The Political Economy of Taxes and the Vote

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Abstract: Pooled aggregate analyses of the American states and a cross-sectional individual-level analysis of election exit polls in the states yield mixed findings on the impact of changing taxes on vote outcomes and voter behavior. Our research investigates the impact of legislated changes in the sales, income, and “sin” taxes on individual voting behavior using exit polls from 43 states in 228 elections from 1982-2000 with 315,000 respondents. We hypothesize conditions that affect the tax-vote linkage. We find stronger negative effects of changes in the sales tax on vote choice, but little or no impact of changes in either the income or sin taxes. Some other non-obvious findings of the paper include: Republican candidates defending tax records do worse than Democratic candidates, a trait that appears concentrated among open seat Republicans. Republicans are particularly sensitive to sales tax changes, especially if an incumbent. Open seat Republicans appear vulnerable to their party-predecessor’s income tax changes. Of the impact of tax changes on voters, there appears to

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be little variation in the impact of tax changes on voting by those in the lower or upper income classes nor by party identification of the voter.
I. Introduction: Given that taxes are raised frequently in the American states, we should have increasing confidence in answering the queries of whether, and if so, when and under what conditions do gubernatorial candidates face electoral retribution for taxes that increased during their term of office. Over the past two decades, answers to this question have differed. Early evidence (Pomper 1976, Hansen 1983) based on highly-aggregated measures suggested that the relationship was weak. Better measures of legislated changes in tax rates also suggested weak retribution (Eismeier 1983). Separating brand-new programs vs. changes across sales and income taxes indicated variable impact by type and weak overall impacts (Kone and Winters 1993). Niemi and colleagues (1995) argued that the impact of changed tax rates on individuals as assessed in thirty-five pooled 1986 gubernatorial exit-polls was significant. However, the net effect on the voter was small and the individual effects found in such a single election analysis could be substantially biased.

Our research pools 18 years of 43 states exit poll data of gubernatorial elections. Pooling permits the addition of “fixed effects” for each state and for each election year with the result that time-invariant, statewide and electoral period effects are factored out. Further, our model contains a more comprehensive set of control variables and sets of “contextual conditions” that allow for answers to queries of when and under what conditions do taxes electorally impact. Pooling individual-level, cross-

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2 In the 43 states from 1979-2000, income, sales, and sin tax (beer, gasoline, cigarettes) changes totalled 540 discrete changes, respectively, 72, 76, and 392.

3 Our three-way N is 228 elections and about 315,000 voters in 43 states. We exclude Hawaii and Alaska because Voter News Service does not canvas their exiting voters. We exclude the off-year elections in New Jersey, Virginia, Kentucky, Louisiana, and Mississippi. The “independent” gubernatorial administrations, Weicker in CT and King in ME, were also excluded.
sectional data and adding key controls reduces the probability of omitted variable bias, thereby obtaining superior estimates of the “true” effect of tax hikes on the vote.

We argue that endogeneity is the fundamental problem associated with determining the effect of tax hikes on the vote. Because governors are interested in furthering their political careers, attaining reelection, or helping their party’s candidates for office, governors’ decisions on whether to raise taxes are related to the upcoming, projected vote share. If tax changes have the potential to render uncertain incumbents’ hopes, then governors will likely seek non-tax solutions to their need for revenue -- budget cuts, increased fees, etc. This will be true as the prospects for electoral victory shrink. If so, then the effect obtained from a regression analysis will be biased: it will only take into account the effect when a tax change is observed. Thus, we expect the data on tax changes to be severely truncated in electorally problematic/competitive conditions, precisely the most interesting situations of all. The effects of tax changes will be markedly different from that which would be observed if tax changes occurred exogenously, as if they were essentially unrelated to electoral consequences.

The usual solution to this problem of “instrumental variables,” will not work in this situation because we believe that no suitable instrument is available.\(^4\) We offer a second-best strategy of putting regression results in context through interaction effects, as we will describe more fully shortly. Theory suggests what groups of governors might have the most to fear from raising taxes and, as such, would engage in the most strategic behavior. In an indirect way, the use of interactions permits us to map out those situations that are characterized by a relatively high degree of endogeneity and to separate out those situations in which endogeneity is most likely to plague the model from those situations in which it is less likely to be an issue. We argue that our technique highlights, but does not resolve, endogeneity.

Our “mapping” strategy suggests that the political context (Books and Prysby 1992; Brace

\(^4\) Besley and Case (1995a) attempt such, unsuccessfully, in our opinion.
and Jewett 1995; Stonecash 1996) may be a key determinant of individual vote choice and election outcomes, yet many empirical studies fail to place the major results – typically couched as regression coefficients – within relevant contexts. Powerful examples of hypothetical contextual effects arise at the aggregate level. Electoral timing should affect voter retribution, thus tax hikes in periods of rising unemployment will be more severely punished at the polls. At the individual level we might expect high income voters to be more sensitive to changes in the income tax. Many authors have discussed the role of context in the politics of taxation (e.g., Hansen 1983; Winters 1996), but these discussions were rarely accompanied by direct empirical investigation.\textsuperscript{5} The implication, then, is that the gubernatorial tax-vote relationship should be reexamined using an empirical model designed to ascertain whether the tax-vote relationship is conditional on the political and economic environments as well as on the characteristics of the voting population. To do so requires data that merges measures of individual-level voting behavior (315,000 voters) that vary across electoral contexts (43 states) and time/electoral periods (228 gubernatorial campaigns from 1982 to 2000).

Our paper is organized as follows. Section II reviews the literature on the impact of taxation on gubernatorial vote outcomes. Section III reviews the likely determinants of under what conditions governors likely propose and get taxes changed. These conditions generate the problem of endogeneity, because proposing new taxes and getting them enacted must surely be related to the prospects of electoral victory, \textit{a priori}. The endogeneity issue is described in Section IV, and we propose a “second best” response. Section V proposes a contextually-rich, across-state, across-time model of voter retribution for tax changes. Section VI describes our data and the operationalization of the model. Section VII describes a number of measurement and econometric issues in the study. Section VIII describes the results of the models’ tests. We conclude in Section IX.

\textsuperscript{5} We exclude Carsey’s excellent analysis of campaign dynamics (2000) from this generalization.
II. Assessing the impact of state taxation on gubernatorial voters: Our analysis of the impact of taxation on the vote occurs within the bounds of a largely agreed-upon set of determinants of the vote. At the aggregate level, researchers show that national effects dominate gubernatorial contests (Peltzman 1987; Kenney 1983; Holbrook 1987). Chubb (1988) demonstrated that aggregate gubernatorial election outcomes are affected by state economics, but national forces – and particularly evaluations of the president’s handling of the economy – are more important.

At the individual level, Svoboda (1995) found that voters’ evaluations of the state economy significantly affect vote choice. Strong national-level findings resulted from the use of aggregate economic indicators rather than respondents’ perceptions. Stein (1990), using 1982 exit polls, demonstrated that responsibility for economic conditions is assigned to the president, not to the governor, and that punitive effects are concentrated on incumbents of the president’s party. Hansen (1999) used time-series poll data from eight states from 1967-1997 and found that high unemployment resulted in higher disapproval of the governor’s job ratings, but consistent with the asymmetric effects literature, lower unemployment was not rewarded. Atkeson and Partin (1995) found that the electoral success of senators depends on the success of the president, following a national referendum hypothesis, while the success of governors depended on perceptions of state economic conditions, but not personal economic circumstances. With an incumbent Republican president, they claimed that incumbent Republican governors (but not open-seat Republican candidates) were punished more sharply (but, see Carsey and Wright 1998a, 1998b).

Governors may be punished by political context. Voter accountability is stronger for unified government, and voters may have party-specific expectations regarding taxing and spending: Republican candidates lose votes if their party is held responsible for increases in the size of the budget, but Democratic candidates do not (Besley and Case 1995b). MacDonald and Sigelman (1999; also see
Poterba 1994) found that a governor is held responsible for tax increases and the health of the state economy only in an election year.

A great deal of scholarly research has been devoted to separating the effects on electoral retribution from changed taxes vs. changes in economic conditions. Harris (1959) found that governors were “getting the daylights knocked out of them for simply trying to make ends meet.” Cowart (1973) argued that the governor has “borne the stigma of increased tax rates” (Ranney 1965; Turett 1971; Beyle 1983). Pomper (1968, 1976) concluded that governors who increase taxes were not significantly hurt at the polls. Pomper observed that governors performed better if they taxed earlier in their terms rather than later. Pomper also found that in more competitive states, voters were more likely to support tax increases and larger spending. Eismeier (1983) concluded that there were electoral risks associated with higher taxes in the 1950-1980 period, but these risks were not overwhelming (379). Governors who raised taxes also appeared not to lose their party’s nomination in their reelection bid. Hansen (1983, 177) found that among survey respondents in 1980, 15% surveyed mentioned taxes as a criterion in their voting decisions. Moreover, 31 percent of occasions of new sales taxes and 22 percent of new income taxes were followed by the defeat of the incumbent or the party’s candidate. She concluded that while there is “some risk . . . involved in passing broad-based taxes . . . the imposition of [such] taxes does not constitute political suicide” (166).

Recent research reports (Jewell and Morehouse 2000) suggest that taxes are often listed as a major issue in gubernatorial contests, especially when the incumbent had promised not to raise taxes (187). Carsey (2000) argued that the 1993 campaign in New Jersey hinged on framing the tax issue.

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6 Eismeier coded his tax variable for legislative changes as opposed to the change in revenue collected. This technique, which we adopt, more accurately taps into changes in the tax code for which the governor can reasonably be held accountable.
Sanders (1988) argued that the argument is too simple: the public is interested in more benefits paid with less taxes, but also may have more complex preferences: the elderly may push for greater services (and thus taxes) while younger groups want exactly the opposite (MacManus 1995, but c.f. Rhodebeck 1993).

Different taxes may have differing levels of visibility and associated electoral punishment (Burnori 1998, 191-192). Changes in the income tax will be punished because it places the burden on “well-educated, informed, politically responsive, upper- and middle-class citizens” (Downs, 1960), yet the sales tax is opposed by well-organized commercial, retail interests. Mikesell (1998) noted “the consumer sees the [sales] tax being levied on each purchase and thus is aware of its cost to him or her. . .

The tax can be starkly transparent” (17). Low-income earners have been shown to be resistant to the regressive sales tax (Phares 1980). However, excise taxes may provide a way for governors to raise revenue with less public attention. Consumers may be unaware of taxes on alcohol, gasoline, and cigarettes (Winters 1996, 335-336) and are more likely to be galvanized by the personal income and sales taxes (339).

Three articles are central to our argument. Kone and Winters (1993) studied the aggregate results from 407 gubernatorial elections from 1957-1985 and found that enacting brand-new income or sales tax program harmed the incumbent’s party in the subsequent election, although this effect was not significant. However, incremental changes in existing sales tax programs were found to have a significant impact.

Niemi and colleagues (1995) analyzed exit polls for 34 gubernatorial elections in 1986. State and national economic factors were found to be significant predictors of the personal vote – including taxation. Indeed, there was punishment associated with each increment of taxation. They also find evidence that bad economic conditions and more tax increases are correlated with governors’ decisions not to run for reelection. The study suffers limits which originate from its single cross-section design.
They measure change in the national economy with subjective evaluations by the respondent -- they
interact an evaluation of the state of the economy with whether the voter judged the economy to be a
“salient” issue. Unlike over-time changes in unemployment or real disposable income, these are
subjective questions that are influenced by partisan predispositions or the already-determined vote
choice, thereby making them poor proxies for economic change. In fact, in a single cross-section, there
is no national economic change at all. Finally, using a single cross-section meant that Niemi and
colleagues could not use state fixed effects.

Besley and Case (1995a) first treated the relationship between taxation and vote choice as an
endogenous one, determined simultaneously, and that the effects of a tax may differ depending on
circumstances. Using various income groups and their respective average tax liabilities, they craft
models that control for changes in state income, state unemployment rate, and state debt. However, they
do not include relevant political controls used in previous studies of taxation and voting behavior. They
find that an increase in taxes diminishes the probability of voting for an incumbent, but if neighboring
states raise taxes at the same time, the effect is offset. To account for possible endogeneity problems,
tax effects are instrumented with year effects and demographics (changes in the proportion of elderly
and the young), and the original results stood. The lack of political controls creates a potentially serious
problem: The demographic instruments are surely correlated with the error term in vote choice making
them poor instruments. While their attempt to resolve the endogeneity problem is admirable, their
success is questionable. Their instruments fundamentally proxy for a tax when it must be enacted to
maintain balanced budgets and not for when a tax is voluntary. The difference may be thought of a
fiscal health in the former situation as opposed to increased services, as a political preference of the
incumbent administration, in the latter.

**III. If taxes impact, when are governors likely to tax?** Information asymmetries exist for leaders and
voters. Governors and their advisers will be uncertain of the impact of a proposed tax change. Actions
such as opinion polls, elite consultation, party caucusing, media trial balloons are undertaken to diminish uncertainties (Hansen 1999). Leaders’ information on electoral consequences is ultimately imperfect, so there is an incentive to choose an option that affords the opportunity to hedge. This is particularly so because voters, too, are imperfectly informed – perhaps more so than candidates because voters are “rationally ignorant” (Downs 1957). Opportunistic politicians (Brennan and Buchanan 1980) will structure taxes in such a way so as to acquire the greatest impact with the least visibility.

We assume that governors will attempt to satisfy their personal preferences, the most notable of which is future electoral success. However, state executives generally act as though raising rates represents a serious political risk (Berry and Berry 1992; 1994). As such, governors attempt to enact taxes only at times when a “political opportunity” presents itself, represented by a likely low level of electoral retribution or a situation in which exogenous factors leave the governor no choice but to raise taxes. The situation is further complicated by the political and economic climate within a state that can affect a governor’s ability to pass legislation. In general then, tax rate increases are a likely product of the interaction of three types of factors: a governor’s personal preferences, exogenous economic and legal factors, and the political climate.

**Personal Preferences:** Personal preferences include reelection concerns, desire to pursue higher office, and the governor’s ideology – all of which combine to form a spatial “ideal point” for each governor. The relative weights that each governor places on ideology, reelection, and other personal preferences are unknown; they cannot be directly observed, would be difficult to measure in any case and only can, at best, be inferred from gubernatorial actions. **Ideology:** Governors may have a preference between tax programs, and in our case, the choice is between changing the sales, income or sin taxes. The incidence or burdens of these taxes vary by income so we might expect that the likely electoral reactions to the tax choices of a governor by income class will be reflected in the chosen tax instrument of change. Lower socioeconomic class voters devote more resources to consumption and
less of their income to savings and investment, thus should be more sensitive to changes in sales and excise taxes (Winters 1996). Higher income voters might oppose changes in the income tax because they save and invest more and are “taxed twice” on income (first via the income tax and, then, on the interest and dividends). Further, because income tax systems are often graduated into brackets, higher income individuals may also face higher average rates. Further, tax increases “purchase” public goods. Some public goods valued by some governors, e.g. roads and highways or a balanced budget, may be inferior goods for governors with a taste for redistributive policies. A governor sets expenditures and revenue collections so as to maximize the chances of winning the next election (Downs 1957, 1960). Incumbents seek to maximize a weighted sum of expected votes, where those weights are determined by voter characteristics (Hettich and Winer 1988).

*Winning elections*, either one’s own reelection, or a future office, or increasing the likelihood of the election of the successor of his/her party is a well-established motive (Mayhew 1974). As a result, whether taxes are increased likely depends, on how those taxes will affect a sitting governor’s electoral bid. Further, voter retribution is likely linked to timing of the tax change. Berry and Berry (1992) found support for an election cycle hypothesis for timing of tax changes, particularly in contrast to competing explanations of tax increases. Mikesell (1978) found that the less visible excise taxes are more likely to be used as revenue sources in an election year, (but, see Hansen 1983). It is probably easier for a governor to engage in “bracket creep” than to institute a brand new income or sales tax (Davies 1986, Penniman 1976; but, cf. Kone and Winters 1993). Governors expect that increases in existing taxes will not carry the same level of electoral retribution as the imposition of new taxes or large rate hikes in existing taxes. On the other hand, having a larger than average number of rate increases, even if each of
those increases was small in magnitude, would render the then-incumbent governor vulnerable to
charges that he or she is a “taxer.”

Exogenous economic and legal factors: The explanation for tax increases with the most
empirical support is enactment in response to economic downturns. The fiscal health explanation
(Berry and Berry 1992, 1994) argues that short-term fiscal crises require tax increases to raise the
necessary funds. The existence of a fiscal crisis may make it more politically palatable to raise taxes
(Hansen 1983, 150-157). There are directional effects here, which may be asymmetrical: If a state is
experiencing economic growth, then it may increase taxes, particularly those that are progressive (Berch
1995). The hypothesis posits that as a state’s economic well-being increases, taxation will increase as a
function of an increased ability to raise revenue through taxes (Barro 1986, 53). Further, development
leads to increased demand for public services (Berry and Lowery 1987) and for public services needed
to manage new and changing interdependencies, especially those spawned by urbanization (Berry and
Berry 1992). Constitutional constraints and super-majority requirements may shape need for tax
increases (Poterba 1996). Some states have formal provisions limiting debt as well (von Hagen 1991).
As a result of these formal constraints, raising taxes may be as the only way for a governor to balance
the budget by the end of the fiscal year.

The political climate: Finally, there is a set of factors that may best be described as the political
climate. Unified party government makes it easier for programs to be enacted because the barriers
created by partisanship are eroded (Poterba 1994; Alt and Lowry 1994; Hansen 1983). It may matter
which party is in control (Gilligan and Matsusaka 1995; Berch 1995; Roemer 1999). Finally, party

7 There is another problem associated with rate increases of the same tax. If the demand for the good or
goods being taxed is elastic, the marginal gains in revenue will decline as the rate increases. As a result,
politicians must consider how voters will react to the tax not just politically but economically as well.
strength is distinct from party control. Certainly, whether the government is unified, the percentage of seats held by each party in the legislature, and the quality of the candidates all proxy for party strength, but they do not measure the influence of the state party apparatus on policymaking. At the gubernatorial level, Morehouse (1997) discovered that a strong parties and strong gubernatorial influence over the legislature eased gubernatorial agenda passage. Collectively, scholars have referred to the litany of explanations for taxation as “political opportunity” hypotheses (Howe and Reeb 1997). Berry and Berry (1992) concluded that governors increase taxes at times when the politicians can shield themselves from the political costs (737). “Our multivariate model of tax innovation suggests that even if the adoption of a new tax does not guarantee electoral defeat for a governor, politicians act as if such an adoption will spell defeat” (736). It is a combination of internal and external, political and economic conditions that form such windows.

IV. The endogeneity problem: 228 elections were held in 43 American states between 1982 and 2000. In 55 of these elections, no changes in the rates or brackets of income, sales, or sin taxes occurred during the governors’ term preceding the election. Furthermore, twelve states observed no income tax changes during the two decades, and ten states had no changes in the sales tax. Such states cannot contribute directly to estimation of the relevant tax coefficients. The simplest explanation is that there would be no way to disentangle the “effect of no tax increases” in the state from the state fixed effect.\(^8\) In essence, the coefficient on the tax variable is really the effect of tax increases on the vote only for a “marginal” group: i.e., voters in those states where a tax increase occurred at some point during the decade.

\(^8\) However, observations from states in which taxes are not increased still affect the coefficients on other controls in the model. There is almost always some non-zero correlation between the tax and control variables, thus the tax coefficient must adjust until a least squares solution is obtained.
An example illustrates a corollary point. Suppose that in half the states, an incumbent running for reelection would expect, given conventional statewide “wisdom,” to take a 5 percent hit for increasing tax rates. Some governors are willing to bear this burden because they are strong candidates, while others have no choice but to increase taxes for fiscal reasons. Suppose that in the other half of the states, voters are much more tax-averse and, as a result, a tax increase would cause an incumbent to take a 10 percent hit in a reelection bid. Relative to the previous set of states, the proportion of governors willing to undertake tax hikes in these states would be considerably smaller. Risk-averse governors in tax-averse states in the midst of fiscal crisis might try to cut expenditures before passing an unpopular rate hike. Governors in this second group will be less likely to increase tax rates, and therein lies the problem. Because of the added fear of electoral retribution in the electorally-sensitive states, some governors who otherwise would have raised taxes at one point in time will chose not to do so. At the limit where taxes scared off all such governors, the electoral retribution effect in these states cannot be estimated because the tax measure has no variability. As a result, the regression fails to reveal the increased punishment in these states which would have occurred if taxed, and the coefficient is attenuated away from its “true” value. Strategic behavior on the part of reelection-minded incumbents acting within tax-sensitive contexts introduces this problem.

The usual approach to deal with an endogeneity problem is with an instrumental variables (IV) or two-stage least squares (2SLS) approach. We argue that the IV/2SLS approach, while theoretically

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9 The IV and 2SLS estimators are essentially the same. The only difference is that 2SLS will underestimate the coefficient standard errors. The reason is that IV takes into account the fact that the endogeneity correction (the predicted values for the first stage regression) is being estimated while 2SLS treats it as if it were known. Contemporary statistical programs will do the IV calculation and
and mathematically appealing, is not a reasonable solution in our cases. The IV method has three stringent assumptions: the existence of endogeneity; the instrumental variables are strong; and the exogeneity of the instruments themselves. Because IV is a less efficient estimator than OLS, failure to satisfy these key assumptions will yield results that are both biased and inefficient – an even worse outcome than that would have been obtained with OLS. Some analysts appear to have failed to test their data to ensure that each of these assumptions is met. Others have used instruments that are clearly correlated with the main dependent variable as was the case with Markus (1988), who estimated a model of vote choice and wanted to resolve the measurement error within the variable for the respondent’s personal financial situation. Markus instrumented for financial situation with the respondent’s age, sex, and education, as well as information regarding the respondent’s experience with unemployment and income, all factors likely related to the vote. In fact, our model employs as control variables (as do most vote models) some variant of all of Markus’s “instruments” and finds them all to be significant. As such, Markus’s instruments were inappropriate.

Finding a valid instrument for tax increases is problematic. In Besley and Case (1995a) state tax changes were instrumented with state demographic variables (changes in the proportions of elderly and young individuals in the state’s population) and year effects. While Besley and Case employed overidentification tests and determined that the demographic variables should not be eliminated from the second stage, there are several problems with their approach. First, their failure to reject the null hypothesis may have been a function of the small number of observations – 85 observations with 13 independent variables in the structural model. Second, they reported no tests of the strength of their instruments. If the joint $F$-statistic on these instruments is less than 10, then while they may be obtained the correct standard errors. In both cases, the coefficients will be identical; only the standard errors will differ.
significant in the conventional sense, they would not be sufficiently so to obtain consistent parameter estimates. Third, their model is sparing in its use of control variables; while they controlled for changes in income, debt, and unemployment for the state and the state’s neighbors, no political controls were included. Omitted variable bias is a real possibility. Had the model included a comprehensive set of political controls as well as national economic variables, then it may indeed have been the case that age changes would have appeared to be significant predictors of the gubernatorial vote.

A more serious problem comes from considering what the IV estimates really are measuring. As noted earlier, the IV estimator determines the effect for a particular marginal population or group. In Besley and Case’s model, there are two marginal groups – one for each set of instruments. The first group is all of the states clumped together at a particular time; this aggregation arises out of the use of year effects. The second group is those states undergoing major demographic changes in terms of the age of the population. In the first group, tax changes are a response to national conditions and tides; in the second group, the tax changes are a response to changes in the services that the electorate demands or the electoral preferences of different age groups. In essence, the effect of tax changes on the vote is probably being measured for the marginal groups where taxes are a fiscal necessity. This is very different from an exogenous increase in tax rates.

We claim that there does not appear to be an apparent, appropriate instrument for tax increases. The closest possible option would likely be a set of institutional and legal variables, such as the stringency of balanced budget provisions (Poterba 1996) or court decisions that impose a tax onto a state. However, these variables may be indirectly correlated with the vote as the governor will behave strategically, determining expenditures and services offered so as to maximize his or her utility. This does not mean, however, that analysts must simply accept endogeneity on the tax issue as a given. As we explained in the introduction, there need not be a single effect of a tax change on the vote; rather, one can imagine a set of effects conditional on other explanatory variables. Providing sufficient numbers of such
conditional “contexts” allows us to map out the endogenous and the exogenous space indirectly, thereby allowing us to make interesting inferences without relying on the IV estimator.

V. A model of voter retribution: The public has shown sophistication with respect to assignment of functional responsibility in holding governors responsible for changes in state economic conditions (Stein 1990). As the chief executive with the responsibility for management of the purse strings, the governor receives more publicity and media attention than other elected officials. Gubernatorial accountability has increased in recent decades with presidential and gubernatorial decoupling with 80% of the states now in the midterm or off-year. Further, there should be little voter confusion as to whether tax changes are state or federal. While an individual’s perceptions of local and state economic conditions may be affected by the health of the national economy, the same effect would not be expected with respect to taxes. Sales taxes are clearly imposed by states and localities, and individuals separately file federal and state income taxes. Finally, changes in state tax rates are relatively rare (Berry and Berry 1992), and when increases do occur, they are often visible and sometimes climactic (Kone and Winters 1993; Niemi et al. 1995). While voters are usually interested in the results of economic policies rather than the actual policies themselves (Kiewiet and Rivers 1985, 370), the case of taxation may be an exception. Intense media coverage and the saliency of the issue ensures that tax increases will be prominent in public discourse. Further, the opposing party and its candidates have a powerful incentive to expose the taxing actions of the incumbent.

There are compelling reasons to believe that increases in taxation will harm the sitting governor or the party nominee. However, some might take issue with this hypothesis for two reasons. First, as is noted earlier, taxes are also the mechanism through which the governor provides programs that garner votes and support. Kone and Winters evaluate the claim: “[e]ven when benefits funded by tax increases do become visible, the distributions are demographically selective or spatially limited leading taxpayers to perceive that many of their tax dollars are being used to finance programs which assist other
constituencies. In any case, because the benefits of many expenditure policies are remote in time, preventative in nature, and collective in consequence, they are not properly appreciated by voters when compared to the immediacy of tax burdens” (1993, 27). In short, taxes may help particular segments of the population and garner group votes, a backlash from the remainder of the population would be expected. This is precisely because tax increases are visible to the electorate; were they not, a governor could curry favor with each group and “hide” these actions from the rest of the public. Furthermore, there is inefficiency associated with any governmental action: the nature of bureaucracy mandates that the value of inputs will be greater than the value of outputs.

The second reason that some might believe that tax hikes would not be punished is contextual. The governor’s hand may be forced into taxation. Rarely does a governor raise one of these major taxes because he or she wants to provide some particular program or policy. Indeed, a superior strategy for a governor would be to determine what existing programs garner the least political support and eliminate them, thereby freeing up resources. More often, it is the case that a tax increase is seen as a no-win situation, but a fiscal necessity. The political opportunity hypotheses developed earlier provide a range of ways in which a governor may be able to raise taxes without incurring electoral costs. Thus, it is not altogether clear that tax increases will always convey election-day punishment. Nevertheless, given the logic above, we hypothesize: (H1) Increases in taxes negatively affect the vote for the incumbent or the nominee from the incumbent’s party.

Electoral retribution should also be examined as conditional on sets of statewide contextual factors. If the public properly assigns electoral responsibility to political agents, then it follows that an incumbent governor would be held liable for presiding over a tax increase to a much greater extent than the successor candidate of the incumbent’s party. Therefore: (H2) An incumbent suffers a greater electoral penalty for tax increases than do nominees of the incumbent’s party who run for the office of governor.
Previous models have implicitly assumed that the effect of tax hikes on the vote is symmetrical for Republicans and Democrats – a testable proposition. Additionally, while Republican voters are traditionally associated with higher incomes while Democrats are associated with lower incomes yields another prediction: an increase in the income tax should alienate a key Republican voting bloc, while an increase in the sales tax should alienate a Democratic bloc. If so, (H3) (a) the effects of tax increases on the vote for Republican incumbent governors and Democratic incumbent governors are not symmetrical. (b) Republican governors are penalized more than Democratic governors for enacting an income tax increase. (c) Democratic governors are penalized more than Republican governors for enacting a sales tax increase.

This hypothesis has a rival: As partisanship is the most predictive factor in the gubernatorial vote, it may be the case that a voter’s partisan predispositions affect whether he or she will punish the incumbent. Specifically, if the voter is Republican and his or her Republican incumbent governor raises taxes, the voter’s partisanship may overwhelm dissatisfaction. Thus, strong partisans may not jump to support the candidate of the other party, even in the face of disliked taxation. This poses the following: (H4) (a) Republican voters are less likely to punish Republican governors and more likely to punish Democratic governors for a tax increase, and (b) Democratic voters are less likely to punish Democratic governors for a tax increase.

Voters are likely to be differently affected by changes in different taxes and their vote should reflect such impacts. The income and sales taxes are widely thought to be two taxes with quite different impacts on income classes. Therefore, we argue: (H5) (a) Higher income individuals are more likely to punish an incumbent administration (or the nominee from the incumbent’s party) for an income tax increase than are lower income individuals, (b) while lower income individuals are more likely to punish a sales tax increase.
Because research suggests that governors are held responsible for economic conditions, regardless of whether those conditions are within their control, it is possible that gubernatorial political liability increases for tax increases in years of fiscal crisis. In parlous economic times, voters can ill afford to give up more income. Further, a tax hike would serve as a symbolic reminder of the failure of the governor. Thus, (H6) governors who raise taxes when when unemployment is rising in the electoral year, will be punished more than those governors who raise taxes in times of falling unemployment.

VI. Data and Operationalization of the Individual-level Models: Our study exploits exit poll data that is collected biennially at polling sites across the nation.\textsuperscript{10} For the period from 1982 to 2000 we pool the Voter News Service (VNS (1994, 1996, 1998, and 2000 elections)), Voter Research and Surveys (1990, 1992), the ABC/\textit{Washington Post} (1982, 1984, 1986, 1988) and CBS/\textit{New York Times} (1984, 1988) surveys. Exit poll data is, for example, the only systematic data that satisfies conditions of large numbers of voters per state (usually from 750 to 2500 voters) and sampled serially across the period with an appropriate sampling model.\textsuperscript{11} Actual VNS procedures elicit two kinds of voter “ballots,” a “long” or national form and the “short,” forms for the states that include many of the questions from the

\textsuperscript{10} Hawaii and Alaska were not included in this study, nor those with odd-year elections, New Jersey, Virginia, Kentucky, Louisiana, and Mississippi. For 1996 and 1998, some telephone surveys to account for absentee and early voters in California, Oregon, and Washington were conducted.

\textsuperscript{11} VNS, for example, chose a probability sample of voting precincts to represent different geographic areas across the state and the vote by party. Precincts were chosen with a probability proportionate to the population size in each state. However, in some states with large minority populations, some precincts were sampled at a higher rate than others. The procedure was such that each voter in a state had an equal likelihood of having his or her precinct chosen, and the exit polling was conducted throughout the day so as to give all voters an equal probability of being interviewed.
national forms as well as some questions specific to the politics of that state. Aggregating the data from the state and national forms and from earlier VR&S, ABC, and CBS polls yields about 315,000 observations of gubernatorial voters. However, because potentially relevant control variables such as respondent ideology, education, and income only appear on some versions of the questionnaires, the number of voter-observations varies in parts of this study.12

Our model is of the following form:  

\[ v_{ist} = \alpha T_{st} + \beta E_{st} + \gamma P_{st} + \lambda X_{it} + d_s + f_t + \epsilon_{ist} \]

where \( v_{ist} \) is the vote choice of individual \( i \) in state \( s \) at time \( t \), \( T_{st} \) is a vector of relevant tax variables (including interactions with other variables in some specifications), \( E_{st} \) is a vector of economic conditions at the state and national levels, \( P_{st} \) is a vector of political conditions at the state and national levels, \( X_{it} \) is a vector of characteristics of the individual voter, \( d_s \) is a vector of state fixed effects, \( f_t \) is a vector of year fixed effects, and \( \epsilon_{ist} \) is the error term.

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12 We are particularly interested in exploiting the interactions between state-level contextual variables and individual-level survey variables. Our contextual conditions, such as state and national economic data predominantly come from the Census Bureau’s *Statistical Abstracts* as well as volumes of *Book of the States*. Estimates of state-level unemployment figures are derived from data sets from the Current Population Survey (CPS). The data on tax increases is derived from relevant volumes of *Book of the States* as well as the Tax Foundation’s annual publication *Facts and Figures of Government Finance and the monthly publication of the federation of Tax Administrators*. Some contextual data was collected as a by-product of earlier studies; see . Complete documentation on data sources can be obtained at http://www.  

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Dependent Variable: The dependent variable is the respondent’s vote for governor, coded 1 if he or she voted for the Democratic candidate and 0 if he or she voted for the Republican candidate.\textsuperscript{13}

Independent Variables: The five sets of independent variables are the fixed effects, our three tax variables, economic conditions, political conditions, and individual characteristics. Because the individual characteristics are derived from categorical variables, those control variables are incorporated through the addition of dummy variables.\textsuperscript{14}

Fixed Effects: To account for over-time national trends in the vote for governor, year fixed effect dummies for each of the election years are included. Additionally, 43 state fixed-effect dummies are incorporated, which account for time-invariant but state-constant aspects of the political culture in the American states that give one party a natural edge (Stimson 1985).

Tax Variables: We created a database that noted whether, in the electoral term for each governor, the state had an increase in the personal income tax rate or bracket, an increase in the sales tax rate, or increases in the tax rates on cigarettes, beer, and gasoline. Unlike Niemi et al. (1995), who aggregated these and a number of other excise tax increases into a single composite variable, the income and sales tax variables were coded separately for this study, while the excise sin taxes were aggregated, thereby

\textsuperscript{13} Votes for third party candidates were excluded from the analysis. All votes cast in the 1998 Maine and 1994 Connecticut elections (Independent incumbent governors Angus King and Lowell P. Weicker, respectively) were excluded, as well, because the incumbents were third-party candidates. There is no straightforward way to map electoral retribution against third party incumbents.

\textsuperscript{14} The various sources for our variables, as well as setting out coding schemes for these dummies are explained at the following website: http://www. ... Other variables such as the quality ratings for the candidates have measurement and coding schemes that are non-obvious, and these, too, are detailed at the above site.
examining the electoral effects specific to each of the three types of taxation. The number of increases in the tax during the electoral period was multiplied by +1 if the incumbent is Democratic and –1 if the incumbent is Republican. Weighting the tax variable by party of the governor provides directionality. In our case, an increase in the sales tax, weighted as it is positively with a Democratic governor in office, will have a negative impact on the dependent variable of the individual Democratic vote. Most existing research (Eismeier 1983, Kone and Winters, 1993, Niemi et al, 1995) measures the tax variables by the number of legislated occasions the tax was increased. Measuring the tax variables by the number of rate increases ensures that only those effects that are due to governmental action are being picked up by the model. By contrast, for example tax revenues or tax collections as percent of income may change in response to changes in state and national economic conditions.

Economic Conditions: Classical models of retrospective voting suggests that voters reward incumbents for increases in real per capita disposable income and punish incumbents for increases in unemployment (Chubb 1988; Peltzman 1987; Holbrook 1987; Stein 1990). Measures of the percentage change in national unemployment and percentage change in national real per capita disposable income

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15 The legislative focus forces us to distinguish what a “legislated” tax change is. States often pass tax laws that are designed to take effect in the next fiscal year, so the researcher is confronted with the question of whether to code the tax hike as occurring at the time of passage or the time when it took effect. For our purposes, tax variables were coded according to the date they took effect. This is because it is expected that the most proximate effects of tax increases on voters will begin to occur at that time.
from the year prior to the election to the year of the election are included. The variables are weighted by the presidential party in power variable.\textsuperscript{16}

Voters also respond to state-level economic conditions when choosing between candidates for the governorship (Chubb 1988; Atkeson and Partin 1995; Svoboda 1995; MacDonald and Sigelman 1999; Howell and Vanderleeuw 1990). Our model includes \textit{percentage change in state unemployment}, weighted by gubernatorial party in power, as well as the state-level \textit{percentage change in real per capita disposable income}, weighted by the gubernatorial party in power variable.

**Political Conditions:** Evaluations of the sitting president have also been found to affect the vote for governor (Simon 1989; Peltzman 1987; Stein 1990; Piereson 1975). While some have argued that coattails are decreasing in importance (Tompkins 1984, 1988, Chubb 1988; Jewell and Olson 1988), few dismiss the effect outright (e.g., Tompkins 1988). Several studies in the last few years have found presidential evaluations to be important determinants of the gubernatorial vote in the 1990s (Carsey and Wright 1998a; Carsey 2000). Mondak and McCurley (1994) argued that coattail voting depends on the context of the election as well as the characteristics of the individual voter. Our model includes a dummy variable for \textit{presidential approval}, which is coded +1 if the respondent approved of the sitting president (or, in the case of an election year, voted for him) and 0 otherwise. Relevant interactions are included to weight the presidential approval variable by the presidential and gubernatorial parties in power. Because the data are taken from exit polls, the results should be insulated from the question order effects of presidential approval ratings on gubernatorial approval that have been found by some researchers (see Alspach 1991).

\textsuperscript{16} Weighting the economic variables assumes that the impact of, for example, a 1\% increase in national unemployment in the early 1980s will have the same (positive) impact on the possible Democratic vote for governor as a 1\% drop in unemployment during the Clinton administration.
Incumbency has been found to be a highly significant factor in the vote for governor (e.g., Cowart 1973; Jewell and Morehouse 2000). Stein (1990, 40) found incumbency to be “modestly helpful for forecasting gubernatorial elections.” As partisan attachments loosen, incumbency should play an increased role (Romero and Sanders 1994). Incumbency offers the indirect advantage of a great deal of visibility, even more so than some national-level offices (Squire and Fastnow 1994). It is easier for incumbents to raise money (Jewell and Morehouse 2000, 165). Furthermore, it appears that an incumbent governor is likely to be held accountable for past performance more than another representative from his or her party (Atkeson and Partin 1995; Jewell and Morehouse 2000, 191; Niemi et al. 1995). Three dummy variables for incumbency are included: whether the incumbent is a Democrat, whether there is an incumbent Democrat running, and whether there is an incumbent Republican running. These variables are interacted with several variables in the model, including the tax variable, as explained below.

Finally, some governors elected with a “mandate,” are stronger candidates than others, and, thereby, bring political “tides” to bear on the next election, we include the Democratic percentage of the vote in the previous gubernatorial contest (Niemi et al. 1995; Hansen 1999). We include variables for candidate-specific characteristics: candidate age (Besley and Case 1995a), candidate gender (Delano and Winters 2002), and candidate quality rating for both the Democratic and the Republican nominees (Squire 1992).

Individual Characteristics: Analysts continue to establish that an individual’s partisan identification affects the individual vote for governor (Jewell and Olson 1988, 207; Jewell and Morehouse 2000, 181; Squire 1992; Svoboda 1995; Atkeson and Partin 1995). The dynamics of partisanship in gubernatorial contests may change with time (Piereson 1977) and may not be the same
across state electorates (Jackson and Carsey 1999). We employ dummy variables to denote whether the respondent identifies as a Democrat, a Republican, or an Independent.\footnote{Those who characterized themselves as “other” composed the excluded category. While voters’ ideology has been shown to have a significant effect on the gubernatorial vote, especially when the competing candidates are ideologically far apart (Jewell and Morehouse 2000, 185), we chose not to include the VNS measure of ideology. The Voter News Service asked voters about their ideology in only one-half of the elections. We chose to maximize cases, rather than maximize variables. Education was a personal characteristic asked only of voters in a fraction of the elections and not included in our analysis.}

Our measure of the respondent’s income needs explanation. Much of the literature on electoral choice has treated income as a dichotomous variable, used mostly as a qualitative control in multivariate methods (see, for example, Axelrod 1972, 1982, and 1986; Stanley et al. 1986; Stanley and Niemi 1993). The VNS surveys provide categorical measures of income, but the exact categories vary across years. Additionally, because of inflation, the effect of a particular value of income in one year cannot be treated the same as the effect of the same nominal income in a later year. Our procedure to resolve these difficulties involved two steps. Respondent’s income was recoded as the mean of the category that he or she selected. For example, if the respondent selected the income category “$50,000 - $75,000,” his or her income was recoded to be $62,500. Top-coded earnings (e.g., “$100,000 or more”) were multiplied by one and a half. Second, we deflated these figures to 1990 dollars. The income variable was expressed in thousands of dollars resulting in rough cross-election equivalence and suitable for use in a pooled cross-sectional design.

Other demographic variables have been found to affect the individual vote. Voters’ age is particularly important for this study given that the elderly benefit disproportionately from some state
programs such as welfare (MacManus 1995; Rhodebeck 1993). Other research has uncovered the effects of race and gender on exit poll voting (Delano & Winters 2002). These demographic variables had categorical formats on the VNS surveys, and as such, they were employed as a series of dummy variables.

**VII. Further specifications regarding methods and econometrics:** The binary nature of the dependent variable in the exit poll analysis suggests that a probit or logit model would be more appropriate, however, the coefficients of a linear probability model are more easily interpretable. Several tests were run to compare the key coefficients among the logit, probit, and linear probability models, and the substantive findings did not appear to be dependent upon the choice of model. Thus, it would appear that the choice of model, at least in this instance, is not tremendously important.

**Pooling only states and years:** A pooled cross-sectional design presents a number of statistical obstacles (see Stimson 1985 for an overview). First, observations within each state exit poll are likely to be correlated with each other, a problem that can be solved through the addition of state fixed effects. However, a problem arises from the fact that state fixed effects, by definition, will constrain the effect to be the same across time. As such, there may be “common group effects” that are time-variant, and as a result, the combination of state and year fixed effects may fail to capture the entire relationship. An example would be some exogenous shock \_st that occurs in a particular state in a particular year and affects the vote but does not affect the vote in any other periods/state. This is a problem that exists when the independent variable (in this case, taxation) is more highly aggregated than the dependent variable. One approach to solve the common group effects dilemma would be to use fixed effects at the level of “state-year” units. However, because the tax change variables only vary with state-year, the addition of such fixed effects would prohibit identification of the tax coefficients. Thus, we chose to “cluster” the standard errors by state-year while including the state fixed effects. In effect, this makes
the standard errors behave as if a random effects estimator were employed. This approach was employed in each of the models.

Interaction Terms and Weighting By “Party in Power:” In previous studies of elections (e.g., Bloom and Price 1975) and gubernatorial contests in particular (e.g., Chubb 1988; Kone and Winters 1993; Niemi et al. 1995; Lowry et al. 1998), a standard coding scheme is employed to measure the dependent variable. For individual-level data, the dependent variable is dichotomous, coded as +1 if the respondent voted for the Democratic candidate and 0 for a Republican vote. The problem with this choice of dependent variable is that it does not measure incumbency directly. That is, if one expects an incumbent to be punished if unemployment increases, the model encounters a problem: an increase in unemployment will appear to have a positive effect on the vote for the Democrat if there is a Republican incumbent, while that same increase will appear to have a negative effect on the vote for the Democrat if there is a Democratic incumbent. Including a simple measure of change in unemployment, then, is clearly inappropriate. As such, scholars have interacted these variables with “party in power” terms. If the original variable was a national condition, then it was multiplied by +1 if the president was a Democrat and –1 if the president was a Republican. Similarly, if the original variable was a state-level condition, then it was multiplied by +1 if the incumbent governor was a Democrat and –1 if the incumbent governor was a Republican.

While this scheme is intuitive and does force the effects to operate in the correct directions, it is also improper on two levels. First, it fails to account for party-dependent effects (e.g., if Republican incumbent governors were to be punished more for an economic downturn than their Democratic counterparts). And, as the literature on “asymmetric effects” suggests, these effects are sizeable (Bloom and Price 1975). A more serious problem is that the introduction of these interacted variables creates a misspecified model due to omitted variable bias. If the “party in power” variable is not included in the
model (and, in the case of the existing research, it sometimes is not), the interaction term will be biased, and potentially seriously so.\textsuperscript{18}

To summarize, if the public assigns responsibility for political or economic conditions in a rational way, then the effects of such retribution may vary based upon the party of the president and the party of the governor. For national-level conditions, this situation is dealt with by using six variables: (1) the independent variable as it was recorded, without any weighting; (2) a dummy variable for the party of the incumbent president, (3) a dummy variable for the party of the incumbent governor, (4) an interaction between the independent variable and the presidential party dummy, (5) an interaction between the independent variable and the gubernatorial party dummy; and (6) a three-way interaction between the independent variable, the presidential party dummies, and the gubernatorial party dummy. For state-level variables, the same basic procedure is followed, but those categories involving the dummy for party of the president are excluded. While this general approach of adding interactions to account for more complicated dynamics can reduce the efficiency of the parameter estimates, those estimates will be unbiased. In general, this approach is used for the control variables at the individual level. The tax variables, however, employ the simple multiplication by \( +1 \) and \( -1 \) scheme. This is to keep the interpretation of the important coefficients as simple as possible.

\textbf{A Comment on Fixed Effects:} Including year and state fixed effects adds a twist to the analysis. For reasons of multicollinearity, in a model that includes year fixed effects, any control variables that change in value only by year cannot be added. Similarly, in a model that incorporates state fixed

\textsuperscript{18} Using the “weighted” variable and the “party in power” variable is only one of several structurally-similar possibilities that would be correct. Equally legitimate would be a model including the main effect, a dummy variable for the party in power, and an interaction term. We employ this latter specification for weighting the control variables.
effects, any variables that take on values that are time-constant but specific to each state also cannot be added. Within a linear regression, any continuous variable that takes on \( k \) values can be represented as well or better through the inclusion of \( k - 1 \) dummy variables. Further, if the relationship between the dependent variable and the independent variable in question is even slightly non-linear, then the non-parametric approach will actually yield a higher \( R^2 \) value.\(^{19}\) Several of the variables that are listed in the preceding sections, e.g. the national-level measures of percent change in real disposable income and unemployment, would exhibit this collinearity problem with respect to the year dummies. As a result, the “main effects” of these variables were not included when the regressions were run. However, these variables can still be interacted with the “party in power” variables as described previously and then added to the model without generating collinearity.\(^{20}\)

**VIII. Testing the models:** Because we employ a linear probability model at the individual level, there may be questions of how precisely to interpret the coefficients. The obvious and intuitive way to conceptualize them is as the average change in voters’ probabilities of voting for the candidate given

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\(^{19}\) Of course, a non-parametric approach can also quickly absorb degrees of freedom, thereby resulting in less efficient parameter estimates.

\(^{20}\) While this statement is true in the simplest sense, the conclusion does not hold in very complex models such as the one used here. Because certain variables only vary by year, such as the change in unemployment or real wages, they take on relatively few values. When these variables are interacted with the dummies that represent the parties-in-power, the explanatory power of the interactions is quickly exhausted. The result is that most statistical programs will begin to drop some of these interactions, making it difficult to estimate the effects associated with the original set of variables.
that the governor raises the tax in question. This change is measured in terms of percentage points. A reasonable-sounding interpretation, albeit an inappropriate one, is that the coefficient indicates the direction and size of impact on the electoral margin that the incumbent will obtain. This is an incorrect way to conceptualize the dependent variable, which is, after all, a description of individual behavior, but if the number of voters is large, it should be a close approximation.

Note that nearly all of the models code the tax variable using the scheme that is usually employed in the literature – multiplying the number of increases by +1 if there is a Democratic incumbent governor and –1 if the incumbent administration is Republican. Under certain conditions, this choice of coding will miss the underlying party-specific differences in electoral retribution, but it also makes interpretation of the coefficients relatively straightforward and simple.

Table 1, Two Basic Models: Table 1 presents the cumulative results of two basic specifications of the tax-vote relationships. Row (A) represents the results of a series of regressions using the simplest of all tax change measures, one identical to that used by Niemi et al. (1995), which is the sum of all tax changes per administration weighted by the party of gubernatorial control. The variable ranges from a –10 (Nebraska in 1982) to +7 (North Dakota in 1988). The typical respondent experienced a very minor tax change. The standard deviation for the ‘all tax change” variable is 3 such changes. Rows (B), (C), and (D) disaggregate the tax change variable into its component changes in income, sales, and “sin” taxes with the associated coefficients “right-justified” in the cells. The associated $R^2$ for the respective

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21 What this means is that if the coefficient is, for example, -0.05, then the voter will be five percentage points less likely to vote for the incumbent. So, if the voter would have had a 60 percent probability of voting for the incumbent if there had been no tax increases, then the same voter would have a 55 percent probability of voting for the incumbent if there had been a single tax increase. The changes in percentage points distinct from changes in percent should not be confused.
equations in rows (A) and for (B), (C), and (D) are contained in rows at the bottom of the table and labeled “$R^2$ for ‘all tax’ equation” and “$R^2$ for the ‘three tax’ equation.”

Column (1) displays the simple regression coefficients associated with the party-weighted tax variables in explaining the gubernatorial vote. In its most aggregated form, in Row (A) the sum of all changes in taxes has a strong, positive relationship with the vote. The $R^2$ for the equation, as denoted in the row titled “(A) $R^2$ for ‘all tax’ equation,” is .002. At its simplest, taxes appear to benefit the taxing party at the polls.

However, working along row (A) to the right, we add sets of control variables. In row (A) and column (2), the variables for time (9 binaries) and states (42 binaries) are added. The “all tax” coefficient remains positive, but is now insignificant. Adding the Republican and Democratic incumbency variables along with the time and state binaries (in row (A) and column (3)) now turn the coefficient into its expected negative value and the $R^2$ rises slightly. Adding the presidential approval/presidential vote variable (in column (4)) inserts a generous dose of partisanship to the equation, and the $R^2$ rises appreciably. Further, the variable for “all tax” change begins to equilibrate at the level of -.003, but statistically insignificant. The implication of the coefficient is simple: A standard deviation change in the value of the “all tax” variable, that is to say, for a Democrat, adding three tax changes of any kind to the revenue complement in the state will cost the Democratic candidate about 1% of a change in the voters’ probability of support. Three new Republican tax changes, by complement, will gain Democrats the same percentage of the vote probability. As we add further sets of controls in columns (5) through (7) the values of the coefficients remain steady at the -.004 to -.001 rate, but also remain as insignificant coefficients. While row (A) captures the effects of any and all tax changes, there is no a priori reason to expect that the political costs of each type of tax change will be identical. Kone and Winters (1993) detected greater punishment at the aggregate level of changes in the sales taxes.
Rows (B), (C) and (D) display the results of changes in each of the three tax components. With no controls and no rival variables other than the other tax variables, as reported in row/column (B/1), the income tax is, contrary to expectation, positively and significantly related to the vote probability, while changes in the sales taxes (C/1) are negatively related to the responsible gubernatorial party vote. Changes in sin taxes (D/1) are, also perversely, positively related to the vote. The $R^2$ is, for practical purposes, zero. The pattern of positive signs for income and sin tax changes and negative sign for the sales tax holds as we begin to add sets of controls.

Columns (2) through (7) report the relationships between changes in each of the three taxes and the vote as we systematically add sets of control variables. By adding gubernatorial incumbency variables, as set out in column (3), we now factor in political party effects – either with a Democratic incumbent, or Republican incumbent in the race – and a pattern of coefficients is established that is basically maintained until the final column: each sales tax change dampen voter preference on the order of 3% to 4%; while changes in other taxes have negligible impacts. Only in column (7) when the estimates of the quality of the Democratic or Republican gubernatorial candidates are added, does the sales tax variable drop marginally to a level of not quite significant. Strong high-quality candidates can ameliorate the impact of tax changes. Or, as the endogeneity logic would argue, strong, high-quality candidates are able to risk tax changes.

In the end, these results provide new perspectives on electoral retribution. We suggest three possible interpretations: one of tax “timing;” the second, the cost of political information; and, third, a coding issue. While the tax-summation measure (in row A) picks up voter retribution, only the sales tax changes seem to have consistently negative and generally significant effects upon the vote probability for the incumbent or the party’s nominee. This argues that an increase in sales taxes is more salient than an increase in the income or sin taxes. The reasonable explanation might have to do with the fact that citizens encounter the sales tax on an everyday basis, while they deal with the income tax just once a
year when filing returns or seem unable to notice the particular excise levies on various “sins.” Another distinction is that the income tax code is more complex due to the presence of exemptions and deductions, and thus it is more difficult for voters to ascertain the effect due to a legislated tax change. It also implies an incentive for politicians to tinker with the complex income tax code.\textsuperscript{22} This latter explanation implies that the coefficient on the income tax is subject to omitted variable bias of code complexity and voters’ informational barriers. Third, if the income tax statutes are so complex that legislated changes defy candidates’ and voters’ ability to identify and clarify their electoral implications, then an alternative coding strategy might be considered – going to the sources such as state legislative leaders and quizzing them regarding the “political” meaning of what appears to us to be simple, straightforward and easily identifiable changes in the tax code as set out, for example, in the biennial Book of the States. Finally, changes in sin taxes have little electoral impact.

\textit{Table 2, Party, Incumbency, Taxation and the Vote:} Row (A) of Table 2 presents the results of the “sum of all taxes” measure on voters’ decisions. Predictably, in column 1, which repeats the finding set out in column (7) of Table 1, the coefficient is negative, albeit insignificant, and suggests that a one standard deviation change in the taxing practice of an administration, e.g. from “0” or no tax changes during the prior four years to “3” Democratic-sponsored changes would result in about a 1% loss in the probability of a favorable vote. Consistent with our argument to this point, we split the sample of voters into those with incumbents defending their tax records vs. open seat races – open for reasons either of term limits or voluntary departures, as we do in row (A), columns (3) and (4). While the coefficient associated with races with both incumbents and nonincumbents have the expected negative sign, there are sizable standard errors suggesting that many incumbents overcome their tax records.

\textsuperscript{22} Note that the numbers of income tax and sales tax changes were roughly equal in our data set.
Rows (B) and (C) disaggregate the sample into races that defend a Republican taxing record (in (B)) and Democratic taxing records (in (C)), and then races with incumbents vs. open seats.

Asymmetries in signs (although neither coefficient is significant) occur on both counts. Looking first at column (2); Republican candidates defending the party’s taxing record advantage their Democratic opponents by about .4% per taxing action. Because the tax variable ranges from a value of “-10” for the most taxing Republican governors to “0” for those Republican governors who raised no taxes, the fewer the taxes raised by the Republican, the more disadvantaged was the Democratic gubernatorial nominee, thus the negative sign of the coefficient. Perversely, the positive coefficient in Row (C), Column (2) indicates that Democratic taxers appear to be advantaged by taxing.

Columns (5) and (6) further isolate those candidates most and least burdened by tax changes. The weak appear to be (insignificantly so) open-seat Republican candidates who are defending their fellow partisans’ taxing record as those most crucially affected. A standard deviation change in tax policy for such open seat Republican challengers, a move from no change to “2” tax changes, implies a 2% vote loss. However, none of these coefficients are statistically significant.

Table 3, Party, type of tax changed and incumbency: Table 3 parcels up the data by responsible incumbent party, by type of tax changed, and by nature of the political defense – an incumbent in the race vs. open seat races. Table 3 represents nine separate regressions testing for the effects of responsible political party control on subsequent voter retribution. The striking impression is that Republican candidates are more likely to be punished for taxing actions and Democrats appear to be more likely to be advantaged by voters for taxing actions. Further, there are asymmetries between taxes in terms of relative punishment with the sales tax, again, standing out as the retribution-prone tax change.

Among “all races” as set out in column (1), increases in income taxes by Democrats are not punished. No coefficient associated with taxing actions approaches significance and two of the three are
positive. For Republicans, income and sales tax changes have negative signs, and the coefficient for changes in the sales tax strongly suggests heightened likelihood of voting against the Republican.

Columns (2) and (3) divide the races into those with active defenders of records – races with incumbent vs. open seats with two challengers, one of whom may be endeavoring to bob and weave away from his/her party’s taxing record. The evidence suggests that there is little retribution wreaked against Democratic taxers. For incumbent Democrats, all of the coefficients are weak and one has the wrong sign. For nonincumbent Democrats, it appears that they may even gain in voter approval in the face of additions to the sales taxes imposed by their fellow partisan from the previous administration. The evidence for Republicans is more mixed. Of the six coefficients for the three taxes by incumbent and nonincumbent, two reach some level of statistical significance. Nonincumbent Republicans are punished for their party’s income tax record, while incumbent Republicans are strongly punished for a sales tax change. One sales tax change nets a 7% loss in the probability of an expected Republican vote for the sales-taxing-incumbent.

*Table 4, the State of the Economy:* The last statewide contextual factor that we examine is the economic climate of the state at the time of the election. The state of the economy should have a significant impact upon the voters’ reactions to when and which taxes are increased within a state. Our measure of fiscal health is the change in the statewide unemployment rate for the year before the election. In the face of the good-news of falling unemployment (columns 1, 2, and 3), voter retribution for tax changes should be dampened. If unemployment is rising (columns 4, 5, and 6), on the other hand, bad-news voters may have heightened macroeconomic concerns and should more likely punish those who tax. Table 4 arrays our data and tests for these hypotheses.23

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23 We drop from the regression the two continuous variables of statewide unemployment changes*Democratic governor and national unemployment changes*Democratic president.
Columns (1) examines for all races the good news conditions when unemployment is falling. We include a stacked series of interaction terms. Rows (a), (b) and (c) set out the net direct impact of the changes in the three taxes. Rows (d) interacts the falling unemployment rates with Democratic party governorship. Rows (f), (g) and (h) in a three-way interaction codes races as to type of tax change under conditions of falling unemployment by Democratic party gubernatorial control. No clear simple effects occur. The net effects of tax changes (rows a, b, and c) appear to be attenuated by the added contextual factors. In the case of falling unemployment, none of the first-order tax coefficients is significant, nor are any of the added interaction variables of falling unemployment times the Democratic party control variable. In fact, the interaction term of “falling unemployment X Democratic administration” has a contrary negative sign.

The next two columns split all races into those with defending incumbents (2) and those that are open contests under the “good news” condition. No clear effects occur for incumbents. However, in open seat contests, Democrats appear to be damaged by past income tax and sin increases, but benefited by changes in the sales tax.

Column (4) examines for all races the impact of tax changes under the “bad news” of rising unemployment. Again, no clear message appears among the broader tax variables, rows (a), (b), and (c). By decomposing the tax changed during rising, good times (columns 5 and 6), we discover that income tax changes by Democrats are positively rewarded by voters, both for incumbents and nonincumbents. That is to say in hard economic times, Democrats appear able to defend a rise in the income tax – a tax likely to hit, or at least can be represented as “likely to hit,” the better-off. Changes in sales taxes appear marginally to be punished, while sin tax changes appear to have little or no effects.

Table 5, Voter Characteristics – Income: We turn to the question of whether electoral retribution depends upon the characteristics of the voter, which we accomplish by means of interaction terms. Employing interactions at the individual level when the variable of interest has a number of
categories presents a dilemma. Examples of such variables include education and income. Because income in the VNS study is coded using ordered multichotomous schemes, we converted the variable into a continuous one – albeit with some degree of measurement error, as explained earlier on page 21. For our purposes in Table 5, we created two binary variables for income – one for those in the upper one-third of the income distribution and a second for those in the lower one-third. These binaries were then interacted with the number of occasions for which each, say, wealthy voter’s income, sales, or sin taxes were increased during the prior incumbents’ terms. The same procedure was carried out for the personal income, sales and sin tax binaries for the lower third of the income distribution.

Table 5 displays the results for our analysis for all races (in column 1); for races where incumbents were defending their records (column 2); and for all open-seat races (in column 3). Looking first at “all races:” the effects of changes in taxes retain their rough pattern of signs and relatives sizes. No effects appear for the income tax; negative effects for the sales tax changes at about a 2% loss (t=1.75); and a negative effect of sin tax changes. Rows (d) and (e) contain the coefficients and associated standard errors for the simple income binaries, and, as expected, wealthier voters were less likely to vote Democratic and lower income voters more likely. Rows (f) through (h) contain coefficients associated with being in the indicated income class multiplied by the number of indicated tax changes. In the case of “all races,” wealthy voters appear to vote counter-intuitively: on behalf on incumbents/parties that increase the income tax; opposing those who increase the sales tax; and favoring changes in sin taxes. Lower income voters oppose those who increase their income and sales taxes and favor – significantly so – those who finance government by means of increases in the sin taxes, also not an intuitive finding, as gas, alcohol and cigarette taxes fall disproportionately on those at the lower ends

24 As we noted earlier, the income variable has been transformed by an across-time price deflator.

25 The original transformed income variable was not included in the regression
of the income distribution. Note that the values of the interaction term for “lower income class* in sin taxes” vary from –8 to +5.

Columns (2) and (3) display the analysis for races with and without incumbents. For races with incumbent defenders-of-record, general retribution in the face of sales tax increases is marginally heightened, but so is the standard error. For races with incumbents defending their tax records, none of the interaction terms are consistently significant. Coefficients which appear to be the best predictors are those associated with income tax changes and high-income voters’ reactions – positively so (t=1.73), and the opposing impact on low income voters (t=-1.93).

The analysis of the impact on open seat races of tax changes is not particularly clarifying. Changes in sin tax changes are rewarded (see row c) and particularly so among low-income voters (row (k), column (3)) in open seat races. The other sizable coefficients are associated with the contrasting impacts of the upper and lower income binaries on the vote. In summary, there is no compelling evidence for the expected pattern of voting self-interest; indeed, the lack of evidence merits rejecting the hypothesis that higher income citizens support the sales tax while lower income citizens support the income tax.

26 This finding squares with an oft-observed characterization of legislators about their poorer constituents – they favor changes in sin taxes over all others (personal conversations with author).

27 Another interpretation may be helpful in terms of ascertaining why the results are contrary to theoretical predictions. Because the correlation between income and education is quite high, it may be the case that the interaction terms are tapping into respondents’ educational status as well. Those individuals with a great deal of education may more likely oppose regressive taxes because they realize that these taxes are imposed predominantly on those citizens who are least able to pay. This might lead
Table 6, Partisan Identification: One of the common ways in which our two parties are painted is that the Democratic Party favors “tax and spend” politics while the Republican Party prefers fiscal restraint. If this is an accurate description of reality, then it might follow that self-identified Democrats might be more willing to accept taxes than self-identified Republicans. Table 6 shows three specifications designed to investigate this proposition. The interaction term in this model is the number of taxes raised, weighted by the party in power and multiplied by +1 if the respondent identified himself or herself as Democratic and 0 if he or she identified with the Republican Party. For these models, those respondents who identified themselves as either independent or “other” were the excluded class.

None of specifications of the interaction terms was significant. However, it is notable that while small in effects, Democratic voters appear to punish an income tax increase (column (1) and row (b)) while rewarding sales and sin tax increases relative to their Republican counterparts (column (1) and rows (d) and (f)). This is a puzzling result. Theory and conventional wisdom would suggest that Republicans earn higher incomes and thus would be disproportionately hurt, dollar-for-dollar, by an income tax relative to a sales tax. Similarly, it is often thought that Democrats may support income tax programs, which place a great deal of the burden on high-income citizens, in order to obtain funding for social programs. The results from the models in Table 5, even though not significant, suggest that this logic should be reconsidered. It is true that the size of the standard errors relative to the magnitudes of the coefficients means that even the direction of the effects cannot be inferred in any meaningful sense. However, it is also true that were the effect suggested by theory to be pronounced, the magnitudes of the coefficients would be sufficiently large to overwhelm the standard errors. This clearly does not happen in any of these specifications, and as a result it is fair to conclude that the conventional wisdom that such individuals to oppose the sales tax and support the income tax, which would be consistent with the results from this table.
Democratic voters are more conducive than Republicans to the politics of taxing and spending needs reevaluation. It may be the case that Democrats are more favorably inclined to spend, but averse to taxing – not at all an unexpected set of opinions to hold – especially if the typical Democrat were hopeful that that “fellow behind that tree, over there” would be the one most likely to be taxed. There also may be an alternative explanation for the odd results. It could be that because the model does not account for whether the incumbent candidate raising taxes is a Democrat or a Republican, there is omitted variable bias. The unreported disaggregation of the races, as we do in columns (2) and (3) does not appear to clarify the issue.

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28 A characterization of voters and tax politics attributed to Senator Russell Long (D-LA).

29 A similar test was conducted on a much smaller subset of elections of the impact of liberal and conservative ideological self-identification in the presence of changes in income, sales and sin taxes through use of dummy variables of ideological position*changes in taxes. No consistent impacts occurred. While liberal and conservative voters are strongly related (pro- and con-) with the Democratic vote for governor, even in the presence of similar partisan identification factors, the impact of their ideological preferences was not heightened in the presence of tax changes.
**IX. Conclusions:** We sought evidence for whether and under what conditions voters in gubernatorial elections respond to various kinds of tax increases when signed into law. Our data would appear to be the most comprehensive set available yet – 43 states, 228 elections, 315,000 voters -- for testing claims of voter retribution. There is evidence from other studies of the modest impacts of taxing on the vote at the aggregate, election outcomes level, as well as among a cross-section of voters at a specific time period. Our results reconfirm the modesty of the impact of tax increases on voters’ behavior. Further, we can reasonably assert that the impacts are vanishingly small, albeit not zero.

When sales, income, and sin tax changes are combined into a single indicator, given proper controls, there appears to be an overall negative, but insignificant, effect. When the taxes are examined tax-by-tax, the sales tax emerges as the most electorally-sensitive. We stipulated a set of conditions that might exacerbate or dampen retribution – by incumbent vs. open seat races and by party. Incumbents plausibly should be held to a higher standard of responsibility for tax actions by voters, while the open-seat, responsible-party successor might artfully dodge retribution. However, the evidence suggests that no clear distinction occurs among voters. Further, when all taxes are lumped together, no across-party distinctions appeared, either. The lack of evidence for incumbents is consistent with our view of forward-thinking, strategic-calculating politicians.

When the lumped tax changes are cleaved into the three components of sales, income and sin and examined by incumbent/open-seat and by party, a not-obvious pattern begins to emerge: both incumbent and open-seat Democrats appear to be much less vulnerable to tax changes, while both incumbent and open-seat Republicans appear more vulnerable. A further distinction that is maintained throughout our analysis is that changes in sin taxes appear to least impact voters.

One contextual condition that might sensitize voters to tax changes would be the state of the economy. We expect that voters are more likely to punish “taxers” in bad times of rising unemployment and be more spare in punishing during good times. There was no evidence of such a pattern in our
sample of states, elections, and voters. Indeed, the most robust finding reinforced our impression that Democrats appear to be better able to dodge tax-related retribution of voters.

Our final analyses focused on individual-level traits by asking whether voters by income or by party appeared more electorally-sensitive to tax changes. Changes in the sales tax appeared to be weakly and negatively sanctioned by upper- and lower-income voters, while changing the sin taxes appeared to gain lower-income voters’ support. Upper income voters, contrary to reasonable expectation appeared weakly favorable to income tax changes. No particular effects appeared when voters were examined by party.
Bibliography


Harris, Louis. 1959. “Why the Odds are Against a Governor’s Becoming President.” *Public Opinion Quarterly* 4: 370.


### Table 1: The Effects of Taxation Increases on the Vote

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<thead>
<tr>
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<th>(1)</th>
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<th>(4)</th>
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<th>(6)</th>
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<tbody>
<tr>
<td>(A) Sum of All Taxes</td>
<td>0.0077** (.0003)</td>
<td>0.0042 (.0025)</td>
<td>-0.003 (.003)</td>
<td>-0.004 (.003)</td>
<td>-0.003 (.003)</td>
<td>-0.003 (.003)</td>
<td>-0.001 (.003)</td>
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<td>Mn=.09; sd= 3; mn/mx= -10/7</td>
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<tr>
<td>(B) Income tax</td>
<td>0.014** (.0015)</td>
<td>0.019 (0.017)</td>
<td>0.005 (0.014)</td>
<td>0.0000 (0.013)</td>
<td>-0.0007 (0.014)</td>
<td>0.003 (0.012)</td>
<td>0.006 (0.012)</td>
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<tr>
<td>(C) Sales tax</td>
<td>-0.031** (.0015)</td>
<td>-0.044** (0.010)</td>
<td>-0.029** (0.011)</td>
<td>-0.034** (0.011)</td>
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<td>-0.030** (0.010)</td>
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<td>(D) Sin Taxes</td>
<td>0.015** (.0005)</td>
<td>0.013** (0.005)</td>
<td>0.003 (0.005)</td>
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<td>(e) State &amp; year fixed effects</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>(h) National and state economy variables</td>
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<td>No</td>
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<td>Yes</td>
<td>Yes</td>
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<td>(i) Respondent characteristics: partisanship, ideology, age, gender, race, income, education</td>
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<td>No</td>
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<td>No</td>
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<td>.03</td>
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Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. The tax variables are the number of times the tax was raised in the electoral period, multiplied by +1 if the incumbent governor is a Democrat and –1 if the incumbent is a Republican. Models include the respective sets of controls as set out in rows (d) through (i). #=p < .10; **= p < .01, *p= < .05. The complete set of tables can be obtained by contacting the second author.
Table 2: Party, Incumbency and Taxation on the Vote

<table>
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<tr>
<th>Nature of population</th>
<th>All voters, all races</th>
<th>All voters, all races</th>
<th>Races with incumbent</th>
<th>Open seats</th>
<th>Races with incumbent</th>
<th>Open seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) The sum of all increases in income, sales, and sin taxes. Mn=.08; sd=3; min/mx=-10 to 7</td>
<td>-0.001 (0.003)</td>
<td>-----</td>
<td>-0.003 (0.006)</td>
<td>-0.004 (0.005)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>(B) The sum of all increases in income, sales, and sin taxes made by Republican administrations. Mn= -1.1; sd=1.8; min/mx= -10 to 0</td>
<td>-----</td>
<td>-0.0040 (0.0050)</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-0.002 (0.007)</td>
</tr>
<tr>
<td>I The sum of all increases in income, sales, and sin taxes made by Democratic administrations. Mn= 1.2; sd= 1.7; min/mx= 0 to 7</td>
<td>-----</td>
<td>0.0024 (0.0045)</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-0.005 (0.009)</td>
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<tr>
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<td>.34</td>
<td>.39</td>
<td>.34</td>
<td>.39</td>
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</table>

Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. The tax variables are the number of times the tax was raised in the electoral period, multiplied by +1 if the incumbent governor is a Democrat and –1 if the incumbent is a Republican. All models include controls based upon the following variables: state and year fixed effects; the party of the incumbent; whether the incumbent is running; the respondent’s partisan identification, ideology, age, gender, race, income, and education; percentage change in national and state unemployment; percentage change in national real disposable income; presidential approval; previous Democratic margin; candidate characteristics of age, gender, and quality ratings. #=p < .10; **= p < .01, *= p < .05,. The complete set of tables can be obtained by contacting the second author.
Table 3: Party, Incumbency and Taxation on the Vote

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<tbody>
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<td></td>
<td>All races</td>
<td>Races with incumbents</td>
<td>Open seat races</td>
</tr>
<tr>
<td>(a.1) Democratic increases in # of income taxes. Mn=.03; sd=.6; min/mx= 0 to 3</td>
<td>.011 (.016)</td>
<td>-.0002 (.0346)</td>
<td>.009 (.014)</td>
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<td>(a.2) Republican increases in income taxes. Mn= -.4; sd=.6; min/mx= -2 to 0</td>
<td>-.006 (.016)</td>
<td>.0095 (.0266)</td>
<td>-.040# (.021)</td>
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<td></td>
<td></td>
<td><strong>R^2</strong></td>
<td></td>
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<tr>
<td></td>
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<td>.35</td>
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<tr>
<td>(b.1) Democratic increases in # of sales taxes. Mn=.28; sd=.56; min/mx= 0 to 3</td>
<td>.009 (.013)</td>
<td>.022 (.031)</td>
<td>.046** (.014)</td>
</tr>
<tr>
<td>(b.2) Republican increases in sales taxes. Mn= -.4; sd=.6; min/mx= -2 to 0</td>
<td>-.033** (.011)</td>
<td>-.071* (.034)</td>
<td>-.0007 (.0167)</td>
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<tr>
<td>(c.1) Democratic increases in # of sin taxes. Mn=1.6; sd= 1.4; min/mx= 0 to 5</td>
<td>-.0014 (.0050)</td>
<td>-.013 (.008)</td>
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<td>(c.2) Republican increases in # of sin taxes. Mn= -1.67; sd= 1.44; min/mx= -8 to 0</td>
<td>.0008 (.0068)</td>
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</table>

Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. The tax variables are the number of times the tax was raised in the electoral period, multiplied by +1 if the incumbent governor is a Democrat and –1 if the incumbent is a Republican. All models include controls based upon the following variables: state and year fixed effects; the party of the incumbent; whether the incumbent is running; the respondent’s partisan identification, ideology, age, gender, race, income, and education; percentage change in national and state unemployment; percentage change in national real disposable income; presidential approval; previous Democratic margin; candidate characteristics of age, gender, and quality ratings. The complete set of tables can be obtained by contacting the second author of the paper.

#=p < .10; **= p < .01, *p= < .05,. The complete set of tables can be obtained by contacting the second author.
Table 4: Good Times vs. Bad Times and Taxation Increases on the Vote
(Standard errors in parentheses)

Reactions to changing taxes by varying economic climate and incumbency and open seats
(Standard errors in parentheses)

<table>
<thead>
<tr>
<th>(1) All races</th>
<th>(2) Races w/ incumbent running for reelection</th>
<th>(3) Races w/o incumbent running for reelection</th>
<th>(4) All races</th>
<th>(5) Races w/ incumbent running for reelection</th>
<th>(6) Races w/o incumbent running for reelection</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>“Good times” with falling unemployment</td>
<td>“Bad times” with rising unemployment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Effect of increasing income tax</td>
<td>.016 (.015)</td>
<td>.008 (.043)</td>
<td>.007 (.012)</td>
<td>-.011 (.017)</td>
<td>-.003 (.03)</td>
</tr>
<tr>
<td>(b) Effect of increasing sale tax</td>
<td>-.010 (.012)</td>
<td>-.034 (.035)</td>
<td>.010 (.012)</td>
<td>-.011 (.013)</td>
<td>-.041 (.044)</td>
</tr>
<tr>
<td>(c) Effect of increasing sin tax</td>
<td>-.002 (.005)</td>
<td>-.005 (.008)</td>
<td>-.005 (.006)</td>
<td>.002 (.005)</td>
<td>.0003 (.01)</td>
</tr>
<tr>
<td>(d) Falling UE * Dem Gov Pty</td>
<td>-.018 (.018)</td>
<td>-.027 (.031)</td>
<td>.003 (.027)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(e) Rising UE * Dem Gov Pty</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>-.011 (.016)</td>
<td>.03 (.03)</td>
</tr>
<tr>
<td>(f) Income tax changes * Falling UE*DEMPNTY</td>
<td>-.021 (.022)</td>
<td>.02 (.05)</td>
<td>-.042# (.025)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(g) Sales tax changes * Falling UE*DEMPNTY</td>
<td>-.007 (.016)</td>
<td>-.045 (.046)</td>
<td>.061** (.016)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(h) Sin tax changes * Falling UE*DEMPNTY</td>
<td>.009 (.009)</td>
<td>.009 (.013)</td>
<td>-.029# (.015)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(i) Income tax changes * Rising UE*DEMPNTY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.04* (.02)</td>
<td>.104# (.057)</td>
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<tr>
<td>(j) Sales tax changes * Rising UE*DEMPNTY</td>
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<td>---</td>
<td>-.005 (.018)</td>
<td>-.028 (.055)</td>
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<tr>
<td>(k) Sin tax changes * Rising UE*DEMPNTY</td>
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</tbody>
</table>
Voters who identify themselves as independents and “other” are excluded. Baseline category is self-identified Republicans. Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. All models include controls based upon the following variables: state and year fixed effects; the party of the incumbent; whether the incumbent is running; the respondent’s partisan identification, ideology, age, gender, race, binary variables for upper one-third and lower one-third of states’ last year change in unemployment rate weighted by Democratic party affiliation of responsible governor, education; percentage change in national unemployment; percentage change in national real disposable income; presidential approval; previous Democratic margin; candidate characteristics of age, gender, income and quality ratings. # p < .10  * p < 0.05  ** p < 0.01
Table 5: The Effects of Voters’ Incomes and Taxation Increases on the Vote
(Standard errors in parentheses)

<table>
<thead>
<tr>
<th>Individual income and reactions to taxes</th>
<th>(1) All races</th>
<th>(2) Races with incumbent running for reelection</th>
<th>(3) Races without incumbent running for reelection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Effect of increasing income tax</td>
<td>0.0040</td>
<td>0.023</td>
<td>-0.006</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.028)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>(b) Effect of increasing sale tax</td>
<td>-0.021#</td>
<td>-0.059</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.037)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>(c) Effect of increasing sin tax</td>
<td>-0.0043</td>
<td>-0.007</td>
<td>0.025**</td>
</tr>
<tr>
<td></td>
<td>(0.0034)</td>
<td>(0.008)</td>
<td>(0.0089)</td>
</tr>
<tr>
<td>(d) Binary variable for upper one-third of income distribution</td>
<td>-0.006#</td>
<td>-0.0009</td>
<td>-0.010**</td>
</tr>
<tr>
<td></td>
<td>(0.0033)</td>
<td>(0.0046)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>(e) Binary variable for lower one-third of income distribution</td>
<td>0.0096**</td>
<td>0.011**</td>
<td>0.011*</td>
</tr>
<tr>
<td></td>
<td>(0.0033)</td>
<td>(0.003)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>(f) Interaction: upper one-third * N of income tax change</td>
<td>0.0045</td>
<td>0.013#</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>(g) Interaction: upper one-third * N of sales tax change</td>
<td>-0.0039</td>
<td>-0.001</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.011)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>(h) Interaction: upper one-third * N of sin tax change</td>
<td>0.0029#</td>
<td>0.0025</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.0017)</td>
<td>(0.0019)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>(i) Interaction: lower one-third * N of income tax change</td>
<td>-0.009</td>
<td>-0.019#</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.010)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>(j) Interaction: lower one-third * N of sales tax change</td>
<td>-0.0057</td>
<td>0.015</td>
<td>-0.009#</td>
</tr>
<tr>
<td></td>
<td>(0.0056)</td>
<td>(0.010)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>(k) Interaction: lower one-third * N of sin tax change</td>
<td>0.0044**</td>
<td>0.0009</td>
<td>0.006**</td>
</tr>
<tr>
<td></td>
<td>(0.0018)</td>
<td>(0.0025)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>N</td>
<td>274210</td>
<td>172867</td>
<td>137089</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.401</td>
<td>.407</td>
<td>.394</td>
</tr>
</tbody>
</table>

Voters who identify themselves as independents and “other” are excluded. Baseline category is self-identified Republicans. Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. All models include controls based upon the following variables: state and year fixed effects; the party of the incumbent; whether the incumbent is running; the respondent’s partisan identification, ideology, age, gender, race, binary variables for upper one-third and lower one-third of income distribution, education; percentage change in national and state unemployment; percentage change in national real disposable income; presidential approval; previous Democratic margin; candidate characteristics of age, gender, and quality ratings. #=p < .10; *p= < .05, **= p < .01. The complete set of tables can be obtained by contacting the second author.
Table 6: Partisan Identification and the Effects of Taxation on the Vote  
(Standard errors in parentheses)

<table>
<thead>
<tr>
<th>Individual partisanship and reactions to taxes</th>
<th>(1) All races</th>
<th>(2) Races with incumbent running for reelection</th>
<th>(3) Races without incumbent running for reelection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Effect of incumbent/incumbent party increasing income tax</td>
<td>.005 (.016)</td>
<td>.018 (.032)</td>
<td>-.022# (.012)</td>
</tr>
<tr>
<td>(b) Added effect if respondent is Democrat</td>
<td>-.006 (.015)</td>
<td>-.008 (.024)</td>
<td>.011 (.017)</td>
</tr>
<tr>
<td>(c) Effect of incumbent/incumbent party increasing sales tax</td>
<td>-.024* (.012)</td>
<td>-.048 (.037)</td>
<td>.022 (.018)</td>
</tr>
<tr>
<td>(d) Added effect if respondent is Democrat</td>
<td>.0005 (.013)</td>
<td>-.007 (.026)</td>
<td>-.0007 (.015)</td>
</tr>
<tr>
<td>(e) Effect of incumbent/incumbent party increasing sin taxes</td>
<td>-.005 (.004)</td>
<td>-.004 (.007)</td>
<td>-.023** (.009)</td>
</tr>
<tr>
<td>(f) Added effect if respondent is Democrat</td>
<td>.005 (.004)</td>
<td>.0015 (.005)</td>
<td>.006 (.005)</td>
</tr>
</tbody>
</table>

N 274210 154155 120784  
$R^2$ .40 .40 .39

Voters who identify themselves as independents and “other” are excluded. Baseline category is self-identified Republicans. Coefficients denote the increased probability of voting for the Democratic candidate for each year the incumbent increased the tax rate for each tax. All models include controls based upon the following variables: state and year fixed effects; the party of the incumbent; whether the incumbent is running; the respondent’s partisan identification, ideology, age, gender, race, income, income, and education; percentage change in national and state unemployment; percentage change in national real disposable income; presidential approval; previous Democratic margin; candidate characteristics of age, gender, and quality ratings. 
# = p < .10; ** = p < .01, * = p < .05. The complete set of tables can be obtained by contacting the second author.