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Congruence Among Voters and Contributions to Political Campaigns

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Abstract:
This paper builds a theory of electoral campaign contributions. Interest groups contribute to political campaigns to signal their private information on the valence of candidates for office. Campaign contributions by an interest group enhance electoral fortunes by a candidate who is valent with this group. The candidate preferred by an interest group whose private information is the most precise receives the highest contributions and wins political office. Campaign contributions are smaller than donor electoral sorting benefits.

Keywords: Campaign contributions, incumbency advantage

JEL Classification: D72, D82, M37

1 Introduction

Political campaign contributions play an important role in elections: (i) political advertising is expensive, however, these expenses are much smaller than stakes of public policies; (ii) most of campaign contributions comes from private sources; (iii) winners of elections (mostly incumbents) receive the highest contributions. These patterns are clearly revealed in the US Congressional races. During the last two decades, the US Congressional candidates raised and spent more than a billion 2003 US dollars per election cycle.[1] Approximately 80% of these contributions were donated by individuals most of them directly, and the other part through Political Action Committees.[2] On average, an incumbent candidate received almost 6 times larger contributions than a challenger candidate.[3] Incumbents won more than 90% of House races, and about 80% of Senate races.[4]

Given that private campaign financiers may pursue different objectives, these observations raise the following inter-related issues: what are the incentives to contribute to electoral campaigns, and why does political advertising influence elections? Furthermore, why is it that campaign contributions are skewed towards incumbent candidates?

[1] From 1981 to 2002, average US Congressional campaign fundraising per election cycle was 1069 millions of 2003 US dollars (see data available at http://www.fec.gov, deflated with GDP per capita deflator). This sum is roughly equal to half the annual budget of a small state like Wyoming or Dakota. At the same time, campaign fundraising per election cycle made up only 0.026% of Federal budget receipts in the two subsequent years.

[2] In order to increase transparency of corporate participation in campaign financing, the Federal Election Campaign Act of 1971 allowed organizations to establish Political Action Committees (PACs) that raise donations from individuals (mostly stockholders and managers) and give them to candidates. In the following three decades, 60% of the Fortune 500 companies have established their PACs. However, from 1982 to 2004, donations from individuals constituted 55% of the US Congressional campaign receipts, while the share of contributions from PACs was only 26%.

[3] From 1992 to 2002 an incumbent to a challenger candidate campaign receipts ratio was 5.67 in the House and 5.62 in the Senate.

[4] From 1964 to 2002, the House re-election rate reached a minimum of 85% in 1970, and achieved a maximum of 98% in 1998 and 2000. The Senate re-election rate fell to 55% in 1980, and peaked at 96% in 1990.

To address these issues, we build a two-period model of a representative democracy with an election at the end of the first period. The electorate is divided in two interest groups. Each group is a uniform constituency of voters who benefit from group-specific public policy. There are two candidates competing for office: the incumbent and the challenger. A candidate has two-dimensional *type*: each dimension represents her *valence* with specific interest group, that is, her ability to deliver policy benefits to this group.

A voter's objectives are lexicographic: (i) it is the most important for him to elect a candidate who is valent with his interest group; and (ii) he would also like to elect a candidate who is not valent with the other interest group. Voter information about the challenger's type is diffused. Instead, a voter holds private signal on the incumbent's type. This signal is generated by the voter's benefit from the incumbent's public policy: strength of the signal depends on the size of the benefit.

The voters can signal their information about the incumbent's type in two ways: (i) through "cheap-talk" endorsements; and (ii) through campaign contributions. We allow for any amount of correlation between the dimensions of a candidate's type, and we study bandwagon effects of endorsements and campaign contributions.

When the correlation is weaker than *the lower threshold*, private information by one interest group is irrelevant for the vote by the other interest group. Hence, both endorsements and campaign contributions are useless. When the correlation is stronger than *the upper threshold*, both interest groups would like to vote for the same candidate depending on the most precise signal on the incumbent's type out of the two that they receive. Therefore, they effectively share information through "cheap-talk" endorsements and vote coherently afterwards.

However, when the correlation is stronger than the lower threshold, but weaker than the upper threshold, "cheap-talk" endorsements are not convincing. The reason is that the vote by an interest group is independent, unless it believes that the other interest group's private signal on the incumbent's type is more important than its own: then, it is brought on board by better-informed interest group. Naturally, an interest group would always like to claim that it holds the strongest signal on the incumbent's type, so as to avoid a possible tie in the election. Therefore, the voters do not believe such claims, unless they are supported by campaign contribution that is unreasonably expensive if the donor's signal is weaker than it claims. When an interest group indeed receives information that may induce electoral bandwagon, it burns money through campaign contributions.

Notice, that we rationalize campaign contributions without the sale of policy favours or assuming that the voters prefer a candidate with higher campaign spending: this is the main difference between our paper and other models of campaign contributions. We find that campaign contributions lie below the donor's expected signalling benefits. This insight comports nicely with political advertising expenditures observed to lie far below the stakes of public policies (see Ansolabehere, de Figueiredo, and Snyder 2003). Furthermore, we find that the incumbent raises more contributions, because the interest groups hold more information about her type than about the challenger's type.

The paper is organized as follows. The next section reviews closely related literature. Section 3 presents the model. Section 4 considers a "thought experiment" in which the interest groups share their information about the candidates for office. Thereby, it prepares the basis for Section 5 that describes bandwagon effects of endorsements and campaign contributions. Section 6 discusses the impact of campaign contributions on electoral sorting. Section 7 briefly reviews the main insights. Technical proofs are collected in the Appendix.

2 Related literature

A sizeable literature in economics views campaign contributions as a payment for policy favor from informed lobbies to candidates, and explicitly assumes that uninformed voters are more eager to elect a candidate who raises more contributions. These papers do not explain *why politicians get away with corruption*, because they do not model the asymmetry of information that generates a signal-extraction problem for the voters or judges.

Starting with Austen-Smith (1987), a growing number of studies point at this drawback, and build models in which political campaigns provide information about the quality of candidates to rational voters. Political advertising is financed by informed lobbies donating contributions to those candidates who bias policies towards their interests. However, in equilibrium, candidates who run more expensive campaigns are also more suitable for the voters. The reason depends on whether political advertising is assumed to be directly informative or not.

Unlike us, Ashworth (2003), Coate (2003), Schultz (2003), and Wittman (2005) assume that campaign advertising directly informs the voters about policy platforms by candidates for office. Therefore, those candidates whose platforms are more beneficial for the voters generate higher returns from campaign advertising. Hence, they advertise more. Instead, Potters, Sloof, and van Winden (1997), and Prat (1999, 2002a, 2002b, 2004), assume that political advertising is not directly informative. Candidates for office must bias their policies in order to raise campaign donations from informed lobbies. High campaign receipts by a candidate signal her high quality, because lobbies have stronger incentives to give money to valent candidates.[5]

We rationalize political advertising much like Prat does in the series of his papers. However, in our model there is no sale of policy favours. Candidates for office receive donations from interest groups which care directly about the election winner's type, because this type determines public policy after the election. This approach is reminiscent of Battaglini and Bénabou (2003), who study political activism by several interest groups.

[5] This is reminiscent of Milgrom and Roberts (1986). However, in the context of political (rather than commercial) advertising candidates outsource campaign finance.

3 A model of electoral campaigns

Consider a two-period model of a representative democracy.[6] At the end of the first period there is an election in which two candidates compete for office: the first-period incumbent and the challenger.

The electorate is divided in two interest groups: each group is a uniform constituency of voters who benefit from group-specific public project. We index interest groups and group-specific projects by $i = 1, 2$. The cost of project i is normalized to 1. It is paid by both interest groups in equal shares. Return r_i from project i goes to interest group i.[7]

Project i may generate: (i) *high* return, that is, $r_i = R$; or (ii) *moderate* return, that is, $r_i = r$ (where $\frac{1}{2} < r < R$); or else (iii) no return at all, in which case we say that it *fails*. The outcome of project i depends on *valence* v_i by the politician in office with interest group i.[8] The higher the valence, more weight is put on successful outcomes:

$$r_i = \begin{cases} R, \text{ with probability } v_i, \\ r, \text{ with probability } v_i + l, \\ 0, \text{ with probability } 1 - l - 2v_i. \end{cases}$$

Parameter l measures "luck". It is such that the politician in office: (i) delivers moderate return from a project with a positive probability; and (ii) fails a project with a positive probability, for any v_i:

$$0 < l < 1 - 2v. \tag{1}$$

For simplicity, we assume that a candidate for office is either valent with interest group i, that is $v_i = v$; or she is nonvalent with interest group i, that is $v_i = 0$. Table 1 describes a candidate's two-dimensional *type* (v_1, v_2), and

[6] Timing of the game is summarized at the end of this section.

[7] Outcome of project i is realized within a period. However, for notational convenience, we omit period indicator for variable r_i.

[8] We follow the political science tradition of using "valence" for "quality": a politician's valence with an interest group measures her ability to deliver policy benefits to this group, or else her congruence with the group.

the prior distribution from which it is drawn. This distribution is common knowledge, while a candidate's type is her private information.

Table 1: A candidate's type.

	$v_2 = v$	$v_2 = 0$
$v_1 = v$	VALENT (prior weight $\frac{\rho}{2}$)	BIASED TOWARDS INTEREST GROUP 1 (prior weight $\frac{1-\rho}{2}$)
$v_1 = 0$	BIASED TOWARDS INTEREST GROUP 2 (prior weight $\frac{1-\rho}{2}$)	NONVALENT (prior weight $\frac{\rho}{2}$)

We say that a candidate is *unbiased* when her type lies on the main diagonal of table 1, that is, $v_1 = v_2$. The prior probability of this event is equal to ρ. Hence, parameter ρ measures the degree of *congruence* between the interest groups. It is the most important parameter of the model.

In each period, the politician in office decides whether to undertake a project or to shut it down. Notice, that in general this decision is not trivial, because the projects are costly, and their outcomes are stochastic. We assume that it is efficient (i) to undertake project i, if and only if the politician in office is valent with interest group i; and (ii) to undertake both projects, if type by the politician in office is drawn at random from the prior distribution. These properties are guaranteed by inequalities

$$lr + \frac{v}{2}(r + R) > 1, \text{ and} \tag{2}$$

$$lr < 1. \tag{3}$$

However, the politician in office is not benevolent. She attaches only an arbitrary small value to picking efficient policies. Her primary objective is to be in office.

For simplicity, we assume that the voters see whether a project is undertaken or not, and we focus on those perfect Bayesian equilibria of the game in which re-election concerns encourage the first-period incumbent to undertake both projects regardless of her type.[9] Returns from the projects generate two signals on the incumbent's type. These signals go to different receivers: return from project i is private information by interest group i.

The interest groups can share information during electoral campaigns in two ways. The first way is *cheap-talk endorsements*: interest group i can claim that it has received any return $e(r_i) \in \{0, r, R\}$ from project i, regardless of return r_i that it has received in reality.[10] The second way is costly signalling through *campaign contributions*: interest group i can contribute any positive sum $c_I(r_i)$ to the incumbent's campaign or/and any positive sum $c_C(r_i)$ to the challenger's campaign. Both endorsements and campaign contributions are public information.

Timing of the game

Date 1.

a. Nature draws the incumbent's type.

b. The incumbent learns her type, and she undertakes both projects.

c. A project either succeeds or fails. Interest group i receives return r_i from project i and updates its beliefs about the incumbent's type.

d. An interest group makes public endorsements and/or campaign contributions, and the voters form their *posterior beliefs* about the incumbent's type.

Date 2. The election.

The winner of the election picks public policy.

[9] The last section in the Appendix proves the existence of such an equilibrium.

[10] There are three reasons for which we assume that endorsements provide "*soft*" information about candidates for office. (i) In the US, lying during electoral campaigns is legal (unlike lying in commercial advertising). Also, direct lying can be avoided by selective reporting (called in the literature on communications"*slanting*"), which allows to skew campaign message. (ii) Experimental evidence shows that political advertising is effective, even if it contains no direct information (Ansolabehere and Iyengar 1996). (iii) Under the alternative assumption, campaign expenditures and the vote depend on prices of political advertising. However, the increase in prices of television advertising (the largest item of electoral campaign expenditures, Prat 1999), has no effect on total campaign spending levels or vote margins in the US Congressional elections (Ansolabehere, Gerber, and Snyder 2001).

Tie-breaking assumptions

(T1) If the vote results in a tie, either interest group is pivotal with probability $\frac{1}{2}$.

(T2) An interest group has arbitrary weak preference for making: (i) truthful endorsements; and (ii) donations to the candidate whom it would like to elect.

(T3) When a voter has no preference between the candidates for office, he votes for the incumbent.

4 The shared-information "thought experiment"

First of all, we would like to understand how the vote by one interest group depends on private information held by the other interest group. This section describes voting behavior when the first-period returns from the projects are public information. Hereafter, we call it *informed vote*. The reader who is uninterested in the details of the analysis can move directly to summary at the end of the section.

Voter objectives Being freed from re-election concerns, the winner of the election picks efficient public policy at date 2. That is, she undertakes project i if and only if she is valent with interest group i (recall inequalities (2) and (3)). Hence, when a valent-type candidate wins the race, the expected second-period payoff by interest group i is equal to[11]

$$B = vR + (l + v)\,r - 1 > 0,$$

[11] Inequality (2) implies that $B > 0$.

and its expected payoff from re-election is equal to[12]

$$I(r_i, r_{-i}) = B\left(\Pr(v_i = v \mid r_i, r_{-i}) - \frac{1}{2}\right) +$$

$$+\frac{1}{2}\left(\Pr(v_i = v \mid r_i, r_{-i}) - \Pr(v_{-i} = v \mid r_i, r_{-i})\right). \tag{4}$$

If $I(r_i, r_{-i}) \geqslant 0$, interest group i votes for the incumbent. Otherwise, it votes for the challenger. Notice that

Remark 1 (voter posterior beliefs and benefits from re-election) *$I(r_i, r_{-i})$ increases in $\Pr(v_i = v \mid r_i, r_{-i})$ at speed $B + \frac{1}{2}$, and decreases in $\Pr(v_{-i} = v \mid r_i, r_{-i})$ at speed $\frac{1}{2}$.*

Hence, a voter's objectives are lexicographic: (i) it is most important for him to elect a candidate who is congruent with his interest group; (ii) he would also like to elect a candidate who is noncongruent with the other interest group: ideally, a voter would like to elect a candidate who is biased towards his interests.

The posterior beliefs about the incumbent's type depend on correlation between its two dimensions, and so does informed vote. We first describe informed vote for two extreme values of correlation coefficient ρ: $\rho = 0$ and $\rho = 1$. Then, we extend our description for other values of ρ by monotonicity argument.

Informed vote with biased candidates When $\rho = 0$, a candidate is biased. A successful outcome of project i signals that the incumbent is biased towards interest group i. Hence, an interest group votes for the incumbent, unless it receives a lower return from group-specific project than the other interest group.

Lemma 1 (informed vote with biased candidates) *Suppose that the first-period returns from the projects are public information. When $\rho = 0$,*

[12] The expected second-period payoff by interest group i is equal to (i) $B\Pr(v_i = v \mid r_i, r_{-i}) + \frac{1}{2}\left(\Pr(v_i = v \mid r_i, r_{-i}) - \Pr(v_{-i} = v \mid r_i, r_{-i})\right)$ if the incumbent stays in office; and to (ii) $\frac{B}{2}$ if the challenger wins the election.

interest group i votes for the challenger either if (i) $r_i = 0$ and $r_{-i} > 0$; or else if (ii) $r_i = r$ and $r_{-i} = R$. Otherwise, it votes for the incumbent.[13]

The left limit of Figure 1 depicts the vote described by Lemma 1: $I(0, R)$, $I(0, r)$, and $I(r, R)$ lie in the lower part of the Figure, while for any other pair of the first-period returns from the projects $I(r_i, r_{-i})$ is nonnegative.

Informed vote with unbiased candidates When $\rho = 1$, a candidate is unbiased. Therefore, both interest groups vote for the same candidate. Indeed, they re-elect the incumbent, unless the posterior weight is skewed towards the event that she is a non-valent type. This happens either when (i) both projects fail; or else when (ii) one project fails, the other project has moderate return, and the signal on the incumbent's type generated by the failure is stronger, that is,[14]

$$3l + 2v > 1. \tag{5}$$

Lemma 2 (informed vote with unbiased candidates) *Suppose that the first-period returns from the projects are public information. When $\rho = 1$, interest group i votes for the challenger if (i) $r_1 = r_2 = 0$; or else if (ii) $r_1 + r_2 = r$ and inequality (5) is fulfilled. Otherwise, interest group i votes for the incumbent.*

Figure 1 illustrates the case in which moderate return from a project generates a stronger signal on the incumbent's type than the failure of a project. At the right limit of the Figure, $I(r_i, r_{-i})$ is positive, unless $r_i = r_{-i} = 0$. That is, both interest groups vote for the incumbent, unless none of them receives any benefits.

Informed vote To describe informed vote for the interior values of parameter ρ, we first show its monotonicity.

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[13] Since a biased incumbent cannot deliver high return from both projects, $I(R, R)$ is not well-defined for $\rho = 0$. However, $I(R, R) = \frac{B}{2} > 0$ for any ρ arbitrary close to 0.

[14] Moderate return from a project generates a weaker signal on the incumbent's type than the failure of a project if and only if $\Pr(v_i = v \mid r_i = r) - \frac{1}{2} < \frac{1}{2} - \Pr(v_i = v \mid r_i = 0)$, which is equivalent to inequality (5): for the posteriors, see section A.2.

Lemma 3 (monotonicity of informed vote) (i) $\frac{\partial}{\partial\rho}(I(r_i, r_{-i})) > 0$, *if* $r_i < r_{-i}$, *or else if* $r_i = r_{-i} = r$; (ii) $\frac{\partial}{\partial\rho}(I(r_i, r_{-i})) < 0$, *if* $r_i > r_{-i}$, *or else if* $r_i = r_{-i} = 0$; (iii) $\frac{\partial}{\partial\rho}(I(R, R)) = 0$.

Notice, that for any pair of the first-period returns from the projects, the distance between the expected payoffs from re-election by different interest groups decreases in ρ (unless both projects have high return);[15] and when ρ is sufficiently close to 1, both payoffs have the same sign.[16]

To illustrate this point, suppose that project 1 fails, and project 2 has high return. The outcome of the first project signals that the incumbent's type lies in the lower cells of Table 1. The outcome of the second project signals that the incumbent's type lies in the left cells of Table 1.

When $\rho = 0$, the incumbent's type lies on the secondary diagonal of Table 1. Therefore, both signals tell that the incumbent is biased towards interest group 2. Trivially, the expected payoff from re-election by interest group 1 is negative, while that by interest group 2 is positive: notice, that at the left limit of Figure 1 $I(0, R)$ lies far below 0, while $I(R, 0)$ lies far above 0.

However, as ρ increases, more prior weight is put on the event that the incumbent's type lies on the main diagonal of Table 1. Hence, the expected payoff from re-election by interest group 1 increases in ρ, as depicted by the thick curve on Figure 1; while that by interest group's 2 decreases in ρ. Recall now, that high return from a project generates a stronger signal on the incumbent's type than the failure of a project. Therefore, in region

[15] When both projects have high return, the distance between the expected benefits from re-election by different interest groups is equal to 0 for any ρ: recall, that high return from a project cannot be generated by pure luck.

[16] Lupia (1994) shows that preferences by better-informed voters can be useful information for the vote by less informed voters by using survey data on voting behavior in insurance reform initiatives of 1998 in California. He finds that "poorly informed voters used their knowledge of insurance industry preferences to emulate the behavior of those respondents who had relatively high level of factual knowledge."

where ρ lies at least as high as threshold

$$\rho_R^0 = \frac{(B+1)(1-l)}{2B(1-v-l)+1-l} \tag{6}$$

expected payoffs from re-election by both interest groups' are nonnegative.

Using similar argument, we describe voter expected payoff from re-election for the other pairs of the first-period returns from the projects. When project 1 fails, and project 2 has moderate return, the expected payoffs from re-election by both interest groups have the same sign when ρ lies sufficiently high. The sign depends on which of the two signals on the incumbent's type is stronger. Figure 1 depicts the case where moderate return from project 2 generates a stronger signal on the incumbent's type than the failure of project 1, that is, inequality (5) is met. Dashed curve on the figure depicts the expected payoff from re-election by interest group 1. In region where ρ lies at least as high as threshold

$$\rho_r^0 = \frac{(B+1)(1+l)}{2B(1-v-l)+1+l} \tag{7}$$

the expected payoffs from re-election by both interest groups are nonnegative. Suppose instead, that the failure of project 1 generates a stronger signal on the incumbent's type than moderate return from project 2. In region where ρ lies above threshold

$$\rho_0^r = \frac{(B+1)(1+l)}{2B(v+2l)+1+l} \tag{8}$$

the expected payoffs from re-election by both interest groups are nonnegative. Notice, that threshold ρ_R^0 lies above both thresholds ρ_r^0 and ρ_0^r. The reason is that high return from a project generates the strongest signal on the incumbent's type.

When project 1 has moderate return, and project 2 has high return, the expected benefits from re-election by interest group 1 are negative for any ρ that lies below threshold

$$\rho_R^r = \frac{l(B+1)}{(B+1)(2l+v)-l-v}. \tag{9}$$

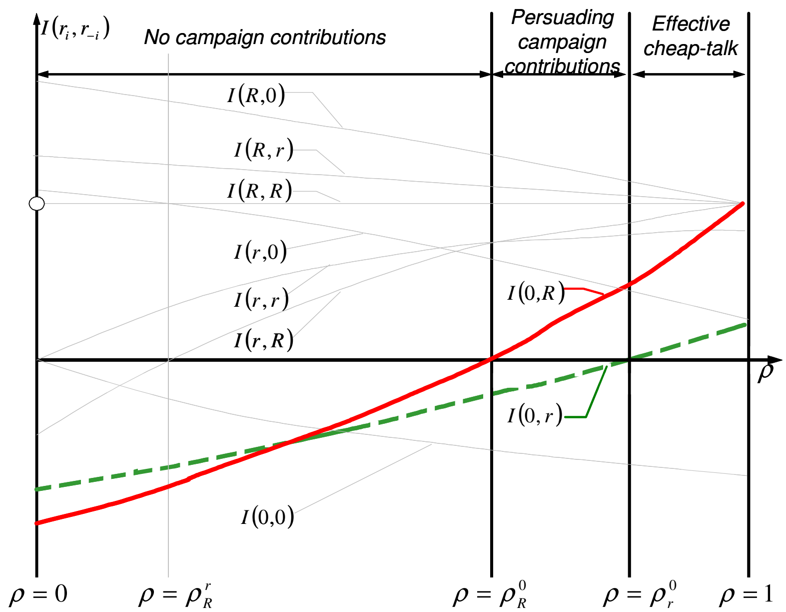

Figure 1: The expected payoff from re-election.

The reason is that it avoids re-electing a politician who is certainly valent with the other interest group (recall remark 1).

For all other combinations of the first-period returns from the projects, the expected payoffs from re-election by an interest group are positive if and only if it holds a positive return from group-specific project.

Lemma 4 (informed vote) *Suppose that the first-period returns from the projects are public information. Consider $\rho > 0$. Interest group i votes for the challenger when:* (i) $r_i = r_{-i} = 0$*; or* (ii) $r_i = r$*,* $r_{-i} = R$*, and* $\rho < \rho_R^r$*; or* (iii) $r_i = 0$*,* $r_{-i} = R$*, and* $\rho < \rho_R^0$*; or* (iv) $r_i = 0$*,* $r_{-i} = r$*, and either inequality (5) is fulfilled or* $\rho < \rho_r^0$*; or else* (v) $r_i = r$*,* $r_{-i} = 0$*, inequality (5) is fulfilled, and* $\rho > \rho_0^r$*. Otherwise, interest group i votes for the incumbent.*

Summary We can partition interval $(0, 1]$ of correlation coefficient ρ in three regions, depending on informed vote. This partition is depicted on Figure 1. In region where ρ lies below the *lower threshold* ρ_R^0, an interest group votes for the incumbent unless: (i) it receives no return from group-specific project; or (ii) it receives moderate return, while the other interest group receives high return, and ρ lies below threshold ρ_R^r.

In region where ρ lies between the lower threshold ρ_R^0 and the *upper threshold* $\min\{\rho_r^0, \rho_0^r\}$,[17] and the informed vote is coherent, unless one of the projects has moderate return, while the other project fails. Then, however, informed vote results in a tie: the interest group that holds moderate return votes for the incumbent, while the interest group that holds no return votes for the challenger.

In region where ρ lies at least as high as the upper threshold informed vote is perfectly coherent. Indeed, when moderate return from a project generates a stronger signal on the incumbent's type than the failure of a project, the upper threshold is equal to ρ_r^0 (see Figure 1). For any $\rho \geqslant \rho_r^0$, both interest groups vote for the incumbent unless she fails both projects. When, instead, the failure of a project generates a stronger signal on the incumbent's type than moderate return from a project, the upper threshold is equal to ρ_0^r. For any $\rho \geqslant \rho_0^r$, both interest groups vote for the challenger, unless the incumbent delivers either high return from at least one project or moderate returns from both projects.

5 Bandwagon effects of campaign advertising

In this section, we return to the basic framework in which an interest group's first-period benefit is its private information. For each of the three regions of parameter ρ that are described in the previous section, we find campaign advertising and the vote in a *symmetric pure strategy* perfect Bayesian equilibrium of the game. We focus on *informative* equilibria, that is, on equilibria in which the interest groups share all information that is relevant for the vote. For concreteness, we consider *the least-cost* equilibrium in which an interest group plays the least-cost campaign advertising strategy among equally in-

[17]If inequality (5) is fulfilled, then $\rho_R^0 < \rho_0^r < 1 < \rho_r^0$. Otherwise, $\rho_R^0 < \rho_r^0 \leqslant 1 < \rho_0^r$.

formative ones.

Independent vote When the degree of congruence between the interest groups lies below the lower threshold, an interest group's private information is not relevant for the other interest group's vote (lemma 4). Trivially, the interest groups do not contribute to electoral campaigns. Because endorsements are meaningless, the interest groups are indifferent what to tell about their first-period payoffs. By assumption (T2), they tell the truth.

Proposition 1 (independent vote) *In region* $\rho < \rho_R^0$ *there is the unique symmetric, pure strategies, informative, least-cost perfect Bayesian equilibrium of the game in which* $c^I(r_i) = c^C(r_i) = 0$; $e(r_i) = r_i$ *for any* r_i; *and the vote is described by lemma* 4.

Influential cheap-talk When the degree of congruence between the interest groups lies at least as high as the upper threshold, informed vote is perfectly coherent (lemma 4). In order to maximize the efficiency of the vote, the interest groups truthfully tell to each other their first-period payoffs. Obviously, this is the least-costly way of information sharing.

Proposition 2 (influential "cheap-talk") *In region* $\rho \geqslant \min\{\rho_r^0, \rho_0^r\}$ *there is the unique symmetric, pure strategies, informative, least-cost perfect Bayesian equilibrium of the game in which* $c^I(r_i) = c^C(r_i) = 0$; $e(r_i) = r_i$ *for any* r_i; *and the vote is described by lemma* 4.

Persuading campaign contributions When the degree of congruence between the interest groups lies between the lower- and the upper thresholds, the voters whom the incumbent delivers a positive return from their group-specific project are eager to re-elect her. However, the voters who receive no return vote for the challenger, unless they are convinced that the incumbent has delivered high return to the other voters. In order to avoid a possible tie in the election, the voters who seek re-election would like to claim that they have received high return from their group-specific project, even if in reality they have received only moderate return. Therefore, the voters who intend to vote for the challenger do not trust such claims, unless they are supported by campaign contribution which is unreasonably expensive for an interest group holding moderate return from group-specific project. The smallest campaign contribution persuading them to vote for the incumbent is equal to[18]

$$\underline{c} = \frac{1}{2}\Pr\left(r_{-i} = 0 \mid r_i = r\right) I\left(r, 0\right) =$$
$$= \frac{v\left(B\left(1 + l - 2\rho\left(v + 2l\right)\right) + \left(1 - \rho\right)\left(1 + l\right)\right)}{4\left(v + 2l\right)}. \tag{10}$$

In the least-cost equilibrium, an interest group makes this contribution when it receives high return from group-specific project. Otherwise, it does not contribute to campaign advertising. Campaign contributions, if made, are donated to the incumbent.[19] Endorsements play no role, hence, they are truthful (both insights follow from assumption (T2)).

Proposition 3 (persuading campaign contributions) *In region $\rho_R^0 \leqslant \rho < \min\left\{\rho_r^0, \rho_0^r\right\}$ there is the unique symmetric, pure strategies, informative, least-cost perfect Bayesian equilibrium of the game in which $c_I(R) = \underline{c}$, $c_C(R) = 0$, $c_C(r_i) = c_I(r_i) = 0$ for any $r_i < R$; $e(r_i) = r_i$ for any r_i; and the vote is described by lemma* 4.

6 Campaign donations and electoral sorting

This section describes how campaign contributions affect electoral sorting, and, as a consequence, the future public policy. Because contributions are useless when ρ lies the extreme regions of its space (recall propositions 1 and 2), we focus on the region where $\rho_R^0 \leqslant \rho < \min\left\{\rho_r^0, \rho_0^r\right\}$.

[18] We use standard Bayesian updating to find $\Pr\left(r_{-i} = 0 \mid r_i = r\right)$; and equations (4), (16), and (14) to find $I\left(r, 0\right)$.

[19] Naturally, when the incumbent receives campaign contributions, she spends on political advertising at least sum $\underline{c}$, because her primary objective is to win the election.

By proposition 3, an interest group contributes to the incumbent's electoral campaign if and only if it receives high return from group-specific project. When the incumbent receives campaign contributions, she is re-elected. Naturally, the probability of the event that the incumbent delivers high return from at least one project is higher when she is valent with at least one of the interest groups. Therefore,

Corollary 1 (campaign contributions electoral sorting) *campaign contributions increase the probability of re-election, unless the incumbent is a nonvalent-type.*

Notice, that campaign contributions skew electoral outcomes. Firstly, they disproportionately benefit the incumbent.[20] This insight comports nicely with tighter limits to contributions for state elections observed to lead to closer elections for incumbent candidates (Aparicio-Castillo and Strattman 2005).[21] Secondly, campaign contributions by an interest group enhance electoral fortunes by a candidate who is valent with this group. Consequently, they increase the probability of the event that this group benefits from a favorable public policy in the future.

Notice, furthermore, that campaign contributions lie below donor expected benefits from re-election:

$$\underline{c} < \frac{1}{2} \Pr\left(r_{-i} = 0 \mid r_i = R\right) I\left(R, 0\right) =$$

$$= \frac{1}{4}\left(B\left(1 - l - 2\rho v\right) - \left(1 - \rho\right)\left(1 - l\right)\right). \tag{11}$$

At the same time, they generate informational benefit to all voters. Therefore,

[20] The reason is that the voters holding the most precise private information seek re-election. If instead we assume that the most informed voters would like to avoid re-election, it is the challenger who benefits from campaign contributions. Hence, the general insight is that the candidate preferred by an interest group whose private information is the most precise receives the highest contributions and wins office.

[21] Since 1970's, most of the US states have tightened their campaign finance laws. In their paper, Aparicio-Castillo and Strattman take an advantage of substantial variation in limits to contributions for state elections, both across states, and in time.

Corollary 2 (campaign contributions and voter welfare) *campaign contributions have a positive welfare value.*

Hence, caps on campaign contributions disproportionately decrease the efficiency of electoral sorting.[22] Notice moreover, that they encourage the voters to seek other, maybe even costlier ways to share information about the candidates for office.

Certainly, insight of corollary 2 should be taken with a grain of salt, because in our model campaign financing is a pure sorting procedure.[23] Instead, Prat and Snyder (2006) find that campaign contributions signal effectiveness of a candidate to the voters if and only if they: (i) lie below a given threshold; and (ii) come from organizations, rather than from individuals or parties. Such contributions constitute most-, but not all electoral fundraising (see summary statistics in Table 1 of their paper).

7 Conclusion

This paper builds a model of political campaign contributions in which the interest groups hold asymmetric information about candidates competing for office. The paper's new feature is that, while the interest groups have conflicting objectives regarding targeted spending, they are congruent through their desire to elect a high-valence politician. The paper accordingly analyzes endorsements and campaign contributions as alternative means to induce an electoral bandwagon. Campaign contributions are evidently a costlier, and therefore stronger signal than endorsements. That is why, campaign contri-

[22] Caps on campaign contributions are the most important component of the US federal campaign finance regulation since the Federal Election Campaign Act of 1971: amendments of 1974 limited campaign advertising expenditures, but these limits where withdrawn by Supreme Court in 1976; later amendments of Bipartisan Campaign Reform Act 2002 only restricted "soft money" contributions and, at the same time, pushed up the limits to "hard money" contributions from political parties.

[23] This insight may change if we assume, for example, that at some costs, the incumbent can exert an effort to avoid the failure of a project with a higher probability. Then, exchange of information between the interest groups may weaken her incentives to exert an effort on additional project: this consideration is reminiscent of Holmström (1999).

butions are used when the congruence between interest groups is weaker.

Notice, that we rationalize campaign contributions without negative consequences or empirically unsupported assumptions regarding the role of money in campaigning. Furthermore, our model gives a possible reason why campaign contributions disproportionately benefit incumbent candidates. We hope that future research will analyze the complementarity of this and alternative approaches in providing a better picture of political endorsements and contributions.

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A Appendix

A.1 Posterior beliefs about the incumbent's type

This section describes the posterior beliefs about the incumbent's type. If project i has high return, the constituencies learn that the incumbent is valent with interest group i, regardless of return from project $-i$. That is,

$$\Pr\left(v_i = v \mid r_i = R\right) = 1 \text{ for any } r_{-i}. \tag{12}$$

Otherwise, some uncertainty is left about the incumbent's valence with interest group i. Suppose, for example, that both projects fail. Then,

$$\Pr\left(v_i = v \mid r_i = r_{-i} = 0\right) =$$

$$= \frac{\Pr\left(r_i = 0, r_{-i} = 0 \mid v_i = v\right)}{\Pr\left(r_i = 0, r_{-i} = 0 \mid v_i = v\right) + \Pr\left(r_i = 0, r_{-i} = 0 \mid v_i = 0\right)},$$

By total probability theorem, we find

$$\Pr\left(r_i = r_{-i} = 0 \mid v_i = v\right) = \frac{\rho}{2}\left(1 - l - 2v\right)^2 +$$

$$+\frac{1-\rho}{2}\left(1 - l - 2v\right)\left(1 - l\right) = \frac{1}{2}\left(1 - l - 2v\right)\left(1 - l - 2\rho v\right), \text{ and}$$

$$\Pr\left(r_i = r_{-i} = 0 \mid v_i = 0\right) = \frac{\rho}{2}\left(\left(1 - l - 2v\right)^2 + \left(1 - l\right)^2\right) +$$

$$+\left(1-\rho\right)\left(1 - l - 2v\right)\left(1 - l\right) = \frac{1}{2}\left(1 - l\right)\left(1 - l - 2\left(1-\rho\right)v\right).$$

Hence,

$$\Pr\left(v_i = v \mid r_i = r_{-i} = 0\right) = \frac{\left(1 - l - 2v\right)\left(1 - l - 2\rho v\right)}{2\left(\left(1 - l\right)\left(1 - l - 2v\right) + 2\rho v^2\right)}, \tag{13}$$

In a similar way, we find that

$$\Pr\left(v_i = v \mid r_i = 0, r_{-i} = r\right) = \frac{\left(1-l-2v\right)\left(l+\rho v\right)}{l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^2}, \quad (14)$$

$$\Pr\left(v_i = v \mid r_i = 0, r_{-i} = R\right) = \frac{\rho\left(1-l-2v\right)}{1-l-2\rho v}, \quad (15)$$

$$\Pr\left(v_i = v \mid r_i = r, r_{-i} = 0\right) = \frac{\left(l+v\right)\left(1-l-2\rho v\right)}{l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^2}, \quad (16)$$

$$\Pr\left(v_i = v \mid r_i = r_{-i} = r\right) = \frac{\left(l+v\right)\left(l+\rho v\right)}{2l\left(l+v\right)+\rho v^2}, \text{ and} \quad (17)$$

$$\Pr\left(v_i = v \mid r_i = r, r_{-i} = R\right) = \frac{\rho\left(l+v\right)}{l+\rho v}. \quad (18)$$

Notice, that

$$\frac{\partial\left(\Pr\left(v_i = v \mid r_i = R, r_{-i}\right)\right)}{\partial\rho} = 0 \text{ for any } r_{-i}, \text{ and}$$

$$\frac{\partial\left(\Pr\left(v_i = v \mid r_i, r_{-i} = 0\right)\right)}{\partial\rho} < 0 < \frac{\partial\left(\Pr\left(v_i = v \mid r_i, r_{-i} = r\right)\right)}{\partial\rho}$$
$$< \frac{\partial\left(\Pr\left(v_i = v \mid r_i, r_{-i} = R\right)\right)}{\partial\rho} \text{ for any } r_i < R.$$

Indeed, by deriving equations (12)-(18) with respect to ρ, and using inequality (1) when applicable, we find

$$\frac{\partial\left(\Pr\left(v_i = v \mid r_i = R\right)\right)}{\partial\rho} = 0, \quad (19)$$

$$\frac{\partial\left(\Pr\left(v_i = v \mid r_i = r_{-i} = 0\right)\right)}{\partial\rho} =$$
$$= -\frac{v\left(1-l\right)\left(1-l-v\right)\left(1-l-2v\right)}{\left(\left(1-l\right)\left(1-l-2v\right)+2\rho v^2\right)^2} < 0, \quad (20)$$

$$\frac{\partial\left(\Pr\left(v_i = v \mid r_i = 0, r_{-i} = r\right)\right)}{\partial\rho} =$$
$$= \frac{v\left(1-l\right)\left(2l+v\right)\left(1-l-2v\right)}{\left(l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^2\right)^2} > 0, \quad (21)$$

$$\frac{\partial\left(\Pr\left(v_i=v \mid r_i=0,r_{-i}=R\right)\right)}{\partial\rho}=\frac{(1-l)\left(1-l-2v\right)}{\left(1-l-2\rho v\right)^2}>0, \tag{22}$$

$$\frac{\partial\left(\Pr\left(v_i=v \mid r_i=r,r_{-i}=0\right)\right)}{\partial\rho}=$$

$$=\frac{-4vl\left(l+v\right)\left(1-l-v\right)}{\left(l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^2\right)^2}<0, \tag{23}$$

$$\frac{\partial\left(\Pr\left(v_i=v \mid r_i=r_{-i}=r\right)\right)}{\partial\rho}=\frac{vl\left(l+v\right)\left(2l+v\right)}{\left(2l\left(l+v\right)+\rho v^2\right)^2}>0, \tag{24}$$

$$\frac{\partial\left(\Pr\left(v_i=v \mid r_i=r,r_{-i}=R\right)\right)}{\partial\rho}=\frac{l\left(l+v\right)}{\left(l+\rho v\right)^2}>0. \tag{25}$$

A.2 Proof of lemma 1

Suppose that $\rho=0$. Then, by equation (4):

$$I\left(0,R\right)<I\left(0,r\right)<I\left(0,0\right)=0 \text{ (see equations (13)-(15));}$$

$$I\left(r,r\right)=0 \text{ (see equation (17));}$$

$$I\left(R,0\right)=I\left(R,r\right)=\frac{B+1}{2}>0 \text{ (see equations (12), (18), and (15));}$$

$$I\left(r,R\right)=-\frac{B+1}{2}<0 \text{ (see equations (12), (18)).}$$

Outcome $r_i=r_{-i}=R$ is impossible. However,

$$I\left(R,R\right)=\frac{B}{2}>0 \text{ for any } \rho>0.$$

A.3 Proof of lemma 2

Suppose that $\rho=1$. We prove lemma 2 in three steps. On the first step, we prove that

$$I\left(r_i,r_{-i}\right)>0,\ \text{ if } r_i+r_{-i}\geqslant\min\left\{R,2r\right\} \tag{26}$$

Indeed,

$$\Pr\left(v_i=v \mid r_i=R,r_{-i}\right)=1 \text{ for any } r_{-i}\text{, and}$$

$$\Pr\left(v_i = v \mid r_i, r_{-i} = R\right) = 1 \text{ for any } r_i$$

(see equations (12), (18), and (15)). Hence, according to equation (4),

$$I\left(r_i, R\right) = I\left(R, r_{-i}\right) = \frac{B}{2} > 0 \text{ for any } r_1,\, r_2.$$

Furthermore, according to equation (17),

$$\Pr\left(v_i = v \mid r_i = r_{-i} = r\right) = \frac{\left(l+v\right)^2}{\left(l+v\right)^2 + l^2} > \frac{1}{2}.$$

Therefore,

$$I\left(r, r\right) = \frac{B\left(v^2 + 2lv\right)}{2\left(\left(l+v\right)^2 + l^2\right)} > 0.$$

On the second step, we use equation (13) which implies

$$\Pr\left(v_i = v \mid r_i = 0, r_{-i} = 0\right) = \frac{\left(1-l-2v\right)^2}{2\left(\left(1-l\right)\left(1-l-2v\right) + 2v^2\right)} < \frac{1}{2}$$

to see that

$$I\left(0, 0\right) = -\frac{Bv\left(1-l-v\right)}{\left(\left(1-l\right)\left(1-l-2v\right) + 2v^2\right)} < 0. \tag{27}$$

On the third step we show that

$$I\left(0, r\right) = I\left(r, 0\right) \geqslant 0, \text{ unless inequality (5) is satisfied.} \tag{28}$$

Indeed, by equations (14) and (16),

$$\Pr\left(v_i = v \mid r_i = r, r_{-i} = 0\right) = \Pr\left(v_i = v \mid r_i = 0, r_{-i} = r\right) =$$

$$= \frac{\left(l+v\right)\left(1-l-2v\right)}{l\left(1-l-2v\right) + \left(l+v\right)\left(1-l\right) - 2v^2} < \frac{1}{2} \text{ if and only if}$$

inequality (5) is fulfilled. Hence,

$$I\left(r, 0\right) = I\left(0, r\right) = \frac{Bv\left(1-3l-2v\right)}{2\left(l\left(1-l-2v\right) + \left(l+v\right)\left(1-l\right) - 2v^2\right)} < 0$$

if and only if inequality (5) is fulfilled.

Inequalities (26), (27), and (28) prove lemma 2.

A.4 Proof of lemma 3

To prove lemma 3, we use equations (4), and (19)-(25). We find:

$$\frac{\partial}{\partial\rho}\left(I\left(R,R\right)\right)=0;\quad \frac{\partial}{\partial\rho}\left(I\left(0,R\right)\right)=-\frac{\left(1-l\right)\left(1-l-2v\right)}{2\left(1-l-2\rho v\right)^{2}}<0;$$

$$\frac{\partial}{\partial\rho}\left(I\left(R,r\right)\right)=-\frac{l\left(l+v\right)}{2\left(l+\rho v\right)^{2}}<0;\quad \frac{\partial}{\partial\rho}\left(I\left(r,r\right)\right)=\frac{Bvl\left(l+v\right)\left(2l+v\right)}{\left(2l\left(l+v\right)+\rho v^{2}\right)^{2}}>0;$$

$$\frac{\partial}{\partial\rho}\left(I\left(r,R\right)\right)=\frac{\left(2B+1\right)l\left(l+v\right)}{2\left(l+\rho v\right)^{2}}>0;\quad \frac{\partial}{\partial\rho}\left(I\left(r,0\right)\right)=$$

$$=-\frac{v\left(8Bl\left(l+v\right)\left(1-l-v\right)+\left(1-3l-2v\right)\left(2l+v-3lv-2l^{2}\right)\right)}{2\left(l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^{2}\right)^{2}}<0;$$

$$\frac{\partial}{\partial\rho}\left(I\left(0,0\right)\right)=-\frac{Bv\left(1-l\right)\left(1-l-v\right)\left(1-l-2v\right)}{2\left(\left(1-l\right)\left(1-l-2v\right)+2\rho v^{2}\right)^{2}}<0;\quad \frac{\partial}{\partial\rho}\left(I\left(0,r\right)\right)=$$

$$=\frac{v\left(2B\left(1-l\right)\left(v+2l\right)\left(1-l-2v\right)+\left(1-3l-2v\right)\left(2l+v-3lv-2l^{2}\right)\right)}{2\left(l\left(1-l-2v\right)+\left(l+v\right)\left(1-l\right)-2\rho v^{2}\right)^{2}}>0; \tag{29}$$

$$\frac{\partial}{\partial\rho}\left(I\left(0,R\right)\right)=\frac{\left(2B+1\right)\left(1-l\right)\left(1-l-2v\right)}{2\left(1-l-2v\rho\right)^{2}}>0. \tag{30}$$

A.5 Proof of lemma 4

By lemmas 1 and 2, $I\left(0,0\right)<0$, $I\left(r,r\right)>0$, and $I\left(R,r_{-i}\right)>0$ regardless of r_{-i}, both when $\rho=0$ and when $\rho=1$. Hence, lemma 3 implies that $I\left(0,0\right)<0$, $I\left(r,r\right)>0$, and $I\left(R,r_{-i}\right)>0$ regardless of r_{-i} for any $\rho>0$.

Instead, $I\left(r,R\right)$ and $I\left(0,R\right)$ have different signs when $\rho=0$ and when $\rho=1$. Therefore, by monotonicity, $I\left(r,R\right)\geqslant 0$ if and only if $\rho\geqslant\rho_{R}^{r}$, where threshold ρ_{R}^{r} solves equation $I\left(r,R\right)=0$; and $I\left(0,R\right)\geqslant 0$ if and only if $\rho\geqslant\rho_{R}^{0}$, where threshold ρ_{R}^{0} solves equation $I\left(0,R\right)=0$.

When inequality (5) is violated, $I\left(r,0\right)$ has the same sign when $\rho=0$ as when $\rho=1$, unlike $I\left(0,r\right)$. Hence, $I\left(r,0\right)\geqslant 0$, while $I\left(0,r\right)\geqslant 0$ if and only if $\rho \geqslant \rho_r^0$, where threshold ρ_r^0 solves equation $I(0,r) = 0$. When instead inequality (5) is fulfilled, $I(0,r)$ has the same sign when $\rho = 0$ as when $\rho = 1$, unlike $I(r,0)$. Hence, $I(0,r) < 0$, while $I(r,0) \geqslant 0$ if and only if $\rho \leqslant \rho_0^r$, where threshold ρ_0^r solves equation $I(r,0) = 0$.

Notice that,

$$\rho_R^r < \rho_R^0 < \min\left\{\rho_r^0, \rho_0^r\right\}.$$

Indeed, inequality $\rho_R^r < \rho_R^0$ is equivalent to $1 + l > 0$. Furthermore,

$$\rho_r^0 - \rho_R^0 = \frac{4B(B+1)\,l\,(1-l-v)}{(2B(1-v-l)+1-l)\,(2B(1-v-l)+1+l)} > 0,$$

$$\rho_0^r - \rho_R^0 = \frac{2B(B+1)\left((1-l)^2 - 2v\right)}{(2B(1-v-l)+1-l)\,(2B(v+2l)+1+l)} > 0.$$

A.6 Proof of proposition 1

Suppose that $\rho < \rho_R^0$. When the vote is partisan, as described by lemma 4, (i) individual rationality requires $c^I(r_i) = c^C(r_i) = 0$ for any r_i; (ii) an interest group is indifferent among endorsements, hence, $e(r_i) = r_i$ for any r_i (recall, that an interest group has arbitrary weak preference for truthtelling). Trivially, such campaign advertising is consistent with partisan vote.

A.7 Proof of proposition 2

Consider region $\rho \geqslant \min\{\rho_r^0, \rho_0^r\}$. For concreteness, let inequality (5) be violated, so that $\min\{\rho_r^0, \rho_0^r\} = \rho_r^0$. When the vote is coherent, as described by lemma 4, endorsements are truthful. Indeed, suppose that $r_i = 0$. By lying $e(0) > 0$, interest group i reduces its expected second-period payoff by

$$-\frac{1}{2}\Pr(r_{-i} = 0 \mid r_i = 0)\, I(0,0) > 0.$$

Hence $e(0) = 0$. Suppose that $r_i > 0$. By reporting $e(r_i) > 0$ rather than $e(r_i) = 0$ interest group i increases its expected second-period payoff by

$$\frac{1}{2}\Pr(r_{-i} = 0 \mid r_i)\, I(r_i, 0) > 0.$$

Endorsements $e(r_i) = r$ and $e(r_i) = R$ deliver the same expected second-period payoff to interest group i. Hence, $e(r_i) = r_i$ (recall, that interest group i has arbitrary weak preference for truthtelling).

When endorsements make the first period returns public, the vote is coherent (lemma 4). Hence, these endorsements and the vote constitute a perfect Bayesian equilibrium of the game. Trivially, this equilibrium is informative and the least-cost.

A.8 Proof of proposition 3

Consider region $\rho_R^0 \leqslant \rho < \min\{\rho_r^0, \rho_0^r\}$. By lemma 4, campaign advertising is

(i) *informative* if and only if

$$\text{either } e(r_i) \neq e(R), \text{ or } c_I(r_i) \neq c_I(R), \text{ or else } c_C(r_i) \neq c_C(R) \text{ for any } r_i < R; \tag{31}$$

(ii) *individually rational* if and only if[24]

$$c_I(r_i) = c_C(r_i) = 0 \text{ for any } r_i < R, \text{ and} \tag{32}$$

$$\begin{aligned} c_I(R) + c_C(R) &\leqslant \frac{1}{2}\Pr(r_{-i} = 0 \mid r_i = R)\, I(R, 0) = \\ &= \frac{1}{4}\left(B(1 - l - 2\rho v) - (1 - \rho)(1 - l)\right); \text{ and} \end{aligned} \tag{33}$$

(iii) *incentive compatible* with informed vote if and only if

$$c_I(R) + c_C(R) > \underline{c}. \tag{34}$$

Indeed, when inequality (34) is met, an interest group holding moderate return from group-specific project does not signal that it holds high return. Trivially, the nonbeneficiaries do not send such a signal either:

$$\frac{1}{2}\Pr(r_{-i} = 0 \mid r_i = 0)\, I(0, 0) \leqslant 0 < \underline{c}.$$

[24] We use standard Bayesian updating to find $\Pr(r_{-i} = 0 \mid r_i = R)$, and equations (4), (12), and (15) to find $I(R, 0)$.

At the same time, an interest group holding high return is eager to signal information about its return if this signalling satisfies individual rationality constraint (33).

The vote such that the beneficiaries vote for the incumbent, while the non-beneficiaries vote for the challenger, unless $e(r_i) = e(R)$, or $c^I(r_i) = c^I(R)$, or else $c^C(r_i) = c^C(R)$ for some i, and campaign advertising satisfying constraints (32), (33), (34) constitute an informative pure strategies equilibrium of the game. In the least-cost equilibrium campaign contributions are just enough to satisfy the incentive constraint (34), that is, they are arbitrary close to $\underline{c}$. The challenger receives no contributions, because the beneficiaries have arbitrary weak preference to contribute to the incumbent's electoral campaign. Endorsements are truthful, because they play no role, and the interest groups attach arbitrary small value to truthtelling.

A.9 Proof of corollary 1

We compare electoral sorting in two extreme regimes: when campaign contributions are unlimited, and when they are prohibited. We denote (i) the indicator of campaign finance regulation by

$$\lambda = \begin{cases} 1, \text{ when campaign contributions are prohibited;} \\ 0, \text{ when campaign contributions are unlimited,} \end{cases}$$

(ii) the probability to re-elect a valent-type incumbent by $z_V(\lambda)$; (iii) the probability to re-elect a biased-type incumbent by $z_B(\lambda)$; and (iv) the probability to re-elect nonvalent-type incumbent by $z_N(\lambda)$.

When campaign contributions are prohibited, the vote is partisan. Therefore,

$$z_V(1) = l + 2v,\ z_B(1) = l + v,\ z_N(1) = l. \tag{35}$$

By proposition 3, when campaign contributions are unlimited, the incumbent stays in office with probability (i) 1, either if at least one project has high return, or else if both projects have moderate return; (ii) $\frac{1}{2}$, if one project has moderate return, and the other project fails; (iii) 0, if both projects fail. Hence,

$$z_V(0) = l + 2v + v(1 - 2v - l), \; z_B(0) = l + v + \frac{v}{2}(1 - 2v - l), \; z_N(0) = l. \tag{36}$$

Equations (35) and (36) imply:

$$z_V(0) - z_V(1) = v(1 - 2v - l) > 0, \tag{37}$$

$$z_B(0) - z_B(1) = \frac{v}{2}(1 - 2v - l) > 0, \tag{38}$$

$$z_N(0) - z_N(1) = 0. \tag{39}$$

A.10 Proof of corollary 2

If the challenger wins the electoral race, the expected second-period welfare (measured as a sum of the second-period interest groups' expected payoffs) is equal to B. If, instead, the incumbent stays in office, it is equal to $2B$, if she is a valent-type, to 0, if she is a nonvalent-type, and to B if she is a biased-type. Hence, the expected second-period welfare is equal to[25]

$$W_2(\lambda) = B\left(1 + \frac{\rho}{2}(z_V(\lambda) - z_N(\lambda))\right). \tag{40}$$

As in the above proof of remark 2, we consider two extreme regimes: when campaign contributions are unlimited, and when they are prohibited. Equations (35) and (36) imply that voter benefit from campaign contributions is equal to

$$W_2(1) - W_2(0) = \frac{1}{2}B\rho v(1 - l - 2v). \tag{41}$$

At date 1, the expected electoral campaign fundraising is equal to

$$\underline{c}\left(\Pr(r_1 = R,\; r_2 \neq R) + \Pr(r_1 \neq R,\; r_2 = R)\right) + 2\underline{c}\Pr(r_1 = R,\; r_2 = R) =$$

[25] Hence, the vote is more efficient the higher the probability to re-elect a valent-type incumbent, and the lower the probability to re-elect a nonvalent-type incumbent. The efficiency of the vote does not depend on the probability to re-elect a biased-type incumbent, because the distribution of parameter v_i is fully diffused.

$$= 2\underline{c}\left(\Pr\left(r_1 = R,\ r_2 \neq R\right) + \Pr\left(r_1 = R,\ r_2 = R\right)\right) = 2\underline{c}\Pr\left(r_1 = R\right) = \underline{c}v. \tag{42}$$

It is straightforward to see that

$$\underline{c}v < \frac{1}{2}B\rho v\left(1 - l - 2v\right). \tag{43}$$

Indeed, by equation (10), inequality (43) is equivalent to

$$\left(B + 1 - \rho\right)\left(1 + l\right)v < 2\rho B\left(v + 2l\right)\left(1 - l - v\right). \tag{44}$$

The left-hand side of inequality (44) decreases in ρ, while its right-hand side increases in ρ. Hence, it suffices to verify that inequality (44) is fulfilled at the lower threshold, that is,

$$\left(\frac{B+1}{\rho_R^0} - 1\right)\left(1 + l\right)v < 2B\left(v + 2l\right)\left(1 - l - v\right), \tag{45}$$

where ρ_R^0 is given by equation (6). It is straightforward to verify that inequality (45) is equivalent to inequality

$$1 - l - v > 0,$$

which follows from inequality (1).

Inequality (43) tells that welfare benefit that is given by equation (41) lies above average political advertising expenditures that are not higher than $\underline{c}v$.

A.11 Re-election concerns and political activeness

This section proves that there exists Perfect Bayesian Equilibrium of the game in which at date 1.b the incumbent undertakes both projects regardless of her type.

Consider the following date 1.c beliefs: (i) at date 1.b the incumbent undertakes both projects regardless of her type; (ii) if she shuts down project i, then she is not valent with interest group i. At date 1.b, the incumbent maximizes the probability of re-election. If she anticipates that the vote is such as described by lemma 4, she undertakes both projects regardless of her type, which is consistent with the above beliefs. We prove this statement for $\rho = 0$.[26] If the incumbent shuts down both projects, she is out of office at date 2. If she undertakes only one project, she is re-elected with probability $\frac{1}{2}$: the interest group whose group-specific project is undertaken votes for her, while the other interest group votes against her. If the incumbent undertakes both projects, there is at least one interest group that votes for her. She is re-elected with probability $\frac{1}{2}\left(1 + l\left(l + v\right) + \left(1 - l\right)\left(1 - l - 2v\right)\right)$.

[26] It is straightforward to verify that for any $\rho > 0$, the incumbent's incentives to undertake both projects at date 1.b. are at least as strong as for $\rho = 0$.