Voter Turnout and Political Rents: Theory and Evidence

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Abstract

Does lower turnout induce weaker discipline of politicians? We build a model to address this question and test the model's predictions on cross-section data from 49 democracies. Theoretically, we find that if political information is costly for ideologically mobile voters, higher information cost decreases turnout and makes electoral competition less intense. This allows politicians to appropriate higher rents in equilibrium. Empirically, we find that higher education level of citizens and higher non-voting costs induce higher turnout, which, in turn, leads to lower corruption. The quantitative effect is large: one standard deviation increase in turnout reduces corruption by about $\frac{1}{3}$ of standard deviation.

Keywords: voter turnout, corruption, electoral competition.
JEL Classification: E62, H3.

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1 Introduction

Governments in democracies have large economic decision-making power. They set tax rates on incomes of citizens. This tax serves to finance public services provided by governments; however, politicians can divert a part of the tax revenue towards their private consumption. In economic literature, this activity bears the name of "rent extraction". Journalistic evidence and recent political scandals involving top policy-makers in various OECD countries suggest that even mature democracies suffer from rent extraction.

Recent research in political economy has addressed, both empirically and theoretically, the determinants of political rents and corruption. Mauro (1995), Ades and Di Tella (1999), Fisman and Gatti (2002), Persson, Tabellini, and Trebbi (2003), and Adsera, Boix, and Payne (2003) have established empirical links between political and socio-economic variables and the extent of corruption.

On the other hand, one of the reasons of alarm about declining turnout in various OECD countries has been the danger of a weaker discipline of politicians, and, thus, increasing corruption. However, despite the plausibility of this hypothesis, no research has addressed it formally. Thus, the goal of this paper is to analyze the link between turnout and political rent extraction. We want to answer three questions: What is the mechanism through which higher turnout leads to lower political rents? Is this mechanism empirically important? What measures can countries take to exploit this mechanism to reduce corruption?

To answer these questions, we build a model of two-party electoral competition with three groups of voters. Two groups (rich and poor) have strong ideological preferences, are not sensitive to candidates' announced policies, and

always participate in the elections. On the other hand, voters in the middle-income group care both about policy and ideology of candidates, and have to decide whether to vote or not. For these citizens, learning their preferences over ideology comes at a political-information cost. The higher is this cost, the more likely are these voters to abstain. Lower turnout makes electoral competition less intense (since the number of mobile voters decreases) and thus increases equilibrium rents that the candidates can grab.

We then test the predictions of the model on the cross-section data from a set of 49 democracies. Our identifying assumption is that higher education level affects corruption only via its effect on turnout. The results of the regression support our theoretical findings, and the instrument validity tests confirm the soundness of our identifying assumption. Countries with higher turnout exhibit lower corruption. The quantitative effect of turnout is large: one standard deviation increase in turnout decreases corruption by $\frac{1}{3}$ of standard deviation.

The paper has the following organization. Section 2 present the theoretical model. Section 3 states the empirical implications of the model. Section 4 presents the data and empirical evidence. Section 4 discusses the robustness of our theoretical and empirical results. Section 5 concludes.

2 Model

2.1 Economic Setup

We build the model along the lines of Persson and Tabellini (2000, Ch. 4.2). Consider a unit-size population of atomistic citizens, consisting of three groups. Let's index the groups by J, $J \in \{P, M, R\}$. Each citizen in groups J has an endowment of y^J, and $y^P < y^M < y^R$. The sizes of three groups are $\frac{1}{2} - \frac{d}{2}, d$,

and $\frac{1}{2} - \frac{d}{2}$, respectively. Thus, d measures income inequality in the population: a higher d means that the middle-income citizens constitute a larger share of the population. Let's assume, for simplicity, that $y^M - y^P = y^R - y^M$, so the middle group's income equals to the average income in the population. Denote this average with y.

The preferences of citizens comprise consumption of a private good and a public good, and are quasi-linear:

$$w^J = c^J + H(g),$$

where c^J denotes the consumption of the private good by a citizen in group J, g denotes the amount of the public good, and $H(.)$ is concave.

Public good is financed by non-targeted tax on income. Government also can consume rents. Thus, government budget constraint is

$$\tau y = g + r,$$

where τ denotes the tax rate and r denotes rents. The resulting policy preferences of citizens in group J are

$$W^J(g, r) = (y - (g + r))\frac{y^J}{y} + H(g)$$

and, thus, their preferred policy vector is

$$(g^{J*}, r^{J*}) = (H_g^{-1}(\frac{y^J}{y}), 0).$$

Groups differ in their preference over the public good (richer citizens prefer less of a public good). However, all groups prefer zero rents.

2.2 Political Setup

The community holds the elections. Two candidates run for office, L and C. Candidates are purely office-motivated. Denote the probability of L winning

the elections as p_L. Then, candidate L's expected utility is

$$E\left(v_L\right) = p_L(R + \mu r_L), \tag{1}$$

where R are exogenous ego-rents from holding office, r_L are endogenous rents entering government budget constraint, and μ denotes transaction costs associated with rent appropriation. The expected utility of candidate C is analogous:

$$E\left(v_L\right) = (1 - p_L)(R + \mu r_C).$$

The timing of events is as follows: (1) both candidates simultaneously announce their policies $q_L = (g_L, r_L), q_C = (g_C, r_C)$; (2) there is an unobservable shock to candidates' relative popularity, δ; (3) citizens vote; (4) winning candidate's policy is implemented. We thus assume perfect commitment to campaign announcements. We also assume that the popularity shock δ has the uniform distribution on $[-1, 1]$ interval:

$$\delta \sim U[-1, 1].$$

Here, positive δ means that the popularity of C is higher than that of L.

Three groups of voters differ in their preferences over candidates' ideology and their announced policies. Groups P and R are outright partisan: conditional on shock δ, all citizens in P prefer L and all citizens in R prefer C. Group M is less ideological, and its citizens care both about policy and ideology. Citizen i in group M prefers candidate L if

$$W^M(q_L) > W^M(q_C) + \sigma^i, \tag{2}$$

where σ^i is an idiosyncratic preference shock with uniform distribution over the interval $[-\frac{1}{2\phi}, \frac{1}{2\phi}]$:

$$\sigma^i \sim U[-\frac{1}{2\phi}, \frac{1}{2\phi}].$$

Thus, ϕ denotes the ideological dispersion of the middle-income group. Higher ϕ means that middle-income citizens are ideologically more homogeneous, and, therefore, more sensitive to candidates' policies.

2.3 Participation Decision

Group M differs from the other two groups in another crucial way: citizens in P and R know their ideological preferences, while citizens in M do not know them, but can learn them (as well as the policy announcements of candidates) at a cost.

Citizen i in group M participates in the elections if the net benefit of participating exceeds the net benefit of non-participation:

$$B_i - c \geq 0 - \xi.$$

Here, B_i denotes the expressive (or civic duty) benefit from voting, c denotes the cost of voting, and ξ stands for the cost of non-voting. This latter cost is positive if there is compulsory voting (e.g., a fine is imposed on non-voters). Note that we assume away completely the instrumental "pivotal-voter" motivation for voting. This means that any voter regards her probability of casting a pivotal vote as negligible.

The middle-income citizen that decides to participate learns her ideological preference σ^i and the policy announcements q_L and q_C.

The cost of voting consists of two parts: the information cost and the travel cost. We normalize the latter to zero. The information cost decreases with the education level. For simplicity, we assume that it equals the inverse of the education level:

$$c = \frac{1}{E}.$$

Given these assumptions, the voting decision becomes: vote if

$$B_i \geq \frac{1}{E} - \xi.$$

Let the expressive benefit of voting be a random variable, independent across citizens, and drawn from a c.d.f. $F(.)$. Then, the turnout in the middle-income group (which we denote as T) is:

$$T = \Pr(B_i \geq \frac{1}{E} - \xi) = 1 - F(\frac{1}{E} - \xi).$$

Note that the turnout in the middle-income group (and, thus, the overall turnout) increases with education and with the cost of non-voting:

$$\frac{\partial T}{\partial E} > 0, \quad \frac{\partial T}{\partial \xi} > 0.$$

2.4 Equilibrium Policy

Let's find the expected vote shares of the candidates. The swing voter in group M, i.e. the voter that is indifferent between L and C is the one with ideological preference equal to

$$\sigma^M \equiv W^M(q_L) - W^M(q_C).$$

Thus, L's share of votes (prior to shock δ) among voting citizens in group M is

$$\Pr(\sigma^i < \sigma^M) = \frac{1}{2} + \phi[W^M(q_L) - W^M(q_C)].$$

L's total votes among all voters (prior to shock δ) is

$$\widetilde{\pi}_L = (\frac{1}{2} - \frac{d}{2}) + dT(\frac{1}{2} + \phi[W^M(q_L) - W^M(q_C)]).$$

The term in first brackets represents the poor group's votes, while the last term is the number of votes that L gets in the middle-income group.

Given the shock δ, the expected number of votes of candidate L are

$$\pi_L = (\frac{1}{2} - \frac{d}{2}) + dT(\frac{1}{2} + \phi[W^M(q_L) - W^M(q_C)]) - \delta.$$

The probability that L wins the elections is the probability that the number of votes in her favor exceed 50% of the total votes:

$$\begin{aligned} p_L &= \Pr_{\delta}(\pi_L > \frac{1}{2}(1 - d + dT) = \\ &= \Pr_{\delta}(\delta < dT(\frac{1}{2} + \phi[W^M(q_L) - W^M(q_C)]) - \frac{1}{2}dT) \end{aligned}$$

The last line says that the probability that L wins the elections equals to the probability that the popularity shock is smaller than the difference between her votes in middle income group and $\frac{1}{2}$ of votes of that group. Given our assumption about the distribution of the popularity shock, this probability is

$$p_L = \frac{1}{2} + \frac{1}{2}\phi dT[W^M(q_L) - W^M(q_C)]. \tag{3}$$

Now we calculate equilibrium policies that candidates announce at stage 1. They take into account the uncertainty arising from the popularity shock at stage 2 and voters' behavior at stage 3. Candidate L's problem is to maximize (1) by choosing the policy vector q_L. Candidate C's problem is analogous and symmetric to that of L. Therefore, in equilibrium, both candidates announce the same policy.

The first-order conditions of candidate L's problem are:

$$\begin{aligned} \frac{dE(v_L)}{dg_L} &= (R + \mu r_L)\frac{\partial p_L}{\partial g_L} = 0 \\ \frac{dE(v_L)}{dr_L} &= (R + \mu r_L)\frac{\partial p_L}{\partial r_L} + \mu p_L = 0 \end{aligned}$$

From the first expression and deriving (3) with respect to g_L, we find

$$\frac{1}{2}(R + \mu r_L)\phi dT\frac{\partial W^M(g_L)}{\partial g_L} = 0.$$

Given that $W_{gr}^{M} = 0$, in equilibrium, candidate L proposes the amount of public good preferred by middle-income citizens.

Note that in equilibrium $p_L = p_C = \frac{1}{2}$. Then, from the second expression, we get

$$(R + \mu r_L) * (-\frac{1}{2}\phi dT) + \frac{1}{2}\mu = 0$$

Therefore, equilibrium rents are (taking into account the possibility of a corner solution):

$$r^* = \max[\frac{1}{\phi dT} - \frac{R}{\mu}, 0]. \tag{4}$$

Rents are not driven to zero in equilibrium because a small decrease in announced rents increases the probability of winning only by a finite amount. This happens because voters care about both policy and ideology. The degree to which the pool of voters cares about the ideology, though, affects the size of equilibrium rents. If the partisan groups (poor and rich) are smaller (i.e., d is larger), rents are decreased, because the middle-income voters, who care also about policy, constitute a larger share of the electorate. If middle-income voters are ideologically more homogeneous (higher ϕ), they are more sensitive to policies, and the politicians' marginal cost of extra rent is higher. This leads to lower rents in equilibrium. The effect of a higher exogenous value of holding office and a higher transaction cost of rent extraction (lower μ) is similar.

Note the role of voter turnout as a disciplining device on politicians. Higher turnout (here, of middle-income voters, since the other two groups vote always) increases the middle-income voters' share in the overall pool of voters and makes the electoral competition more intense. This decreases equilibrium rents. Thus, parameters driving turnout affect also politicians' rent-seeking be-

havior. In other words, higher education level of citizens and the presence of compulsory voting (higher non-voting costs) lead to higher turnout and lower rents in equilibrium.

3 Empirical Implications

The basic idea of our model is that a higher education level of citizens and a higher non-voting cost induces a higher turnout among ideologically mobile voters, and thus makes the electoral competition more intense. This, in turn, drives down the equilibrium rents of politicians. From here, we derive the main empirical predictions of our model.

Prediction 1 (education - turnout). Countries with higher education level exhibit higher turnout and have lower corruption level.

Prediction 2 (compulsory voting - turnout). Countries with compulsory voting have higher turnout and lower corruption level.

Income inequality also has a key role in our model. Higher income inequality means that there are less middle-income voters, which are more mobile. Therefore, the electoral competition becomes less intense and this leads to higher equilibrium political rents.

Prediction 3 (income inequality). Countries with higher income inequality have higher corruption.

In the remainder of the paper, we confront these predictions with cross-country data from a set of 49 democracies.

4 Evidence

4.1 Data

As an empirical counterpart to politicians' rents, we use three variables which were originally constructed to measure the extent of corruption. All three variables come from the data appendix to Persson and Tabellini (2003). The first measure is the Corruption Perception Index of Transparency International. These measures are issued every year, and we take the average for years 1995 to 2000. We shall denote the variable as $Corr\_CPI$ (it corresponds to variable $Cpi9500$ in the Persson-Tabellini dataset). The second measure is $Corr\_K1$, constructed by Kaufmann, Kraay, and Zoido-Lobaton (1999). It measures the degree to which a country has created an environment with fair and predictable rules for economic activity (in the dataset, it corresponds to the variable $Graft$). The third measure, $Corr\_K2$, comes from the same source as the second, and measures the perceptions of the quality of the public sector provision of a country, the quality of the bureaucracy, the competence of civil employees, and their independence from political pressure (it corresponds to variable $Govef$ in the dataset). In all three measures, higher score means more corruption.

As a measure of turnout, we use the average turnout in national elections for 1960-2000, from Lundell and Karvonen (2003). The dataset comprises several other political variables. All variables, unless otherwise specified, come from Persson and Tabellini (2003). The dataset includes the index of democracy ($PolityIV$), dummy for presidential democracy ($Pres$), the average size of voting districts ($Magn$), and the proportion of legislators elected by plurality rule via a vote on individuals as opposed to party lists ($Pind$). Persson, Tabellini, and Trebbi (2003) have found that these political variables significantly affect

corruption measures. We also include a dummy for federalism ($Federal$). Fisman and Gatti (2002) find that a decentralized political structure is negatively correlated with corruption.

We include in our analysis other social and economic variables that have been found to affect corruption. *Lpop* measures the log of population in millions. $Avelf$ is the average ethno-linguistic fractionalization. Mauro (1995) has found the significant effect of these variables on corruption. Treisman (2000) finds that religious beliefs and the legal system affect corruption, so we include variables $Prot80$ and $Catho80$ (the shares of country's Protestant and Catholic population in 1980), $Confu$ (a dummy for Confucian dominance in the country), $Legor\_Uk$, $Legor\_Fr$, and $Legor\_Ger$ (dummy for country's legal system being based on Anglo-Saxon common law tradition, French civil law tradition, or German civil law tradition). Ades and di Tella (1999) find that openness to trade significantly reduces corruption, so we include a measure of openness to trade ($Trade$) to our analysis. We also add the log of income per capita (Lyp) in our regressions, to control for the level of economic development.

Our model predicts that democracies with a higher income inequality have higher political rent extraction, so we include the average of the Gini index of income inequality between 1980 and 1990 ($Gini$). It is difficult to find a more recent reliable measure of income inequality. However, since the corruption variables are quite stable across time, this lack of more recent data should not affect the quality of our empirical analysis. Edu measures the education level in a country. $Comp$ measures compulsory voting, i.e. the presence of sanctions on non-voters. This measure comes from the International Institute for Democracy and Electoral Assistance (*www.idea.int*).

Appendices at the end of the paper present the list of countries, the full description of variables, and the summary statistics for all variables.

4.2 Descriptive Statistics

Table 1 presents the summary statistics for the main variables in our analysis. We have observations on $Corr\_CPI$ for 44 countries and observations for the other two measures of corruption for a slightly large set of countries (49 countries). All the three measures are on 0-10 scale. Corruption measured by CPI has a slightly higher average (4.21 against 3.77 and 3.74) and a larger standard deviation (2.53 against 1.77 and 2.01) than the other two measures.

The average turnout in the 49 countries in our sample is around 75%. The variation in turnout across countries is large: the standard deviation is 12% with the highest turnout above 95% and the lowest below 45%. About a half of the countries have some form of compulsory voting.

4.3 Cross-Country Regressions

The identifying assumption of our model is that education affects corruption only via its effect on turnout. We estimate the following equations:

$$\begin{aligned} Corr &= \alpha_0 + \alpha_1 Turnout + \alpha_2 Gini + \alpha_3 x + u \\ Turnout &= \beta_0 + \beta_1 Edu + \beta_2 Comp + \beta_3 x + e \end{aligned}$$

Here, $Corr$ is one of the measures of corruption ($Corr\_CPI$, $Corr\_K1$, and $Corr\_K2$), x is the vector of other determinants of corruption mentioned above, and u and e are error terms.

Estimating these equations separately would lead to inconsistent estimates on corruption equation, so we use the two-stage least squares method, with Edu

and $Comp$ as instruments in the first stage regression. Another reason for using two-stage estimator is a possible reverse causality: higher corruption creates cynicism among voters, and leads to lower turnout in future elections.

The signs on the coefficients predicted by the theory are: $\alpha_1 < 0$, $\alpha_2 > 0$, $\beta_1 > 0$, $\beta_2 > 0$.

Table 2 presents regression results. Columns (1) and (2) report the results of the first- and second-stage regressions using $Corr\_CPI$ as the measure of corruption. In this regression we have observations for 44 countries. Columns (3) and (4), and (3) and (5) report the results of similar regressions using, respectively, $Corr\_K1$ and $Corr\_K2$ as the measure of corruption. In these regressions, we have observations for 49 democracies.

In all the three regressions, we find that $Turnout$ has a negative and significant coefficient, in line with our theoretical model. Countries with higher turnout exhibit lower corruption level. $Gini$ has a positive coefficient, as predicted by our model, but it is not significant in neither regression. We also see that our instruments (Edu and $Comp$) are valid and relevant. The over-identifying restrictions test has a p-value between 0.45 and 0.81 (so the test cannot reject the validity of instruments), and the instruments jointly explain slightly less than $\frac{1}{3}$ of variation in turnout.

Thus, the data supports our empirical predictions 1 and 2, and does not lend support for prediction 3. Perhaps, this is because in countries with higher income inequality, the ideological dispersion among the middle-income voters is also higher (which corresponds to a lower ϕ in our model), so we cannot distinguish the two effects in the data.

The quantitative effect of turnout on corruption is large. For example, one

standard deviation increase in turnout (11.9%) reduces corruption - as measured with $Corr\_CPI$ - by 0.85 points (about $\frac{1}{3}$ of the standard deviation).

5 Discussion

In this section we discuss the key assumptions of our model. Our objective is to show that the main results of the model are robust to alternative setups and to provide some empirical evidence to support our modelling strategy.

Our model assumes perfect commitment of candidates' to their announced policies. A model with an incumbent politician and backward-looking voters who care both about ideology and policy would give the same results as in our model. The key point is that the ideologically mobile voters are also the ones with a higher informational cost of voting. This is because they need to collect information about candidates in order to assess their policies (or performance, in the case of backward-looking voters), while ideological voters do not have to bear this cost.

The key assumption of the model is that the variation in corruption is driven by the variation in turnout among mobile voters. This requires some empirical support. We thus look at the survey data from the Comparative Study of Electoral Systems (CSES, *www.umich.edu/˜cses/*), which has individual-level data from recent elections in 35 democracies. We calculate the average turnout (by country) among voters that declare themselves ideologically neutral and among those that declare themselves ideologically motivated. Table 3 presents the results of our computations. Turnout among neutral voters is both lower and considerably more volatile than turnout among ideological voters. This gives good support to our modelling choice.

6 Conclusion

This paper has built and tested a theory of electoral competition with political rents and endogenous turnout. Turnout is determined by political-information cost that citizens face and the extent of compulsory voting. The model rests on two key assumptions. First, the mobility of voters is asymmetric across income groups: middle-income voters are less ideological than the poor and the rich. Second, less ideological voters face a positive cost of information about their ideological preferences. Given these assumptions, we find that higher education level and higher non-voting costs lead to higher turnout of mobile voters, and thus make electoral competition more intense. This, in turn, reduces equilibrium rents for politicians.

The cross-country data for 49 democracies support the predictions of the model. We find that higher education level of citizens and the presence of compulsory voting lead to higher turnout, and higher turnout is associated with lower corruption.

Our findings help to shed light on recent debates about the effect of declining turnout in Western democracies on the quality of democratic outcomes. Our results suggest that if decline in turnout is due to higher political information costs, politicians have opportunities to exploit the resulting less intense electoral competition and appropriate higher rents. On the other hand, if decline in turnout is due to an increase in the number of ideologically neutral voters, then the electoral competition becomes more intense and, thus, politicians can grab less rents.

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Appendix A. List of countries

Australia	Germany	Peru
Austria	Greece	Philippines
Belgium	Guatemala	Portugal
Bolivia	Honduras	Spain
Botswana	India	Sri Lanka
Brazil	Ireland	Sweden
Canada	Israel	Switzerland
Chile	Italy	Thailand
Colombia	Japan	Trinidad&Tobago
Costa Rica	Luxembourg	Turkey
Denmark	Malaysia	USA
Dominican Republic	Mauritius	UK
Ecuador	Mexico	Venezuela
El Salvador	Netherlands	
Fiji	New Zeland	
Finland	Nicaragua	
France	Norway	
Gambia	Paraguay	

Appendix B. Description of Variables

AVELF: index of ethno-linguistic fractionalization, approximating the level of lack of ethnic and linguistic cohesion within a country. Ranges from 0 (homogeneous) to 1 (strongly fractionalized). Sources: La Porta et al. (1999), Mauro (1995).

CATHO80: percentage of a country's population belonging to the Roman Catholic religion in 1980. Source: La Porta et al. (1999).

COMP: compulsory voting dummy variable, equal to 1 if a country imposes some sanction on non-voters and 0 otherwise. Source: International Institute for Democracy and Electoral Assistance (www.idea.int).

CONFU: dummy variable for the religious tradition in a country, equal to 1 if the majority of the country's population is Confucian/Buddhist/Zen, 0 otherwise. Source: Wacziarg (1996).

CORR_CPI: corruption perceptions index, measuring perceptions of abuse of power by public officials. Average, over 1995-2000, of the CPI, which ranges from 0 to 10, with higher values denoting more corruption. Sources: Transparency International (www.transparency.de) and Internet Center for Corruption Research (www.gwdg.de/~uwvw).

CORR_K1: point estimate of "Graft", the sixth cluster of Kaufmann et al.'s (1999) governance indicators, focusing on perceptions of corruption. Ranges from 0 to 10 (lower values correspond to better outcome). Source: Kaufmann et al. (1999).

CORR_K2: point estimate of "government effectiveness" the third cluster of Kaufmann et al.'s (1999) governance indicators, focusing on perceptions of the quality of public service provision the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government' commitment to policies into a single grouping. Ranges from 0 to 10 (lower values correspond to better outcome). Source: Kaufmann et al. (1999).

EDU: total enrollment in primary and secondary education in a country, as a percentage of the relevant age group in the country's population. Computed by dividing the number of pupils (or students enrolled) in a given level of education (regardless of age) by the population of the age group that officially corresponds to the given level of education and multiplying the result by 100. Source: UNESCO-Education Indicator-Category Participation (www.unesco.org).

FEDERAL: dummy variable, equal to 1 if a country has a federal political structure, 0 otherwise. Source: Adsera, Boix, and Payne (2003).

GINI: Gini index of income distribution, computed as the average of two data points: the observation closest to 1980 and the observation closest to 1990. When data for only one of the two years are available, only that year is included. Source: Deininger and Squire (1996).

LEGOR_UK, LEGOR_FR, LEGOR_GE: dummy variables for the origin of the legal system in the country, classifying a country's legal system as having its origin in Anglo-Saxon common law (UK), French civil law (FR), or German civil law (GE). Source: La Porta et al. (1998).

LPOP: natural logarithm of total population (in millions). Source: World Bank (2000).

LYP: natural logarithm of real GDP per capita in constant dollars (chain index) expressed in international prices, base year 1985. Average over 1990-1998. Source: Penn World Tables, mark 5.6 (http://datatcentre2.chass.utoronto.ca/pwt/docs/topic.html), World Bank, World Development Indicators (www.worldbank.org).

MAGN: inverse of district magnitude, defined as number of electoral districts in a country, divided by number of seats in lower (or single) chamber for the latest legislature. Source: International Institute for Democracy and Electoral Assistance (www.idea.int), Quain (1999), Kurian (1998), and national sources.

PIND: measure of proportion of legislators elected by plurality rule via a vote on individuals as opposed to party lists. Computed as 1 minus the fraction of lower house legislators elected through party list systems over the number of seats in lower chamber for the latest legislature. Source: Cox (1997), International Institute for Democracy and Electoral Assistance (www.idea.int), Quain (1999), Kurian (1998), and national sources.

POLITYIV: score for democracy, ranging from +10 (strongly democratic) to –10 (strongly autocratic). Source: Polity IV project (www.cidcm.umd.edu/inscr/polity/index.htm).

PRES: dummy variable for forms of government, equal to 1 in presidential regimes, 0 otherwise. Sources: Shugart and Carey (1992) and national sources.

PROT80: percentage of population in a country professing the Protestant religion in 1980. Source: La Porta et al. (1998).

TRADE: measure of openness to trade, computed as the sum of exports and imports of goods and services divided by the GDP. Source: World Bank (2000).

TURNOUT: average turnout in national elections in 1960-2000. Source: Lundell and Karvonen (2003).

Appendix C. Summary Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
corr_CPI	44	4.206	2.534	0.268	8.250
corr_K1	49	3.768	1.766	0.940	7.200
corr_K2	49	3.738	2.011	0.742	6.917
turnout	49	75.361	11.906	44.100	95.100
edu	49	91.991	15.529	48.150	117.114
comp	49	0.490	0.505	0	1
gini	49	40.176	8.999	25.500	58.690
pres	49	0.408	0.497	0	1
pind	49	0.393	0.456	0	1
magn	49	0.406	0.364	0.007	1
federal	49	0.224	0.422	0	1
trade	49	70.839	36.854	17.562	188.989
avelf	49	0.244	0.232	0.003	0.800
prot80	49	15.882	26.254	0	97.800
catho80	49	52.594	40.988	0.100	96.900
confu	49	0.061	0.242	0	1
polityIV	49	8.356	2.341	0.222	10
lpop	49	2.546	1.584	-0.908	6.812
lyp	49	8.710	0.896	6.638	9.942
legor_uk	49	0.306	0.466	0	1
legor_fr	49	0.531	0.504	0	1
legor_ge	49	0.082	0.277	0	1

Table 1. Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Corr_CPI	44	4.21	2.53	0.27	8.25
Corr_K1	49	3.77	1.77	0.94	7.20
Corr_K2	49	3.74	2.01	0.74	6.92
Turnout	49	75.36	11.91	44.10	95.10
Edu	49	91.99	15.53	48.15	117.11
Comp	49	0.49	0.51	0	1
Gini	49	40.18	9.00	25.50	58.69

Table 2
Estimation Results (Instrumental Variables)

	(1)	(2)	(3)	(4)	(5)
Dep. Var.	Turnout	Corr_CPI	Turnout	Corr_K1	Corr_K2
Edu	0.478		0.564		
	(0.203)**		(0.189)***		
Comp	7.581		6.601		
	(3.875)*		(3.730)*		
Turnout		-0.071		-0.056	-0.048
		(0.030)**		(0.021)***	(0.021)**
Gini		0.032		0.031	0.033
		(0.035)		(0.025)	(0.026)
Partial R^2	0.29		0.29		
Hansen J-stat.		0.575		0.206	0.056
P-value		0.45		0.65	0.81
Observations	44	44	49	49	49
Adj. R-squared	0.32	0.85	0.27	0.84	0.77

Note: Robust standard errors in parentheses; *** significant at 1%, ** significant at 5%, * significant at 10%.
Partial R^2 reports how much variation in Turnout the two instruments explain jointly. Hansen J-stat.: the test of over-identifying restrictions, distributed like Chi^2 with 1 degree of freedom (critical value at 5% confidence is 3.84)

Table 3. Comparing Turnout across Voter Groups

	Mean	***Stan.Dev.***
Turnout among all voters	85%	11%
Turnout among ideological voters	91%	7%
Turnout among neutral voters	79%	15%