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Corruption and Voter Participation: Evidence from the US States

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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. The authors 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 pooled time-series data set of public officials convicted of misusing their offices between 1979 and 2005, we find, after controlling for other influential factors, that governmental corruption raises voter turnout rates in gubernatorial elections.

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> [Rod] Blagojevich joins a long list of Illinois governors who have been charged with crimes, four of the past nine of whom saw jail time.
>
> —Associated Press 2011a

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 higher incomes. On the other hand, turnout rates tend to be lower where the requirements for registering to vote are more onerous, on days when the weather is bad, and where there is no explicit penalty for not voting. 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.

However, 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, political parties, interest groups, and other organizations 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, working to raise the benefits and lower the costs of voting in ways similar to group leaders and elite actors who energize and mobilize voters to turn out on Election Day (Jacobson and Kernell 1983; 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 or distributing "walking around money."

Electioneering effort on the part of candidates, 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 rationally will 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, Coats, and Shughart 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 to 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 return to winning an election over and above that which would be anticipated by honest candidates that refrain from misusing their offices for personal gain. 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.

As our article's epigraph suggests, anecdotal evidence of corrupt politicians extracting rents from their offices abounds. Impeached Illinois Governor Rod Blagojevich was convicted of a variety of crimes, including charges related to attempting to sell President Obama's vacant US Senate seat (Associated Press [AP] 2011a) and wire fraud associated with a plot to shake down a racetrack owner for $100,000 in return for Blagojevich's support for a 2008 Illinois law that taxes casinos to subsidize racetracks (AP 2011b).

Other US governors have not been immune to misusing their offices for personal gain. Governor Dan Miller of Illinois was convicted and sentenced to federal prison in 1987 for wrongdoing connected with what became

Table 1. Average Cost per Vote in the Most and Least Corrupt US States

State	Average cost per vote	Period	State	Average cost per vote	Period
Most corrupt states[a]			Least corrupt states[a]		
Alaska	$18.11	1978–2002	Oregon	$4.96	1978–2002
Illinois	$5.97	1978–2002	Utah	$3.84	1980–2004
Louisiana	$11.27	1979–2003	Vermont	$3.81	1980–2004
Mississippi	$9.94	1979–2003	Washington	$3.15	1980–2004

Note. Source of cost per vote: Jensen and Beyle (2003).
[a]Rankings calculated as average number of convictions per million population, from US Department of Justice, "Report to Congress on the Activities and Operations of the Public Integrity Section" (various years).

known as the savings and 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.

Table 1 supplies some preliminary evidence that lays the groundwork for our subsequent analyses of the links between political corruption, electioneering effort, and voter turnout rates in gubernatorial elections. There we show the amounts spent per vote cast by all candidates running for the governorships of the four most corrupt and four least corrupt US states, as ranked by the US Justice Department, and then averaged over the gubernatorial elections in our sample. Although the numbers shown in table 1 do not control for other determinants of campaign spending, the data are consistent with the conjecture that access to corruption rents raises the value of holding public office and, hence, elicits more electioneering effort on the part of candidates competing to move into the governor's mansion.

We test more systematically the hypothesis that voter turnout is positively related to the prevalence of public corruption using a pooled time-series data set drawn from gubernatorial elections in the fifty US states between 1979 and 2005. Estimating a regional fixed effect model that includes variables commonly used in the existing literature to measure the benefits and costs of electoral participation, we find that voter turnout is indeed higher in states where more public officials had been convicted of corruption, as the demand-side theory predicts.

The remainder of the article is organized as follows: the second section summarizes prior scholarly work on the determinants of voter turnout followed by the section on the description of our data set. The fourth section is on empirical results and is followed by the Conclusion.

Background on Voter Turnout

The issue of voter turnout and electoral closeness is one of the most extensively studied issues in political economy (Matsusaka and Palda 1993). The theory of the rational voter, who participates in elections to advance his or her own self-interest, 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 group 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. 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. Yet, 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 instrumental voting examine 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 Downs's (1957) model that turnout will tend to be higher in "close" elections has received the most attention. Scholars debate how closeness should be measured, and whether these measures should be computed exante or expost (Abramson, Diskin, and Felsenthal 2007; Endersby, Galatas, and Rackaway 2002). Other scholars have explored how voters receive and process information about candidates and election issues (Fridkin and Kenney 1999; Matsusaka 1995). 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, and Patterson, Caldeira, and Markko (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) and Tolbert, Grummel, and Smith (2001) examine turnout in voting on initiatives and referendums.

More recently, evidence gathered in field experiments suggests that "social pressure" plays a role in explaining voter turnout (Gerber, Green, and Larimer 2008) and that voting is contagious in the sense that exposing one member of a household containing two or more registered voters to a get-out-the-vote message raises the voting propensity of the others by about 60 percent (Nickerson 2008).

According to Matsusaka and Palda (1993), Matsusaka (1995), and Matsusaka and Palda (1999), the rational voter theory has produced mixed empirical results. Specifically, after providing a brief review of the literature, Matsusaka 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—the so-called ecological fallacy. 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, constituencies are less populous and, hence, voting is more likely to be decisive.

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 (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. 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 (Jacobson 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.

Indeed, Nichter (2008) suggests that many pre–Election Day activities conventionally thought of as being intended to buy the votes of "swing" voters instead are designed to increase the turnout rates of a candidate's or a party's core constituencies. By rewarding loyal voters who show up at the polls, including those who might not otherwise have turned out, the probability of winning is enhanced without having to monitor actual vote choices.

Some elective offices are more valuable than others for a variety of reasons, including pay, perks, their usefulness as stepping-stones to higher political 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 also 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 nonpecuniary rewards the post confers. Shachar and Nalebuff (1999) and Andersen, Fiva, and Natvik (2011) both argue that one motivation for mobilizing voters is that public sector wealth allows greater rent extraction by office holders, a result that is not directly captured in the Downsian model.

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 whether corruption increases the expected returns to office holding it also increases candidates' demands for votes, Karahan, Coats, and Shughart (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 twenty-six of the state's eighty-two 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, Coats, and Shughart (2009) 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, Coats, and Shughart (2006, 2009) serves as a point of departure for the present article. 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. Moreover, the additional investments by candidates and political parties to mobilize 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 US gubernatorial elections.

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 fifty US states over the period from 1979 to 2005. It is important to note that in some states gubernatorial elections are held every four years while in others they are held every two years. Therefore, even though we cover the 1979–2005 period, we have only seven observations per state for states where governors serve four-year terms and fourteen observations per state for states where they serve two-year terms.

Given the possibility of unobserved, unique local characteristics or institutions that tend to be relatively constant over time for a given state, we would like to estimate our models with state fixed effects. However, a number of the independent variables, including the key variable of interest (corruption), tend to be remarkably stable, at least over the twenty-seven years our sample spans. Specifically, correlations between the percentage of the population twenty-five years and over with a bachelor's degree, voting age population (VAP), the percentage of the population sixty-five years old or older and corruption in 1979 and 2005 all exceed .84. Since these variables change slowly over time, they themselves behave like "fixed effects" and are highly correlated with the state-specific fixed effects.[5] Therefore, we estimate our models using regional fixed effects, grouping states into nine US census regions. Each of the nine census regions comprises three to eight states, thus minimizing the variation in unobserved state characteristics within regions.

Table 2 provides descriptive statistics, definitions, and sources for all variables. It should be noted that for ease of interpretation, the variables that are entered in natural logarithms in the models to follow are presented unlogged in table 2.

The variables chosen for our analysis are those most commonly used in the turnout literature.[6] Voter turnout (TURNOUT), the dependent variable, is measured as the total number of votes cast in each gubernatorial election in our sample divided by the corresponding state's VAP and is taken from the *Statistical Abstract of the United States*.[7] As the key explanatory variable, CORRUPT, we use data on the number of public officials convicted of corruption by state by year; the observations are derived from the US Department of Justice's 1999 and 2005 "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 at the state level. The crimes investigated by the Justice Department include a variety of ways in which public officials may misuse their offices, such as engaging in conflicts of interest, fraud, violations of campaign finance laws and obstruction of justice.[8] Following Glaeser and Saks (2006), to reduce heteroscedasticity, we deflate the number of convictions by state population.

Given that our empirical model focuses on the relationship between public corruption and voter turnout in US gubernatorial elections, our data set 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 assign the same weight in our empirical model to an official found guilty of a minor violation of state or federal campaign finance laws as is 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." Following the demand-side approach of Karahan, Coats, and Shughart (2006, 2009), 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

Table 2. Variable Definitions Sources and Descriptive Statistics

Variable name	Definition	Mean	Min	Max	Source
TURNOUT	Number of votes cast in gubernatorial election relative to state's voting age population	46.46	11.77	77.69	Statistical Abstract of the United States
CORRUPT	Log of the number of federal, state, and local public officials convicted of a corruption-related crime by state relative to state population	14.48	0	155	US Department of Justice Report to Congress
VAP	Percentage of the population that is of voting age	71.28	59.53	246.09	Statistical Abstract of the United States
POP65	Percentage of population 65 years old or older	12.32	2.96	18.54	Statistical Abstract of the United States
COLLEGE	Percentage of the population 25 years and over with a bachelor's degree	23.57	12.3	35.5	US Census Bureau, Decennial Census of Population, 1970–2000
UNEMP	State unemployment rate	5.90	2.3	15.54	Bureau of Labor Statistics
INCOME	Log of real income per capita	21,326.2	12,423.4	37,074.8	Statistical Abstract of the United States
POVERTY	Percentage of population below the poverty line	12.79	3.7	27	US Census Bureau
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	16.55	0.00004	64	Statistical Abstract of the United States
PEY	Presidential election year 1 = *yes*; 0 = *otherwise*	0.22	0	1	Statistical Abstract of the United States
REGDATE	Number of days before election voter must be registered	21.73	0	50	Book of the States
POPBLACK	Percentage of the population that is African American	9.28	0	36.91	US Census Bureau
POPFEMALE	Percentage of the population that is female	46.71	2.68	52.45	US Census Bureau
INCUMBENT	Dummy variable 1 = *candidate is an incumbent*; 0 = *otherwise*.	0.34	0	1	Gubernatorial Campaign Expenditures Database
PARTY	Dummy variable 1 = *candidate is a Democrat*; 0 = *otherwise*.	0.50	0	1	Gubernatorial Campaign Expenditures Database
FRGOV	Dummy variable 1 = *candidate is a former governor*; 0 = otherwise.	0.05	0	1	Gubernatorial Campaign Expenditures Database

chief executive is more valuable in a state where corruption is widespread than it would be in a less corruption-prone jurisdiction.

To control for other factors influencing voter turnout, we introduce additional explanatory variables that have become standard in the literature (Geys 2006). VAP is entered to test the Downsian argument that a larger voting population reduces the probability that one vote will be decisive. The other variables included are demographic and socioeconomic characteristics of the state population: the proportion of the population sixty-five years old and over (POP65), the percentage of the total population twenty-five 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 state socioeconomic profiles 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 US Census Bureau, respectively.[9]

We expect older, more educated voters and those who are unemployed to turn out in greater numbers, as the literature has commonly found.[10] We include per capita income in the model, but the expected sign is ambiguous: higher incomes may produce lower turnout rates owing to the greater opportunity cost of voting or higher turnout rates as individuals think they have more at stake personally in the electoral process. Overall, the literature has produced mixed results on the relation between voter turnout and income. With respect to the poverty rate, we hypothesize that lower turnout rates will be observed in states with larger numbers of poor people. Specifically, income diversity may lower the social pressure to turn out and people with lower incomes may have lesser stakes in election outcomes.

In addition to the socioeconomic characteristics, we include several state-specific political variables. We enter 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. However, turnout rates are not predicted to be higher in close races simply because an individual thinks that his or her vote is more likely to be pivotal when the votes of others are more evenly split between the candidates. As mentioned earlier (see the section on Background on Voter Turnout), candidates and their supporters rationally will invest more resources in getting out the vote on Election Day if a race is expected to be tight since mobilizing voters, especially those belonging to core constituency groups, has a larger impact, at the margin, on the probability of winning.

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 Election Day an individual must register to be eligible to vote (REGDATE). We hypothesize that the farther in advance of an election a voter must be registered, the higher is the cost of voting, and the lower turnout at the polls will tend to be (Calcagno and Westley 2008).

Empirical Analysis and Results

To rigorously test the proposition concerning public sector corruption and voter turnout, we estimate the following regional fixed effects model:

$$\mathrm{TURN}_{it} = \alpha_0 + \alpha_1 X_{it} + \alpha_2 Z_{it} + \alpha_3 \log(\mathrm{CORRUPT})_{it} + \gamma_i + \varepsilon_{it}. \quad (1)$$

Since turnout is a percentage restricted between 0 and 100, it encounters the econometric problems associated with estimating a doubly truncated variable and to correct for this issue we transform the dependent variable logistically.[11] TURN_{it} thus is computed as ln[TURNOUT/(1 − TURNOUT)], for region i at time t.

The $\mathbf{X}_{it}$ vector includes the following six demographic and socioeconomic variables: the population proportion of individuals of voting age (VAP), the fraction of the population sixty-five years old and over (POP65), the fraction of the population twenty-five years and over with a bachelor's degree (COLLEGE), the state unemployment rate (UNEMP), log of real state per capita income (INCOME), and the state-specific poverty rate (POVERTY). The $\mathbf{Z}_{it}$ 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). $\mathrm{CORRUPT}_{it}$ is the number of convictions per capita by state and year, γ_i are the regional fixed effects, and ε_{it} is the normally distributed residual term. Furthermore, since our interest is in the partial effects of time-varying covariates, fixed-effects estimation is attractive because it allows any unobserved heterogeneity to be freely correlated with the time-varying covariates.

Before discussing the fixed-effects estimates of our model, an implicit assumption of this model deserves attention. Specifically, we have thus far assumed that our key independent variable, CORRUPT, is exogenous. While we have found nothing in the literature to call this assumption into question, it does seem at least plausible that corruption is itself influenced

to some extent by voter turnout. That is, CORRUPT may be endogenous. To test the assumption of exogeneity for CORRUPT, we use an instrumental variables approach applying both Hausman (1978) and Durbin-Wu-Hausman tests.

More specifically, we estimate a preliminary auxiliary model by regressing CORRUPT on the regional fixed effects. From this regression, predicted values are calculated for CORRUPT and then used in lieu of the actual observations on CORRUPT in equation (1), thus allowing for the exogeneity tests noted earlier. To identify the preliminary regression properly, we added as explanatory variables (1) the percentage of the population employed by the state government, POPGOV, and (2) the percentage of the population living in urban areas, URBAN, to the other exogenous variables in the baseline model. Both of these variables were found by Glaeser and Saks (2006) to be statistically significant determinants of corruption. Thus, the added variables should serve well here as each has a relatively strong correlation with corruption but a comparatively weak correlation with the dependent variable. These preliminary tests did not reject the exogeneity of CORRUPT, thus reinforcing our confidence in the specification of equation (1).[12]

Baseline Results

The empirical results from the estimation of equation (1) are presented in table 3. To provide insight into the source of variation in the model, we start with the baseline model estimated using ordinary least squares (OLS), with no fixed effects in column 1. Prior to discussing individual outcomes it should be noted that the model generates a coefficient of multiple determination suggestive of a reasonable fit. Columns 2 and 3 present the results of two regional fixed-effects regressions, one of the baseline model and the second adding to the baseline model an interaction term between CORRUPT and CLOSENESS.[13] The idea here is that both corruption and closeness affect the payoff to electoral victory and therefore corruption might affect turnout differently depending on the election's expected closeness. The standard errors for the baseline model and the models estimated using regional fixed effects were corrected for heteroscedasticity using the Huber-White approach.

Broadly speaking, the empirical results in table 3 provide coefficient estimates that strongly support our demand-side theory of the link between public sector corruption and voter turnout. Specifically, in each of the three regressions the coefficient on CORRUPT is both positive and statistically

Table 3. Baseline Results for Turnout Estimation

Variable	(1) OLS regression coefficient	(2) Regional fixed-effects coefficient	(3) Regional fixed-effects coefficient
CORRUPT	.0425** (.0207)	.0416*** (.0172)	.0327 (.0271)
CLOSENESS	−.0047*** (.0013)	−.0051*** (.0011)	.0019 (.0163)
PEY	.5880*** (.0555)	.5743*** (.0371)	.5723*** (.0375)
UNEMP (%)	.0189 (.0126)	.0169* (.0101)	.0163 (.0102)
VAP (%)	−.0106*** (.0009)	−.0096*** (.0014)	−.0096*** (.0014)
INCOME	−.9244*** (.2754)	−.6928*** (.1833)	−.7010*** (.1846)
POVERTY (%)	−.0286*** (0.0075)	−.0157*** (0.0065)	−.0156*** (.0066)
REGDATE	−0.0106*** (0.0024)	−0.0069*** (0.0017)	−.0069*** (.0017)
POP65 (%)	0.0241 (0.0212)	0.0165* (0.0091)	.0163* (.0091)
COLLEGE (%)	0.0294*** (0.0094)	0.0191* (0.0070)	.0193*** (.0070)
CORRUPT × CLOSENESS	–	–	.0005 (.0013)
Constant	9.8829 (2.5607)	7.5634 (1.7630)	7.5282 (1.7676)
N	283	283	283
F-statistic	37.69	42.61	38.64
R^2	.6375	–	–

Note. OLS = ordinary least squares. Huber-White standard errors in parentheses.
***, **, and * indicate significance levels of .01, .05, and .10, respectively.

significant.[14] It is important to note that the coefficient on CORRUPT needs to be interpreted with caution when we include the interaction term. That is, the partial effect of CORRUPT on turnout is $\alpha_{\text{corrupt}} + \alpha_{\text{corrupt} \times \text{closeness}}$. Furthermore, when analyzing the impact of corruption on turnout in the presence of the interaction term, we chose interesting values of closeness, such as the mean value, and the lower and upper quartiles in the sample.[15] We found that CORRUPT in every case has a positive and statistically significant effect on turnout regardless of the value of CLOSENESS chosen. Since the interaction term, CORRUPT × CLOSENESS, does not materially change our overall results or the effect of corruption on turnout we exclude it from the estimations that follow.

Turning to the socioeconomic control variables, we find results as expected. The size of the VAP exerts a negative and significant influence on voter turnout, suggesting that the smaller the probability of an individual's vote being decisive, the less incentive there is to participate. POP65 has a positive effect on voter turnout, but it is statistically significant only for

the fixed-effects models and only at the 10 percent level. 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 more highly educated population is better able to take advantage of information and thus perceives larger benefits from voting. As expected, states with higher unemployment rates, UNEMP, also have larger voter turnout rates, but that variable was statistically significant only at the 10 percent level in one of the fixed-effects models. We find, in addition, that measures of per capita income (INCOME) and the poverty rate (POVERTY) both have negative and statistically significant impacts on voter turnout at the 1 percent level in all three models.

Equally predictable outcomes are found for the political variables. The margin of victory of the winning gubernatorial candidate (CLOSENESS) has a negative and significant effect on voter turnout in Columns 1, 2, and 3. This result is consistent with the Downsian model: as gubernatorial races become more competitive people go to the polls in larger numbers 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 a national election at the top of the same ballot as a gubernatorial race 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 qualify to vote far in advance of an election increases the cost of voting.

Robustness Checks

In this section, we consider a number of robustness checks of our main finding that corruption has a positive effect on gubernatorial election turnout. First, as noted in the literature, measuring public corruption as the number of officials convicted of misusing their offices, regardless of whether those offices are at the local, state, or federal levels, creates potential problems for how many instances of corruption are uncovered, how vigorously such charges are pursued and how many officials actually are convicted across the fifty US states. Therefore, we use an alternate measure of corruption taken from Boylan and Long (2003). In 1998–99, Boylan and Long (2003) surveyed "state house" news reporters on their perceptions of state government corruption. Respondents were asked to rate their state in terms

of the level of corruption of all government employees on a 7-point scale, from *least corrupt* (1) to *most corrupt* (7). CORRUPTION is defined as the average of reporters' ratings from each state.

The survey-based corruption measure has its drawbacks, including the subjective nature of the responses, along with being limited to a single year. In order to compare the survey-based corruption measure (available only for 1999) and the convictions-based measure of corruption (yearly data 1978–2004), we first calculated the average annual number of convictions per state from 1978 through 2004, instead of selecting individual years arbitrarily. The correlation between the two measures of corruption is .41. It is important to note that, although we would have preferred to use the number of convictions in 1999 in our cross-sectional analysis (to compare corruption measures for the same year), only two states held gubernatorial elections in 1999. The lack of data prompted us to use the average value of the convictions-based measure of corruption over our full sample. Columns 1 and 2 in table 4 pool our data cross-sectionally to test whether Boylan and Long's (2003) survey-based measure of corruption is consistent with the Justice Department's convictions-based measure. In column 1, we estimate an OLS model using the average values of the variables in our model, including the observations on CORRUPT, to see whether the results still hold. CORRUPT is still positive and significant but only at the 10 percent level. In column 2, we enter Boylan and Long's (2003) survey-based measure of corruption in place of CORRUPT and find that it enters with a positive and significant coefficient.

Second, to determine whether our results are sensitive to the independent variables chosen for our baseline model specifications, we add five additional explanatory variables: the population of African Americans as a share of total population (POPBLACK), the female population as a share of total population (POPFEMALE), a dummy variable indicating that the governor running for reelection for a consecutive term is an incumbent (INCUMBENT), a dummy variable that takes the value of one if the gubernatorial candidate belongs to the Democratic party (PARTY), and a dummy variable indicating whether or not the candidate is a former governor (FRGOV). These additional variables are obtained from the US Census Bureau and the Gubernatorial Campaign Expenditures Database (Jensen and Beyle 2003, 2007). All of these independent variables have been used previously in voter turnout models, but, according to Geys (2006), none has been included routinely, nor have they produced unambiguous empirical results. Thus, we add them only for sensitivity analysis and not as part of our baseline estimation.

Table 4. Robustness Checks

Variable	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient	(6) Coefficient	(7) Coefficient
CORRUPT	0.2004*		0.0424***	0.0440***	0.0415***	0.0442***	0.0389**
	(0.1169)		(0.0171)	(0.0171)	(0.0173)	(0.0172)	(0.0171)
CORRUPTION		0.1828***					
		(0.0410)					
CLOSENESS	−0.0052	−0.0108	−0.0050***	−0.0050***	−0.0051***	−0.0049***	-0.0039***
	(0.0102)	(0.0096)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0012)
PEY	–	–	0.5841***	0.5794***	0.5745***	0.5736***	0.5761***
			(0.0372)	(0.0370)	(0.0373)	(0.0371)	(0.0369)
UNEMP (%)	0.0500	0.0469	0.0193**	0.0218**	0.0169*	0.0151	0.0146
	(0.0603)	(0.0505)	(0.0101)	(0.0103)	(0.0101)	(0.0102)	(0.0101)
VAP (%)	−0.0235***	−0.0259***	−0.0094***	−0.0095***	−0.0096***	−0.0095***	−0.0099***
	(0.0039)	(0.0042)	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
INCOME	−1.6185**	−0.4191	−0.6992***	−0.6487***	−0.6940***	−0.7109***	−0.7038***
	(0.6876)	(0.6976)	(0.1822)	(0.1835)	(0.1845)	(0.1834)	(0.1821)
POVERTY (%)	−0.0684***	−0.0331	−0.0189***	−0.0163***	−0.0157***	−0.0167***	−0.0158***
	(0.0267)	(0.0256)	(0.0067)	(0.0065)	(0.0066)	(0.0066)	(0.0065)
REGDATE	−0.0131**	−0.0127**	−0.0074***	−0.0072***	−0.0069***	−0.0067***	−0.0070***
	(0.0059)	(0.0062)	(0.0017)	(0.0016)	(0.0017)	(0.0017)	(0.0016)
POP65 (%)	0.0370	0.0537**	0.0217**	0.0197**	0.0165*	0.0174**	0.0176**
	(0.0281)	(0.0242)	(0.0094)	(0.0092)	(0.0091)	(0.0091)	(0.0090)
COLLEGE (%)	0.0356	0.0280	0.0176***	0.0192***	0.0192***	0.0200***	0.0192***
	(0.0244)	(0.0263)	(0.0070)	(0.0070)	(0.0070)	(0.0070)	(0.0070)

(continued)

Table 4. (continued)

Variable	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient	(6) Coefficient	(7) Coefficient
POPBLACK (%)			0.0054**	–	–	–	–
			(0.0026)				
POPFEMALE (%)			–	−0.0076**	–	–	–
				(0.0037)			
PARTY			–	–	−0.0022**	–	–
					(0.0308)		
FRGOV			–	–	–	0.0976	–
						(0.0674)	
INCUMBENT			–	–	–	–	−0.0709***
							(0.0331)
Constant	20.0484	7.8059	7.5698	7.4697	7.5748	7.7553	7.6727
	(7.1959)	(6.4794)	(1.7518)	(1.7534)	(1.7732)	(1.7643)	(1.7519)
N	50	47	283	283	283	283	283
F-tatistic	9.99	12.49	39.63	39.56	38.59	39.09	31.4
R^2	.4047	.5072					

Note. Huber-White standard errors in parentheses.
***, **, and * indicate significance levels of .01, .05, and .10, respectively.

Black and female voters often are argued to be important demographic voting blocs. POPBLACK and POPFEMALE allow us to consider whether our results for corruption and voter turnout are affected by controlling for either of these state-specific demographic characteristics. Three additional dummy variables control for other candidate characteristics. The literature on voter turnout has long debated the importance of an incumbency advantage. INCUMBENT may reduce voter turnout as voters expect the incumbent to win by a comfortable margin. On the other hand, politicians' popular support tends to degrade the longer they have been in office (Martins and Veiga 2011). The variable PARTY asks whether a candidate's political party affiliation affects voter turnout. Both sides of the aisle have incentives to mobilize voters and so the sign here is ambiguous. Finally, FRGOV indicates that the candidate has left office and then later reentered the race for the governor's mansion, often after having been ruled ineligible to succeed himself by state law. A popular former governor rerunning for office may cause voter turnout to increase. The new estimates are presented in columns 3 through 7 in table 4. In each instance, the results are supportive of the notion that corruption is positively and significantly correlated with turnout. The supplementary control variables are all statistically significant, except for FRGOV, but the addition of these variables does not change the signs or statistical significances of any of the independent variables from the baseline estimation.

Corruption being positive and statistically significant in all of our estimations provides us with confidence that a positive correlation exists between voter turnout and corruption. However, this alone does not fully demonstrate our demand-side hypothesis since it is possible that voter turnout in the presence of public corruption could be caused by attempts to ''vote the rascals out.''

Finally, we examine gubernatorial elections involving incumbent candidates and ask whether they are more or less likely to be returned by the voters to office. If the positive correlation between corruption and turnout is explained by voters' intentions to remove corrupt politicians from office, then that motive should be evident in a propensity to defeat gubernatorial incumbents in the presence of widespread corruption. The raw data suggest the following electoral consequences: there are a total of 369 gubernatorial elections in our sample, and in 204 of those elections an incumbent governor was on the ballot; the voters returned the incumbent to office in 158 of those elections, yielding a 77 percent reelection rate. Hence, in nearly 43 percent of the elections in our sample (158 out of 369), an incumbent was reelected, and in almost 45 percent of the total,

Table 5. Election Subsamples Based on Incumbent Status

Variable	(1) Elections where incumbent wins coefficient	(2) Election winners not incumbent coefficient	(3) Elections with no incumbents coefficient	(4) Elections incumbent lost coefficient
CORRUPT	0.0446	0.0442**	0.0516**	−0.0893
	(0.0310)	(0.0210)	(0.0229)	(0.0752)
CLOSENESS	−0.0051***	−0.0026	−0.0036*	−0.0011
	(0.0019)	(0.0017)	(0.0020)	(0.0054)
PEY	0.5797***	0.5739***	0.5714***	0.5994***
	(0.0650)	(0.0460)	(0.0510)	(0.1431)
UNEMP (%)	0.0084	0.0168	0.0163	0.0188
	(0.0198)	(0.0120)	(0.0132)	(0.0383)
VAP (%)	−0.0186	−0.0103***	−0.0111***	0.0125
	(0.0201)	(0.0013)	(0.0014)	(0.0704)
INCOME	−0.7431**	−0.5875***	−0.6534***	−0.4835
	(0.3533)	(0.2294)	(0.2515)	(1.4002)
POVERTY (%)	−0.0194	−0.0147*	−0.0164*	−0.0036
	(0.0122)	(0.0079)	(0.0094)	(0.0183)
REGDATE	−0.0014	−0.0096***	−0.0115***	−0.0065
	(0.0034)	(0.0019)	(0.0023)	(0.0057)
POP65 (%)	0.0256	0.0157	0.0091	0.0475
	(0.0219)	(0.0108)	(0.0123)	(0.0482)
COLLEGE (%)	0.0197	0.0166**	0.0177**	0.0258
	(0.0126)	(0.0084)	(0.0089)	(0.0507)
Constant	8.5746	6.6888	7.6659	1.3988
	(3.0348)	(2.2321)	(2.4632)	(11.2622)
N	117	166	133	33
F-statistic	14.78	27.67	24.71	4.44

Note. Huber-White standard errors in parentheses.
***, **, and * indicate significance levels of .01, .05, and .10, respectively.

no incumbent was running for office. That figure implies that in nearly half of our sample, the electorate did not have an opportunity to vote a "rascal" out, since the seat was open.

Thus, we divide our sample based on whether an incumbent is running and whether he or she won the election. Table 5 provides results from the various estimations on four different subsamples of the data. We continue to use regional fixed effects and to correct the error terms for heteroscedasticity. Before we proceed, it should be noted that each of these subsamples is at best only half as large as our overall sample. Yet, the *F* statistics continue to be significant. Column 1 examines the elections in which the incumbent won, where CORRUPT is positive, but not significant. In column 2, we estimate the baseline model for all elections in which the winner was not the incumbent and found that CORRUPT is positive and

statistically significant at the 5 percent level. Our estimation in column 3 focuses on elections in which neither gubernatorial candidate was an incumbent; CORRUPT again is positive and significant. Finally, we examine the smallest of the subsamples comprising elections in which the incumbent lost. In this case, CORRUPT is statistically insignificant.

Column 3, wherein no incumbents enter the race, is the best test of our demand-side hypothesis. In the absence of an incumbent, there is no rascal to vote out. The sign and significance levels in this estimation are consistent with the finding in our baseline estimation: candidates see value in holding office for a variety of reasons, but value it more in states with ''cultures of corruption'' because the rents potentially are larger. The prospect of collecting corruption rents creates strong incentives to invest more effort to get voters to the polls on Election Day.

In summary, the results support with a reasonable level of confidence the idea that public corruption raises voter turnout in gubernatorial elections. Perhaps most importantly, this relationship appears rather insensitive to alternative methods of estimation (OLS vs. fixed effects), alternate measure of corruption, addition of demographic and political variables, and analyses of various data subsamples.

Conclusion

Students of the political process have begun to recognize that candidates for public office have strong incentives to mobilize their supporters on Election Day that they; their party organizations, and political elites are the demanders of the votes the electorate supplies. This article contributes to the literature adopting a demand-side approach to explaining voter turnout by linking electoral participation rates to the prevalence of public corruption. Our conjecture is that more electoral effort will be expended and, hence, turnout rates will be higher, when candidates seeking office perceive opportunities for misusing those offices for personal gain and the benefits of winning therefore are greater.

We test the hypothesis that corruption rents increase the value of holding public office and, therefore, elicit greater demand-side effort in building winning coalitions. Analyzing a pooled time-series data set of public officials convicted of misusing their offices between 1979 and 2005, we model voter turnout in US gubernatorial elections. Overall, our results provide relatively strong and consistent support for the proposition that, in addition to socioeconomic determinants and political institutions, public corruption is relevant in explaining the variability of voter turnout rates across states and over time.

We do not mean to imply that, because voter turnout rates in corrupt states are higher, ceteris paribus, than 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 rents are available, candidates seeking office and their supporting organizations invest more effort in winning elections, effort that increases the number of voters who go to the polls on Election Day.

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Notes

1. See Aldrich (1993) for a thorough analysis of the rational choice model of voting.
2. An additional resolution to the voting paradox is offered by the theory of expressive voting. According to Brennan and Hamlin (1998), expressive voters are rational in their behavior, but their decision to vote are not dependent upon the outcome of the election. Instead, voters are merely expressing a preference.
3. The literature on corruption is large and expanding quickly. See, for example, Rose-Ackerman (1978), Meier and Holbrook (1992), Mauro (1995, 1998), Goel and Nelson (1998), Fisman and Gatti (2002), and Glaeser and Saks (2006).
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 US 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. For more on this issue, see Glaeser and Saks (2006) and Wooldridge (2002).
6. For more on this issue, see Geys (2006).
7. Endersby , Galatas, and Rackaway (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.
8. 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), and Glaeser and Saks (2006).
9. Missing observations for the percentages of the population twenty-five 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).
10. See, inter alia, Matsusaka (1995) and Primo and Milyo (2006).
11. These problems are easily solved by transforming TURNOUT from a probability to the logarithm of the corresponding odds ratio via a simple logistic transformation. After the transformation, the dependent variable ranges from negative infinity to positive infinity, eliminating predictions outside the allowable range.
12. The null hypothesis is that the difference in coefficients is not systematic. The χ^2 coefficient from the Durbin-Wu-Hausman test is 4.75, with a p value of. 9071, so we cannot reject the null hypothesis.
13. Where region one is the omitted region for the regional fixed effects estimations. Region one is New England and includes the following states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
14. The dependent variable is the log odds of turnout and corruption is measured as the natural log of convictions per capita, and so the coefficient needs proper interpretation. As a rough calculation of a "marginal effect" of corruption on turnout, we take the difference of the natural log of the mean of corruption convictions per capita and the mean plus 1 standard deviation (*SD*). Multiplying this difference by the coefficient of corruption gives us a value the exponent of which allows us to back out the "marginal effect." The result gives us a value of 1.042, which means approximately a 4 percent change in voter turnout.

15. The partial effect of CORRUPT on turnout is $\alpha_{corrupt} + \alpha_{corrupt \times closeness}$. Using the mean value of CLOSENESS, the coefficient of CORRUPT in column 3 is 0.0327 + (0.0005 × 16.5) = .04095. Similar calculations can be carried out at the upper and lower quartile values of CLOSENESS.
16. We found that accounting for the interaction between closeness and corruption in every instance had a negative and statistically significant effect on turnout, regardless of the measure of corruption chosen, including the mean value and the lower and upper quartiles in the sample.

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