Corruption and Voter Participation: Evidence from the U.S. States [*]

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February 23, 2008

Abstract: The literature on voter turnout focuses on the determinants of the electorate's vote supply. There is growing recognition, however, that the demanders of votes – candidates, political parties and interest groups – have strong incentives to invest resources in mobilizing support on Election Day. We test the hypothesis that corruption rents increase the value of holding public office and, hence, elicit greater demand-side effort in building winning coalitions. Analyzing a panel dataset of public officials convicted of misusing their offices between 1977 and 2005, we find, after controlling for other influential factors, that governmental corruption raises voter turnout rates in gubernatorial elections.

JEL Classifications: D72, K4, H1

Keywords: Political Corruption, Vote Demand, Voter Turnout, Rent-seeking

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* Paper presented at the 2007 Southern Economic Association Meetings, New Orleans, LA. We would like to thank, without implicating, the conference participants for useful comments.

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1. Introduction

Most of the existing literature on voter turnout focuses on the determinants of vote supply. Ever since Downs (1957) advanced his model of the rational voter, whose decision to participate in elections hinges on a comparison of the benefits and costs of voting to him personally, considerable scholarly effort has been devoted to identifying the factors that either motivate or deter voters from going to the polls on Election Day. The stylized facts deduced from empirical analyses of aggregate voting data suggest that turnout rates tend to be higher among voters who are older, have more years of schooling and earn larger incomes. On the other hand, turnout rates tend to be lower where the requirements for registering to vote are more onerous, where there is no penalty for not voting and on days when the weather is bad. The weight of the evidence also suggests that, because one vote is more likely to be decisive when the margin of victory is thin, voter participation is higher in "close" elections than those in which a candidate or ballot issue wins by a landslide (Geys 2006).

But if the supply of votes depends at least in part on the instrumental consequences of voting, many of the same forces also will animate the behavior of the elected politicians who demand the electorate's votes. Rational candidates for public office and the political parties, interest groups and others who support them must balance the benefits and costs of the effort required to win an election. In order to prevail at the polls, successful candidates must help solve the collective action problem faced by the members of their hoped-for winning coalitions, among whom the spoils of victory will be shared and who therefore individually will be tempted to free-ride. Politicians, in short, must become strategic actors in the electoral process (Jacobson and Kernell 1983), working to raise the benefits and lower the costs of prospective voters in ways similar to group leaders and elite actors who energize and mobilize voters to turn out on Election Day (Morton 1987; Uhlaner 1989; Shachar and Nalebuff 1999).

The efforts expended by candidates and their supporters to win political office take many forms. In competing for votes, politicians extol their own virtues and disparage their opponents,

engage in advertising to promote their policy positions and to enhance their name-recognition, make promises to support new programs or defend existing ones that transfer wealth to key electoral constituencies, and pledge preferential treatment in the awarding of government jobs and procurement contracts. They may also offer selective incentives (Olson 1965) to get out the vote on Election Day, such as providing transportation to the polls and distributing "walking around money".

Electioneering effort on the part of candidates and their campaign volunteers, especially when it takes the form of personal contacts with prospective voters (Kramer 1970–1971), helps resolve the Downsian paradox of not voting, and expending more effort increases turnout, even holding campaign spending constant (Cox and Munger 1989). Linking politicians' demands for votes with vote supply in this way suggests that voter turnouts will be heavier when candidates invest more time and money campaigning for office – and they will rationally do so when the expected payoff from winning is greater. The expected payoff to a political campaign, in turn, is equal to the probability of winning times the anticipated value of public office minus the costs of mobilizing the votes needed for victory (Karahan et al. 2006).

While the value of a political office depends on many things, including the pay, the perks and the prestige it offers, we turn attention in what follows on the opportunities made available by positions of public trust for collecting corruption rents. Unlawful though it may be, the possibility of engaging in bribe-taking and other illegal activities raises the expected payoff to winning an election over and above that which would be anticipated by honest candidates that refrain from misusing their offices for personal gain. And if opportunities for corruption increase the expected returns to office-holding, corruption also raises candidates' demands for votes, hence leading to greater electioneering effort and, other things equal, heavier voter turnouts.

We test the hypothesis that voter turnout is positively related to the prevalence of corruption in public office using a panel dataset drawn from gubernatorial elections in the 50 U.S. states between 1977 and 2005. Estimating a random-effects model that includes variables

commonly used in the existing literature as influencing the number of voters who go to the polls on Election Day, we find that voter turnout is indeed higher in states where more public officials had been convicted of corruption in the previous four-year period, as the demand-side theory predicts.

The remainder of the paper is organized as follows. Section 2 summarizes prior scholarly work on the determinants of voter turnout, with special attention to the impact of electoral closeness. Our dataset is described in Section 3 and our empirical results are reported in Section 4. Section 5 concludes.

2. Electoral closeness, political corruption and voter turnout

The issue of voter turnout and electoral closeness is one of the most widely addressed issues in political economy (Matsusaka and Palda 1993). The theory of the rational voter, who participates in elections to advance his own self-interests, has evolved over time, initially applying marginal analysis to the individual's decision to vote, and focusing more recently on the role played by political institutions, such as parties, interest groups and their leaders, and campaign finance laws.

The literature begins with Downs (1957), who contended that individuals decide whether or not to vote based on the costs and benefits associated with being decisive in an election. Riker and Ordeshook (1968) expanded on this view, identifying many socioeconomic factors that motivate voters. Later, the focus shifted toward asking whether voting is an investment or a consumption good (Stigler 1972; Tollison and Willet 1973; and Barzel and Silberberg 1973). The conclusion drawn from this early work is that if a voter perceives the probability of his or her vote being electorally decisive as being close to zero, the decision to vote then hinges on whether the consumption or psychic benefits of voting exceed the costs. But even if the consumption benefits of voting are large, the Downsian model also implies that, because going to the polls on Election Day is unlikely to affect the outcome, voters will have little incentive to become informed about the candidates and ballot issues; they instead will rationally be ignorant.

Empirical studies of voter turnout relying on theories of what has come to be called instrumental voting have examined a variety of election and constituent characteristics.[1] Since an individual's vote can be pivotal only if the votes of all other participants are evenly divided, the implication of Down's model that turnout will tend to be higher in "close" elections has received the most attention, with scholars debating how closeness should be measured, and whether these measures should be computed ex-ante or ex-post (Abamson et al. 2007; Endersby et al. 2002; and Kunce 2001). Other scholars have explored how voters receive and process information about candidates and election issues (Fridkin and Kenney 1999; Matusaka 1995; and Carter 1984). Still others have focused on the socioeconomic and institutional factors that mobilize voters. Hill and Leighley (1999) focus on race, Primo and Milyo (2006) examine the role of campaign finance laws, Cox and Munger (1989) address campaign expenditures, Patterson and Caldeira (1983) and Paterson et al. (1985) emphasize the mobilization of voters via campaign spending, partisan competition, the closeness of individual contests and the presence of other, more salient races on the ballot. Smith (2001), Tolbert et al. (2001) and Matusaka (1993) examine turnout in voting on initiatives and referendums.

According to Matsusaka and Palda (1993), Matsusaka (1995), and Matsuaka and Palda (1999), the rational voter theory has produced mixed empirical results. Specifically, after providing a brief review of the literature, Matusaka and Palda (1993) argue that the main defect in prior work is using aggregate voting data to explain what is in fact an individual decision to participate or not. Relying on surveys of Canadian voters, Matsusaka and Palda (1999) find no evidence that electoral closeness influences the probability that a potential voter actually votes. Indeed, they conclude that very little of the variation in voter turnout can be explained by most of the "standard" independent variables, such as age, income and education, leaving much of the observed variation to myriad unobservable factors. Geys's (2006) more recent meta-analysis of aggregate-level studies of voter turnout does, however, yield evidence that participation tends to be greater, ceteris paribus, when elections are closer, candidates spend more and constituencies

are less populous and, hence, voting is more likely to be decisive. Fauvelle-Aymar and François (2006), studying voter participation in elections at the legislative-district level in France, and Rallings and Thrasher (2007), analyzing the responses to a survey of individual voters in England, also report evidence that electoral closeness, no matter how measured, has important and meaningful impacts on voter turnout.

Another strand of the relevant literature examines voter turnout from the perspectives of the political elites and group leaders who benefit personally from winning an election (Morton 1988; Uhlaner 1989; Shachar and Nalebuff 1999). In this view, closeness is a significant determinant of turnout, not because it changes the probability of a single vote being decisive, but rather because closer elections raise the expected payoff to candidates and their organizations of getting supporters to the polls on Election Day. Candidates themselves, political parties and the leaders of other organizations with important stakes in election outcomes have incentives to work harder at mobilizing voters in close races because additional votes have a larger impact at the margin on the probability of winning. Indeed, greater electioneering effort by candidates and the elites who back them tends to raise voter turnout even if perceived closeness is wholly unrelated to the participation decisions of individual voters (Aldrich 1993).[2]

Treating politicians and parties as strategic actors in the electoral process (Jackson and Kernell 1983) suggests a demand-side theory of voter turnout, which predicts greater voter participation when candidates and their organizations invest more time and money in their election campaigns. More electioneering effort will in turn be forthcoming when the office being sought is more valuable and when the contest is expected to be close.

Some elective offices are more valuable than others for a variety of reasons, including pay, perks, their usefulness as steppingstones to higher office, and the opportunities they afford for making personal contacts and acquiring human capital that raise the officeholder's expected income after his or her public career is at an end. The returns to holding public office likewise are increased by the chances they provide for engaging in bribe-taking and other corrupt activities. A

position of public trust that offers illegal forms of compensation is worth more than one from which the incumbent expects merely to draw a fixed government salary and to enjoy whatever status and lawful non-pecuniary rewards the post confers.

While the literature has focused on the determinants of corruption, few researchers have looked at the impact of corruption beyond its chilling effects on economic growth.[3] Recognizing that if corruption increases the expected returns to office-holding it also increases candidates' demands for votes, Karahan et al. (2006) examine the relationship between voter turnout rates in county supervisor races in Mississippi's November 1987 statewide election and the number of incumbent supervisors convicted of corruption in an FBI sting operation ("Operation Pretense") that ran for three years prior to Election Day. Holding other determinants of voter participation constant, they find that turnout was heavier in 26 of the state's 82 counties where one or more supervisors had been caught soliciting or accepting bribes from vendors seeking to supply materials needed to maintain county roads and bridges. In a companion study, Karahan et al. (2007) find the same positive correlation between county supervisor corruption and voter participation in the November 1988 general election, when voters were given the option of replacing the status quo decentralized "beat" system of county governance with a more centralized "unit" system that its proponents contended would be less corruption-prone.[4]

The work of Karahan et al. (2006; 2007) serves as a point of departure for the present paper. Their empirical results lend support to a model of voter participation in which opportunities for corruption increase the returns to holding public office. The model predicts that, holding the probability of detection constant, corruption elicits more electioneering effort both from incumbents hoping to retain their offices and by challengers attempting to unseat them and, moreover, that additional investments by candidates and political parties in mobilizing their supporters raises voter turnout. In what follows, we extend these ideas to the national level by exploring the relationship between public corruption and voter turnout rates in gubernatorial elections.

3. Data

To test the hypothesis that public sector corruption leads to greater voter turnout, we use pooled time-series data from the gubernatorial elections held in the 50 U.S. states over the period 1977 to 2005. Here, we briefly describe each of the variables entered in our models and, in Table 1, report descriptive statistics. More precise variable definitions and data sources are provided in Appendix 1.

Voter turnout (*TURNOUT)* is measured as the total number of votes cast in each gubernatorial election in our sample divided by the corresponding state's voting age population and is taken from the *Statistical Abstract of the United States*.[5] *CORRUPT* is the number of public officials convicted of corruption by state by year; the observations are derived from the U.S. Department of Justice's "Report to Congress on the Activities and Operations of the Public Integrity Section." This publication lists the number of federal, state and local public officials convicted on corruption-related criminal charges by state. The crimes investigated by the Justice Department include a variety of ways in which public officials may misuse their offices, such as conflict of interest, fraud, violations of campaign finance laws and obstruction of justice.[6]

Given that our empirical model focuses on the relationship between public corruption and voter turnout in U.S. gubernatorial elections, our dataset ideally would include only the state and local officials convicted each year of misusing their offices. Unfortunately, however, the Justice Department's Public Integrity Section reports by state the number of convictions obtained against individuals holding office at all levels of government, including Members of Congress and other federal officials. Nor does the Justice Department provide information on the specific criminal charges that led to each conviction, meaning that we are forced to give the same weight in our empirical model to an official found guilty of a minor violation of state or federal campaign finance laws as given to one convicted of arguably far more serious bribe-taking or obstruction of justice.

Our analysis thus assumes that the number of public officials convicted of corruption in a

particular state is an indicator of the extent to which the state exhibits a "culture of corruption". The raw data seem consistent with that interpretation. Table 2 shows the total number of public officials found guilty of misusing their offices, by state, over our sample period. Table 3 shows the same information normalized by states' voting age populations. The Spearman rank correlation between the ranks presented in Table 2 and in Table 3 is 0.40 indicating that there is a weak, but positive correlation between the two variables.

Following the demand-side approach of Karahan et al. (2006; 2007), we model voter turnout in gubernatorial elections as a function of public corruption. Although our key explanatory variable includes all public officials convicted of corruption in a particular state each year, a dead fish rots from the head, as the saying goes, and we therefore hypothesize that the office of chief executive is more valuable in a state where corruption is widespread than it would be in a less corruption-prone jurisdiction. Even so, U.S. governors themselves are not immune to misusing their offices for personal gain. Governor Dan Miller of Illinois, for example, was convicted and sentenced to federal prison in 1987 of wrongdoing connected with what became known as the savings & loan scandal. Alabama Governor Guy Hunt was removed from office in 1993 after being convicted of improperly using campaign funds. Other governors caught in the Justice Department's net include James Guy Tucker, Jr., of Arkansas, entangled in the Clinton Whitewater scandal and convicted of fraud and conspiracy in 1996; Fife Symington of Arizona, convicted of fraud the following year; and Louisiana's Edwin Edwards, found guilty of extortion in 2000.

The expected payoffs from winning gubernatorial office and the electioneering effort candidates invest logically depend on the level of corruption observed in the past. In an attempt to capture the lagged nature of corruption's influence on voter turnout, we calculate annual lags of the corruption variable for each of the eight years prior to a state's gubernatorial election. In alternate specifications of the empirical model, we enter the individual lags (*LAGCOR1* thru *LAGCOR7*) as well as the average level of the corruption variable for two, four and eight year

intervals (*CORRUPT-2, CORRUPT-4, and CORRUPT-8*). For example, *CORRUPT-2* for an observation from 1982 would refer to the mean level of the corruption variable for a given state during the years 1980–1981, while *CORRUPT-4* for the same observation would point to the mean level of corruption identified during the prior four years, 1978–1981, and so forth. In defining corruption in this way, we allow corruption's influence to be felt over time. We expect corruption to be positively correlated with turnout.[7]

To control for other factors influencing voter turnout, we introduce a number of explanatory variables that have become standard in the literature (Geys 2006). Voting age population (*VAP)* is entered to test the Downsian argument that a larger voting population decreases the probability that one vote will make a difference. The other variables included are the proportion of the population 65 years old and over (*POP65*), the percentage of the total population 25 years old and over with a bachelor's degree (*COLLEGE*), the state unemployment rate (*UNEMP),* real state per capita income (*INCOME)*, and the state poverty rate (*POVERTY)*. These variables hold constant states' socio-economic heterogeneity and are taken from the *Statistical Abstract of the United States*, with the exception of *UNEMP* and *COLLEGE*, which were obtained from the *Bureau of Labor Statistics* and the *United States Census Bureau*, respectively.[8]

We expect older, more educated voters and those who are unemployed to turn out in greater numbers, as the literature has commonly found.[9] We include per capita income in the model, but the expected sign is ambiguous: higher incomes may produce lower turnout rates owing to the higher opportunity cost of voting, or higher turnout rates as individuals think they have more to lose personally by not participating. Overall, the literature has produced mixed results on the relation between voter turnout and income. With respect to the poverty rate, we hypothesize that the poor are associated with lower turnout. Specifically, income diversity may lower the social pressure to turn out and poorer people may have smaller stakes in election outcomes. Finally, in order to capture an individual's voting habits we use as a proxy previous

turnout (*LAGTURN)*. The idea is that an individual's past voting behavior should allow good predictions of future behavior. Thus, past turnout should be positively related to current turnout.

In addition to the socio-economic variables we include several political variables. We include *CLOSENESS*, defined as the margin of victory of the winning gubernatorial candidate over the runner-up, and anticipate an inverse relationship with turnout if voters are rational and vote instrumentally. In order to take into account concurrent presidential elections (*PEY*), we include a dummy variable indicating whether the gubernatorial race appears on the same ballot as a presidential election. We expect a positive association between *PEY* and *TUNROUT* since elections occurring simultaneously create economies of scale for voters. To control for differences across states in voter registration requirements, we include the number of days before an election an individual must register to be able to vote (*REGDATE).* We hypothesize that the longer before an election a voter must be register the higher is the cost of voting, and the lower turnout will tend to be.

4. Empirical Analysis and Results

Given the pooled time-series cross-sectional nature of our data, if estimable, a panel procedure is preferable.[10] We therefore postulate the following panel model, with variables chosen based on our discussion in the data section, in order to explain the relationship between corruption and voter turnout in U.S. gubernatorial elections from 1977 to 2005:

$$TURN_{it} = \alpha + \beta X_{it} + \varphi Z_{it} + \gamma CORRUPT_{it} + v_i + \varepsilon_{it}, \qquad (1)$$

where *TURN* is a logistic transformation of voter turnout, that is *TURN* = ln[*TURNOUT*/(1-*TURNOUT*)], for state *i* at time *t.* This transformation is necessary since turnout is a rate, restricted between zero and one hundred.[11] The X_{it} vector is composed of the following six socio-

economic variables: log of the voting age population (*VAP*), proportion of population 25 years and over with a bachelor's degree (*COLLEGE*), the state unemployment rate (*UNEMP*), log of real state per capita income (*INCOME*), the poverty rate (*POVERTY*), and a proxy for individuals' voting habits (*LAGTURN*). The Z_{it} vector is composed of the following three political variables: margin of the winning gubernatorial candidate's victory over the candidate placing second (*CLOSENESS*), concurrent presidential elections (*PEY*), and voter registration requirements (*REGDATE*). *CORRUPT* is the number of convictions by state per year, v_i is the unobserved state effects that are not explicitly included in the regression, and ε_{it} is assumed to be white noise.

From a panel perspective, the estimation of Equation (1) involves allowing the intercept, but not slope, terms to vary across states. The key question is whether the intercept terms are viewed as simple parametric shifts of the regression line or whether the cross-sectional units are viewed as being drawn from a random population. If the former is correct, the fixed-effects estimator is appropriate while the latter would argue in favor of the random-effects estimator. Given that this is an empirical matter, we estimated both fixed and random specifications of Equation (1) and conducted a Hausman test (1978) to determine the appropriate model. The Hausman statistic failed to reject, at the 0.10 level, that the GLS estimator is consistent and efficient for all variable specifications; thereby suggesting that the random effects specification is preferable.

According to Kunce (2001), treating the unobserved state effects as random holds logically as well as statistically. First, the gubernatorial elections were drawn from a large election population and the applicability of the results to such larger population is of primary interest. Second, under the random effects model the unobserved state effect represents the within-booth behavior of voters, which is uncorrelated with the independent variables. Finally, the GLS estimation conserves precious degrees of freedom and does not rely on $T \rightarrow \infty$ (T is the number of observations per state) for all desirable properties to hold.

Empirical results from the estimation of Equation (1) are presented in Table 4. Given that our primary interest is the relationship between voter turnout and corruption, Table 4 reports three variants of Equation (1): Model 1 includes the average level of corruption for a two-year pre-election interval, Model 2 includes the average level of corruption for a four-year interval and Model 3 includes the average level of corruption for an eight-year interval. When considering our results, it is important to first note that the Lagrange multiplier (LM) statistic reveals strong evidence of unobserved state heterogeneity, arguing in favor of random effects specification. Furthermore, the Wald Chi-Square test of joint significance of the included independent variables is highly significant, well below the 0.001 level, indicating that the likelihood of the included independent variables being jointly equal to zero is virtually nil. Finally, it should also be noted that all of the estimations reported below employ standard errors that are fully robust with respect to arbitrary heteroscedasticity (Wooldridge 2002).[12]

Broadly speaking, the empirical results in Table 4 provide coefficient estimates that strongly support our demand-side theory concerning public sector corruption and voter turnout. Specifically, in each of the three regressions the coefficient on corruption is both positive and statistically significant. Also, it is important to note that the magnitude of the coefficient for corruption rises from Model 1 to Model 3. That is, the impact of corruption increases as the corruption measure includes more lags of previous corruption. Specifically, the impact of corruption is greater on voter turnout when the measure of corruption involves a lag of eight years. One interpretation here is that the longer the history of corruption in a state the higher is the value of gubernatorial office and the more effort candidates therefore expend to get their supporter to the polls on Election Day.

Turning to the socio-economic control variables we find results that are as expected. The voting age population, *VAP*, exerts a negative and significant influence on voter turnout, suggesting that the lower the probability of an individual's vote being decisive, the less incentive there is to participate. *POP65* has a positive and statistically significant affect on voter turnout.

Specifically, older voters turn out in greater numbers because they have more experience relative to the younger population and their opportunity cost of participating in an election is lower. We find a positive and significant effect on voter turnout from educational attainment (*COLLEGE*), indicating that a better educated population has an enhanced ability to take advantage of information and thus receives greater benefits from voting. As expected, states experiencing higher unemployment rates, *UNEMP*, have higher turnout, either because voters who are out of work attempt to change economic conditions through the ballot box or because their opportunity costs of voting are lower. Also, we find that indicators of income diversity, per capita income (*INCOME*) and poverty rate (*POVERTY*) have negative impacts on voter turnout; only the poverty rate is statistically significant, however. Finally, a person's past voting behavior, as measured by *LAGTURN*, does indeed seem to be a good predictor of current voting behavior.

Equally predictable outcomes are found for the political variables. The margin of victory of the winning gubernatorial candidate (*CLOSENESS*) has a negative and significant affect on voter turnout. This result suggests that as the competitiveness of the race increases, people are more likely to go to the polls because they believe that their votes are more likely to influence the outcome. We find that concurrent presidential elections (*PEY*) have a positive and significant effect on voter turnout, suggesting that having an election at the national level on the same ballot attracts more voters to the polls. Finally, as anticipated, more stringent voter registration requirements (*REGDATE)* have a negative and significant impact on turnout, indicating that having to register far in an advance before an election raises the cost of voting.[13]

In addition, we consider a number of alternative estimations of the results presented in Table 4 as means of testing the sensitivity of our key finding that public sector corruption has a positive and significant effect on voter turnout. The first issue one might reasonably raise is that averaging corruption over the past two, four or eight years does not indicate whether corruption in a state is increasing, decreasing or remaining relatively stable within the past two-, four- or eight-year intervals. For completeness we examine the impact of the corruption trend on voter turnout.

To do so, we divided the four-year cycles into halves and eight-year cycles into two terms and computed the absolute change. Since we are interested in the direction of the trend, we then create a dummy variable taking the value of 1 if the absolute change is positive and zero if there is no change or a negative change. The results are presented in Table 5. Specifically, all the variables continue having the expected signs and are statistically significant with the exception of *POP65* which has the expected sign but is statistically insignificant for the four-year interval. Most importantly for our analysis, *CORRUPT-4* and *CORRUPT-8* remain positive and significant at the 10% level after taking into account the trend of corruption in the model. In addition, as expected, the trend of corruption (*TREND*) has as positive impact on voter turnout; however it is statistically significant only in the four-year interval.

Next, we check for a systematic pattern in convictions over an election cycle since we suspect that using the lagged average annual number of convictions hides important information. We re-estimated Equation (1) by entering the individual lags of corruption (*LAGCOR1* to *LAGCOR7*) one at the time over two election cycles in lieu of the lagged average corruption variable.[14] These results are presented in Table 6 and all of the variables are again well-behaved. The key finding is a systematic pattern in convictions over an election cycle consistent with the information presented in Figure 1, where we plot the total number of corruption convictions across all states centered on their respective election days. Although exploring the incentives facing federal prosecutors is beyond this paper's scope, the data supply some evidence that they tend to reduce effort invested in ferreting out public corruption during gubernatorial election years.

5. Conclusions

We test the hypothesis that corruption rents increase the value of holding public office and, hence, elicit greater demand-side effort in building winning coalitions. Analyzing a panel dataset of public officials convicted of misusing their offices between 1977 and 2005, we model voter

turnout in U.S. gubernatorial elections. Overall, our results provide relatively strong and consistent support for the proposition that, in addition to socio-economic determinants and political institutions, public corruption is relevant in explaining the variability of voter turnout rates across states and over time.

It is worth emphasizing that the positive relation we find between corruption and voter turnout does not depend on voters' underlying motivations. It is irrelevant whether voters are going to the polls in larger numbers in corruption-prone states to "throw the rascals out" or because they themselves are corruptible and, hence, hope to share in available the corruption rents. We do not conclude that, because voter turnout rates in corrupt states are higher, ceteris paribus, than it is in less corrupt ones, corruption promotes citizen participation and more democratic elections. Our hypothesis simply is that because political offices are worth more in jurisdictions where corruption is greater, candidates seeking office and their supporting organizations exert more effort in winning elections and that this additional electioneering effort increases the number of voters who go to the polls on Election Day.

Appendix 1. Variable Definitions and Sources

Variable Name	***Definition***	***Source***
TURNOUT	Number of votes cast in gubernatorial election relative to state's voting age population	*Statistical Abstract of the United States*
CORRUPT	Number of federal, state and local public officials convicted of a corruption-related crime by state.	U.S. Department of Justice Report to Congress
VAP	Voting age population	*Statistical Abstract of the United States*
POP65	Percent of population 65 years old or older	*Statistical Abstract of the United States*
COLLEGE	Percent of the population 25 years and over with a bachelor's degree	U.S. Census Bureau, *Decennial Census of Population*, 1970–2000
UNEMP	State unemployment rate	Bureau of Labor Statistics
INCOME	Real per capita income	*Statistical Abstract of the United States*
POVERTY	Percent of population below the poverty line	U.S. Census Bureau
LAGTURN	Voter turnout in previous gubernatorial election	*Statistical Abstract of the United States*
CLOSENESS	Winning candidate's margin of victory over runner-up = [(Winner's vote total – Runner-up's vote total) ÷ (Winner's votes + Runner-up votes)]*100	*Statistical Abstract of the United States*
PEY	Presidential election year 1= Yes; 0 = Otherwise	*Statistical Abstract of the United States*
REGDATE	Number of days before election voter must be registered	*Book of the States*

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Table 1. Descriptive Statistics

Variable	*Mean*	*Minimum*	*Maximum*
TURNOUT (%)	46.4312	0.05513	0.776883
CORRUPT	13.54472	0	107
VAP	3,428,857	251,029	2.46E+07
POP65 (%)	12.10222	2.58	18.54
COLLEGE (%)	20.30119	9.98	35.5
UNEMP (%)	5.923035	2.3	15.54
INCOME ($)	21,326.2	1,2423.37	37,074.83
POVERTY (%)	12.8568	3.7	27
CLOSENESS	16.44132	0.00004	64
PEY	0.224932	0	1
REGDATE	21.87805	0	50

Table 2. Number and Rank of Convictions by State, 1976–2005

State	*Average Number of Convictions per year 1976-2005*	*Rank*	*State*	*Average Number of Convictions per year 1976-2005*	*Rank*
Alabama	14	15	***Montana***	5	22
Alaska	3	24	***Nebraska***	1	26
Arizona	10	18	***Nevada***	3	24
Arkansas	6	21	***New Hampshire***	1	26
California	88	1	***New Jersey***	30	8
Colorado	9	19	***New Mexico***	4	23
Connecticut	7	20	***New York***	86	2
Delaware	3	24	***North Carolina***	14	15
Florida	70	3	***North Dakota***	5	22
Georgia	25	9	***Ohio***	50	5
Hawaii	5	22	***Oklahoma***	9	19
Idaho	4	23	***Oregon***	2	25
Illinois	62	4	***Pennsylvania***	47	7
Indiana	12	16	***Rhode Island***	4	23
Iowa	4	23	***South Carolina***	10	18
Kansas	4	23	***South Dakota***	4	23
Kentucky	18	12	***Tennessee***	23	10
Louisiana	30	8	***Texas***	48	6
Maine	4	23	***Utah***	3	24
Maryland	11	17	***Vermont***	1	26
Massachusetts	16	14	***Virginia***	25	9
Michigan	21	11	***Washington***	9	19
Minnesota	6	21	***West Virginia***	6	21
Mississippi	18	12	***Wisconsin***	9	19
Missouri	17	13	***Wyoming***	2	25

Table 3. Convictions relative to Voting Age Population by State, 1976–2005

State	*Average Number of Convictions per 1 Million Voting Age Population 1976-2005*	*Rank*	*State*	*Average Number of Convictions per 1 Million Voting Age Population 1976-2005*	*Rank*
Alabama	5	6	***Montana***	8	3
Alaska	8	3	***Nebraska***	1	10
Arizona	4	7	***Nevada***	3	8
Arkansas	3	8	***New Hampshire***	2	9
California	4	7	***New Jersey***	5	6
Colorado	4	7	***New Mexico***	3	8
Connecticut	3	8	***New York***	7	4
Delaware	5	6	***North Carolina***	3	8
Florida	7	4	***North Dakota***	11	1
Georgia	5	6	***Ohio***	6	5
Hawaii	7	4	***Oklahoma***	3	8
Idaho	5	6	***Oregon***	1	10
Illinois	8	3	***Pennsylvania***	5	6
Indiana	3	8	***Rhode Island***	6	5
Iowa	2	9	***South Carolina***	4	7
Kansas	2	9	***South Dakota***	7	4
Kentucky	7	4	***Tennessee***	7	4
Louisiana	10	2	***Texas***	4	7
Maine	4	7	***Utah***	2	9
Maryland	3	8	***Vermont***	3	8
Massachusetts	4	7	***Virginia***	6	5
Michigan	3	8	***Washington***	3	8
Minnesota	2	9	***West Virginia***	5	6
Mississippi	10	2	***Wisconsin***	3	8
Missouri	4	7	***Wyoming***	6	5

Table 4. Random Effects Models of Turnout

Variable	***Model 1***	***Model 2***	***Model 3***
CORRUPT-2	0.00185** (0.0009)		
CORRUPT-4		0.0019* (0.0011)	
CORRUPT-8			0.0021* (0.0012)
Log(VAP)	-0.1488*** (0.0276)	-0.1472*** (0.0281)	-0.1447*** (0.0284)
POP65	0.0136* (0.0076)	0.0133* (0.0076)	0.0171*** (0.0069)
COLLEGE	0.01445*** (0.0057)	0.0143*** (0.0057)	0.0161*** (0.0057)
UNEMP	0.0335*** (0.0092)	0.0333*** (0.0092)	0.0201* (0.0111)
Log(INCOME)	-0.2628 (0.1835)	-0.2664 (0.1847)	-0.3052 (0.1979)
POVERTY	-0.0140*** (0.0058)	-0.0140*** (0.0059)	-0.0119* (0.0069)
LAGTURN	1.0814*** (0.2309)	1.0881*** (0.2317)	1.1848*** (0.2644)
CLOSENESS	-0.0065*** (0.0012)	-0.0065*** (0.0012)	-0.0067*** (0.0013)
PEY	0.4451*** (0.0396)	0.4453*** (0.0397)	0.4454*** (0.0431)
REGDATE	-0.0064*** (0.0014)	-0.0064*** (0.0014)	-0.0057*** (0.0017)
Constant	3.7695 (1.7965)	3.7854 (1.8213)	4.0300 (2.0705)
N	319	319	275
LM statistic	14.80***	14.57***	3.92**
Wald X^2	905.79***	915.06***	833.48***

Notes: Robust standard errors in parenthesis. ***.01 **.05 *.10 indicates level of significance.

Table 5. Random Effects Models with Corruption and Corruption Trend

Variable	*Coefficient*	*Coefficient*
CORRUP-4	0.0020* (0.0011)	-
CORRUPT-8	-	0.0021* (0.0012)
TREND1	0.0497* (0.0279)	-
TREND2	-	0.0490 (0.0346)
Log(VAP)	-0.1498*** (0.0282)	-0.1455*** (0.0285)
POP65	0.0123 (0.0077)	0.0165** (0.0071)
COLLEGE	0.0141*** (0.0057)	0.0163*** (0.0057)
UNEMP	0.0323*** (0.0092)	0.0178* (0.0107)
Log(INCOME)	-0.2644 (0.1854)	-0.2934 (0.1986)
POVERTY	-0.0143*** (0.0059)	-0.0109* (0.0067)
LAGTURN	1.1054*** (0.2280)	1.1611*** (0.2667)
CLOSENESS	-0.0065*** (0.0012)	-0.0066*** (0.0013)
PEY	0.4374*** (0.0389)	0.4482*** (0.0438)
REGDATE	-0.0065*** (0.0014)	-0.0059*** (0.0016)
Constant	3.799874 (1.8248)	3.9108 (2.0677)
N	319	275
LM statistic	14.51***	4.18**
Wald X^2	920.04***	849.42***

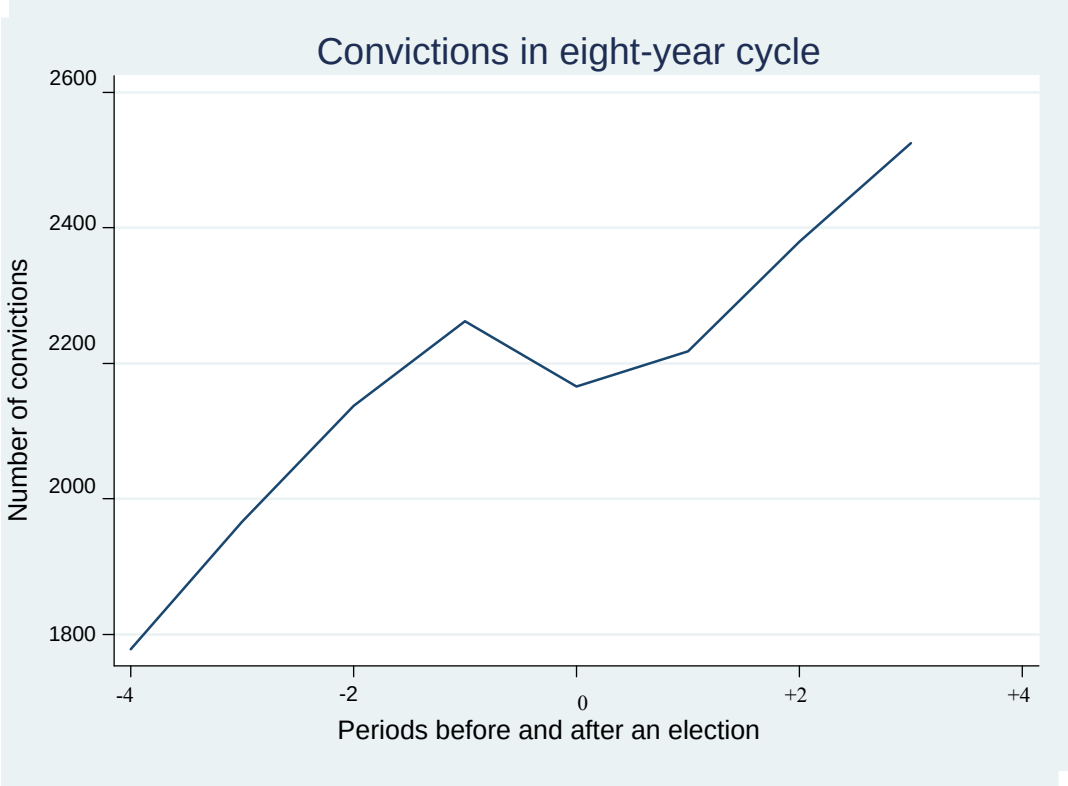
Notes: Robust standard errors in parenthesis. ***.01 **.05 *.10 indicates level of significance.

Table 6. Random Effects Models with Lags of Corruption

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
LAGCOR1	0.0018** (0.0009)						
LAGCOR2		0.0014* (0.0008)					
LAGCOR3			0.0006 (0.0009)				
LAGCOR4				0.0019** (0.0009)			
LAGCOR5					0.0012 (0.0009)		
LAGCOR6						0.0007 (0.0009)	
LAGCOR7							-0.0002 (0.0014)
Log(VAP)	-0.1499*** (0.0270)	-0.1413*** (0.0261)	-0.1305*** (0.0256)	-0.1423*** (0.0248)	-0.1380*** (0.0259)	-0.1276*** (0.0218)	-0.1165*** (0.0239)
POP65	0.0141* (0.0076)	0.0130* (0.0076)	0.0131* (0.0076)	0.0130* (0.0076)	0.0134* (0.0077)	0.0120 (0.0077)	0.0169*** (0.0070)
COLLEGE	0.0146*** (0.0057)	0.0141*** (0.0057)	0.0139*** (0.0057)	0.0141*** (0.0056)	0.0141*** (0.0058)	0.0132** (0.0058)	0.0162*** (0.0056)
UNEMP	0.0341*** (0.0092)	0.0329*** (0.0091)	0.0329*** (0.0091)	0.0332*** (0.0092)	0.0335*** (0.0092)	0.0314*** (0.0091)	0.0213* (0.0107)
Log(INCOME)	-0.2619 (0.1830)	-0.2492 (0.1830)	-0.2259 (0.1834)	-0.2676 (0.1837)	-0.2398 (0.1943)	-0.1868 (0.1990)	-0.2477 (0.1999)
POVERTY	-0.0142*** (0.0057)	-0.0133** (0.0057)	-0.0125** (0.0057)	-0.0141*** (0.0059)	-0.0134** (0.0062)	-0.0104* (0.0059)	-0.0089 (0.0068)
LAGTURN	1.0859*** (0.2289)	1.0834*** (0.2320)	1.0993*** (0.2304)	1.0983*** (0.2319)	1.1032*** (0.2487)	1.2459*** (0.2378)	1.1991*** (0.2594)
CLOSENESS	-0.0066*** (0.0012)	-0.0064*** (0.0012)	-0.0063*** (0.0012)	-0.0064*** (0.0012)	-0.0065*** (0.0012)	-0.0063*** (0.0012)	-0.0064*** (0.0013)
PEY	0.4432*** (0.0395)	0.4457*** (0.0396)	0.4429*** (0.0395)	0.4453*** (0.0397)	0.4388*** (0.0422)	0.4296*** (0.0424)	0.4397*** (0.0427)
REGDATE	-0.0064*** (0.0014)	-0.0064*** (0.0014)	-0.0063*** (0.0014)	-0.0064*** (0.0014)	-0.0064*** (0.0015)	-0.0062*** (0.0015)	-0.0057*** (0.0016)
Constant	3.764054 (1.7825)	3.5368 (1.7759)	3.1422 (1.7694)	3.7329 (1.7796)	3.3852 (1.9329)	2.6481 (1.9636)	3.0232 (2.0774)
N	319	319	319	319	315	313	277
LM statistic	14.93***	14.59***	15.07***	14.20***	14.50***	10.91***	4.79**
Wald X^2	896.75***	912.65***	901.33***	907.01***	853.34***	878.88***	826.7

Notes: Robust standard errors in parenthesis. ***.01 **.05 *.10 indicates level of significance.

Figure 1. Pattern of corruption over an eight-year cycle



Notes

[1] See Foster (1984) for a review of the early literature and Aldrich (1993) for a more through analysis of the rational choice model of voting.

[2] An additional explanation to the voting paradox is offered by expressive voting. According to Brennan and Hamlin (1998), expressive voters are rational in their behavior, but their decision to vote is not dependent upon the outcome of the election. Instead, voters are merely expressing a preference. For more detailed analysis of expressive voting see Fiorina (1976), Brennan and Buchanan (1984), and Ashworth et al. (2006).

[3] The literature on corruption is large and expanding quickly. See, for example, Johnston (1983), Rose-Ackerman (1978), Meier and Holbrook (1992), Mauro (1995; 1998), Goel and Nelson (1998), Fisman and Gatti (2002), Alt and Lassen (2003; 2006), Glaeser and Saks (2005), and Maxwell and Winters (2007).

[4] Meier and Holbrook (1992) look at the historical, cultural and political determinants of corruption, including voter turnout. They find that greater voter turnout reduces public corruption when only political variables are entered in their model, but do not find any statistical significance for voter turnout in their final specification, which includes all three sets of factors. Peters and Welch (1980) examine U.S. congressional races from 1968 to 1978, which involved 81 cases of corruption, and do not find that corruption affected turnout. It should be noted that Peters and Welch's empirical model was based on a supply-side theory of voter turnout and that a dummy variable was used to indicate the existence of corruption.

[5] Endersby et al. (2002) and Geys (2006) suggest that this calculation is among the most common for measuring turnout. In addition, because not all states compile accurate records on the number of registered voters, we use voting age population as a proxy for registered voters.

[6] The use of conviction rates as a measure of corruption has become common in the literature. See, for instance, Meir and Holbrook (1992), Goel and Nelson (1998), Fisman and Gatti (2002), Glaeser and Saks (2005) and Maxwell and Winters (2007).

[7] In addition, by lagging corruption we reduce the problem of multicollinearity between corruption and education and income. Corruption tends to be highly correlated with low income and less education across

states.

[8] Missing observations for the percentages of the population 25 years old and over with a bachelor's degree are interpolated using the ipolate function of STATA in order to apply a standard procedure instead of using our own criterion. Similar methods of handling missing data have been adopted by others, such as Primo and Milyo (2006).

[9] See, inter alia, Foster (1984), Matsusaka (1995), Kunce (2001), Lau and Pomper (2001), Cebula and Toma (2006) and Primo and Milyo (2006).

[10] From a methodological point of view, utilizing panel data provides various advantages over conventional cross sections or time-series data. It gives for example, more informative data, more variability, less collinearity among the variables, and higher efficiency (Baltagi 2001; Hsiao 2003). Panel estimation also allows us to control for individual state heterogeneity, thereby enabling us to minimize serious misspecification problems. As a result, the reliability of the estimated regression parameters is improved with panel estimation.

[11] If we use a simple linear estimation method, the estimated turnout numbers are not constrained to lie within the 0-100% interval. After the transformation, the dependent variable ranges from negative infinity to positive infinity, eliminating predictions outside the allowable range.

[12] All models presented throughout the remainder of the paper rely on fully robust standard errors and yield strong measures of goodness of fit.

[13] We also included incumbency as a control variable in the models and found that it has a negative and insignificant effect on voter turnout. This result may reflect the high correlation between closeness and incumbency (0.66). In addition, since some states have elections every two years we included a dummy variable for states that have four-year election cycles and its impact on voter turnout was insignificant. Thus, we decided to exclude these results from the final models; however, they are available upon request.

[14] We didn't include all the individual lags at once in the model since they are highly correlated among themselves and this will create inflated standard errors.