96	0.80	0.71	0.95	0.86

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 14: Turnover, political competition and policy

	(1)	(2)	(3)	(4)	(5)	(6)
	Expenditures as a % of state income			Tax Revenues as a % of state income		
	Total	Current	Capital outlays	Total	Sales	Income
Average turnover	0.011‡ [0.004]	-0.001 [0.002]	-0.0001 [0.001]	0.014‡ [0.004]	0.003‡ [0.001]	0.001 [0.002]
Political competition	0.033‡ [0.011]	0.024‡ [0.006]	-0.007* [0.004]	-0.004 [0.008]	-0.003 [0.003]	0.003 [0.004]
Log income per capita	-0.85 [1.78]	-3.13‡ [0.58]	2.17‡ [0.55]	12.17‡ [3.00]	-0.86‡ [0.23]	3.70‡ [1.37]
Log Population	-2.48‡ [0.42]	-1.71‡ [0.23]	-0.42‡ [0.11]	-1.32‡ [0.63]	-0.23 [0.17]	-0.98‡ [0.34]
Proportion black	-9.29 [7.31]	-5.79 [4.18]	-0.05 [1.76]	9.28* [4.81]	1.25 [1.49]	-3.46 [2.17]
Proportion aged 65+	-8.33 [9.03]	24.54‡ [4.41]	-9.20‡ [2.58]	-6.44 [7.62]	-7.57‡ [2.35]	-0.21 [2.67]
Democratic Legislature	-0.03 [0.10]	0.04 [0.05]	-0.01 [0.03]	0.19 [0.15]	0.00 [0.03]	0.15‡ [0.08]
Republican Legislature	-0.05 [0.14]	-0.03 [0.06]	0.07‡ [0.04]	-0.27‡ [0.13]	0.01 [0.03]	-0.13‡ [0.07]
Divided	0.12 [0.08]	0.04 [0.04]	0.01 [0.02]	0.01 [0.07]	-0.01 [0.02]	-0.001 [0.03]
Governor term-limited	-0.16‡ [0.08]	-0.09* [0.04]	0.02 [0.02]	0.12 [0.12]	-0.01 [0.02]	0.07 [0.06]
Method	OLS	OLS	OLS	OLS	OLS	OLS
Observations	1340	1340	1340	1340	1340	1340
R-squared	0.95	0.96	0.80	0.71	0.95	0.86

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 15: Turnover and growth of personal income

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Long Run Growth rate						
Average turnover	-0.0115† [0.0042]	-0.0232† [0.0111]	-0.0102† [0.0043]	-0.0255† [0.0108]	-0.0233† [0.0081]	-0.0379† [0.0191]	-0.01† [0.004] 0.057† [0.011]
Political competition							
Turnover × Democratic Legislature			0.13 [0.09]	0.12 [0.08]	0.02† [0.01]	0.01 [0.02]	
Turnover × Republican Legislature			-0.40† [0.10]	-0.38† [0.10]	0.02 [0.01]	0.02 [0.03]	
Democratic Legislature			10.46† [1.45]	10.99† [1.45]	10.27† [1.46]	10.91† [1.44]	0.14* [0.09]
Republican Legislature			-28.64† [5.96]	-29.34† [5.88]	-28.64† [6.01]	-29.69† [5.97]	-29.46† [5.72]
Log Population	10.43† [1.49]	10.83† [1.49]	10.46† [1.45]	10.99† [1.45]	10.27† [1.46]	10.91† [1.44]	10.81† [1.45]
Proportion black	-29.63† [6.01]	-30.26† [5.92]	-28.64† [5.96]	-29.34† [5.88]	-28.64† [6.01]	-29.69† [5.97]	-29.46† [5.72]
Proportion aged 65+	-10.16 [8.60]	-13.46 [8.32]	-10.51 [8.66]	-15.07* [8.41]	-10.35 [8.63]	-15.76* [8.38]	-10.71 [8.88]
Divided			-0.15† [0.06]	-0.15† [0.06]	-0.15† [0.06]	-0.17† [0.06]	-0.22† [0.06]
Governor is term-limited			0.08 [0.07]	0.04 [0.07]	0.10 [0.07]	0.05 [0.08]	0.13* [0.07]
Lagged income	-14.84† [1.20]	-15.18† [1.21]	-14.91† [1.18]	-15.35† [1.19]	-14.83† [1.18]	-15.35† [1.16]	-15.19† [1.17]
Method	OLS	IV	OLS	IV	OLS	IV	OLS
Hansen's J (p-value)		0.28		0.34		0.31	
First stage F-stat.		57.6		62.4		16.7	
Observations	1270	1270	1270	1270	1270	1270	1244
R-squared	0.65	0.65	0.66	0.66	0.66	0.66	0.67

Notes: All regressions include state and year fixed effects. Standard errors are robust and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively. First stage F-statistic is Kleibergen-Paap rk statistic. Hansen's J (p-value) are the p-values from the Hansen's J test with a null hypothesis that instruments are validly excluded from the main equation.