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## **Electoral Campaign Financing: The Role of Public Contributions and Party Ideology**

**D**emocracy has made impressive progress over the last thirty years in Latin America. Since the beginning of the so-called third wave of democratization in 1978, the UNDP's index of electoral democracy has risen from below 0.3 in 1977 to above 0.9 in 2002, confirming that most citizens in the region live in highly electoral democratic countries.<sup>1</sup> That positive situation, however, has repeatedly been upset by political challenges. Over the thirteen-year period 1990–2002, Latin America registered twelve cases of elections with significant irregularities.<sup>2</sup> Moreover, cases of illicit political funding through hidden accounts or covert line items have ignited several crises and placed many a president and former president in situations of impeachment or even imprisonment, including Brazil's Fernando Collor de Mello, Ecuador's Jamil Mahuad, Guatemala's Alfonso Portillo, Nicaragua's Arnoldo Alemán, and Venezuela's Carlos Andrés Pérez.<sup>3</sup>

The concern about political corruption in Latin America has called attention to electoral campaign finances. Academics and policymakers have renewed the debate on the appropriate form of campaign financing regulation.<sup>4</sup> On the policy front, Transparency International analyzes seven Latin American countries from July 2002 to June 2003 (namely, Argentina, Brazil, Chile, Costa Rica,

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1. UNDP (2004).

2. UNDP (2004).

3. Griner and Zovatto (2005).

4. Poiré (2005).

Guatemala, Nicaragua, and Peru).<sup>5</sup> Four of the seven countries modified their political campaign financing law in that short period (Argentina, Brazil, Chile, and Peru). Moreover, Costa Rica witnessed a clear call for such reform, leading the Constitutional Court to rule that “the movements and balances of current accounts held by political parties in state or private commercial banks or in any other nonbank financial entity can, in principle, be accessed by anybody.”<sup>6</sup> Thus, five of the seven countries studied in the report made significant changes to their electoral campaign financing procedures.

While Latin America stands out as a region of frequent campaign legislation reforms, more traditional democracies also display their share of procedural changes. Public financing of electoral campaigns was implemented in the United States in 1904, and several additional rules have since been established, mainly motivated by fundraising scandals (such as the Watergate investigations) or the increasing cost of electoral campaigns. An important recent change was the 2003 Bipartisan Campaign Reform Act, which prohibits transfers from parties to candidates (soft money) if the money was obtained from illegal sources.<sup>7</sup>

Germany initiated public electoral financing in 1959, but the system was reformed in 1992 in response to a concern that public financing might reduce incentives for financial support from party members and sympathetic citizens.<sup>8</sup> The original Parties Financing Act set government disbursement levels for parties based on the number of votes received. A 1994 revision to the Law established that public financing is based on party membership and private contributions, as well as the number of votes received.<sup>9</sup> Moreover, anonymous

5. Transparency International (2004).

6. Transparency International (2004, p. 183). The report further states that “Investigations into the source of financing for the two main political parties, the National Liberation Party (PLN) and Social Christian Unity Party (PUSC), during the 2002 presidential election campaigns, uncovered a myriad of irregular funding tools—currently the subject of a congressional probe—and highlighted the need to tighten political finance legislation” (Transparency International, 2004, p. 182).

7. See Félix Ulloa, “A Framework for Political Party Financing,” at [www.aceproject.org/main/english/ei/eix\\_a040.htm](http://www.aceproject.org/main/english/ei/eix_a040.htm) and at [www.cbc.ca/news/features/campaign\\_contributions\\_030128.html](http://www.cbc.ca/news/features/campaign_contributions_030128.html) (accessed July 2007).

8. See Félix Ulloa, “A Framework for Political Party Financing,” at [www.aceproject.org/main/english/ei/eix\\_a040.htm](http://www.aceproject.org/main/english/ei/eix_a040.htm) (accessed July 2007).

9. See [www.germany-info.org/relaunch/info/publications/infocus/Elections/Political\\_parties.html](http://www.germany-info.org/relaunch/info/publications/infocus/Elections/Political_parties.html).

private donations must not exceed U.S.\$500, and detailed information must be provided on donors of more than U.S.\$10,000.<sup>10</sup>

In 2003 Canada's House of Commons passed a bill limiting corporate and union donations to political parties to a maximum of US\$1,000 and allowing them only at the riding association level, not at the level of direct donations to federal parties. Individual donations were also limited, with a maximum of US\$5,000 per person. A new system of public funding has been established to compensate for the funding shortfall, based on the number of votes received by a party in the previous election, in the form of US\$1.75 per taxpayer subsidy.<sup>11</sup>

In Latin America, Brazil's recent history presents a clear example of the region's electoral reform. In 1971, Law 5682 imposed a total ban on direct private political donations to parties and created a public fund for supporting electoral campaigns. Eighty percent of the total amount of the fund resources were distributed among existing parties according to their proportional representation in congress, while the remaining 20 percent was shared equally among all parties.<sup>12</sup> In late 1992, the congress impeached Brazilian President Fernando Collor de Mello after a long trial characterized by strict respect for the established institutions and popular pressure. One of the main arguments for the impeachment was that the president was unable to explain campaign donations he received illegally.<sup>13</sup> The Collor scandal highlighted the fact that it is basically impossible to ban private political donations. New campaign financing legislation was therefore passed in 1995, allowing private financing (Law 9096). The legislation also established new norms for the working of the public fund, known as the Parties' Fund (Fundo Partidário). According to the new rules, the treasury transfers to the Fund every year an amount equivalent to R\$0.35 times the number of registered voters in December of the previous year. Of these resources, 99 percent is distributed among parties according to their congressional representation, while the remaining 1 percent

10. See [www.cbc.ca/news/features/campaign\\_contributions030128.html](http://www.cbc.ca/news/features/campaign_contributions030128.html) (accessed July 2007).

11. See [www.cbc.ca/news/features/campaign\\_contributions030128.html](http://www.cbc.ca/news/features/campaign_contributions030128.html) (accessed July 2007).

12. The distribution of public resources according to the parties' proportions in the legislature seems to be the most common way of distributing public resources to finance campaigns. Countries using this system include Belgium, France, Italy, and Spain.

13. A parliamentary inquiry committee found over U.S.\$350 million of unexplained funds. See *Veja Online*, "Fique de Olho," in "O Esquema PC," April 2000, available at [veja.abril.uol.com.br/idade/corrupcao/pc/caso.html](http://veja.abril.uol.com.br/idade/corrupcao/pc/caso.html) (accessed December 2007).

is shared equally among all parties. Although private financing became legal after the 1995 law, the huge variation in candidates' declared donations suggests that there might still be an important market for illegal contributions.<sup>14</sup> The Brazilian congress is currently reviewing several projects for a new electoral law. A project passed in the Senate in April 2001 and still under discussion in the House of Representatives eliminates private donations and increases the amount of the treasury transfer from R\$0.35 to R\$7.00 per registered voter.<sup>15</sup> The proportional rule for the distribution of public funds among parties remains unchanged.<sup>16</sup>

The above examples suggest that the effect of different types of electoral financing have not yet been clearly sorted out in the applied policy debate. In the theoretical literature's seminal paper, Baron models an electoral competition in which candidates may favor interest groups to receive campaign contributions and, consequently, influence uninformed voters.<sup>17</sup> He introduces public financing by means of an equal lump sum given to each candidate. This financing leads, first, to a reduction of an original policy bias in favor of interest groups and, second, to a more egalitarian electoral competition. Baron's mechanism, however, is highly unlikely to exist in practice, as it suggests that the same amount of public money should be given to all parties, regardless of size. Zovatto studies eighteen Latin American countries and finds that all fifteen nations that adopted direct public financing of electoral campaigns allocate at least part of the resources based on party size in the previous elections.<sup>18</sup> In our model, therefore, we assume this type of public financing proportional to party representation.

14. The 1998 election provides a clear example of the variation in campaign resources. The winning governor of the state of Pará, José Maranhão, declared having spent U.S.\$110,400 on his campaign, whereas the winning governor of the nearby (and smaller) state of Sergipe, Albano Franco, declared a campaign budget of U.S.\$1.1 million. The runner-up candidate for the presidency that year, Luiz Inácio "Lula" da Silva, declared a budget of U.S.\$3.4 million, whereas the winner, Fernando Henrique Cardoso, declared more than eleven times that amount (U.S.\$37 million). See "O Caixa Dois de Volta à Luz," *Veja* (no. 1,676), 20 November 2000; the amounts in reals were converted to dollars based the exchange rate in July 1998.

15. Brazilian Senate Projects 151/99 and 353/99, passed on 26 April 2001 (Project 4593/01 in the House of Representatives).

16. The House of Representatives recently established a special commission to study this and other issues, but the proposal to increase the per capita voter transfer from R\$0.35 to R\$7.00 remains in the new 2003 project (Project 2679/03), which is still under discussion.

17. Baron (1994).

18. Zovatto (2003). The fifteen countries are Argentina, Bolivia, Brazil, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, and Uruguay.

Roemer analyzes two different public financing institutions in a model in which each lobbyist group contributes only to a specific party.<sup>19</sup> In one of the institutions, each informed voter receives a voucher worth  $k$  dollars to be donated to the party of his or her choice; in the other, public funds match private contributions. The study finds that parties propose policies that are closer to the preferences of the informed voters under the former public financing system, and that the distortion caused by private financing is magnified under the latter matching system. Public financing may thus succeed in reducing policy distortion when it is based on a system that resembles the party's representation criterion discussed.

Our paper analyzes parties' electoral financing mechanisms in a more general framework. Our model allows for public funds (which are collected from the entire population by means of taxation and distributed to the parties according to the party-representation proportional rule discussed above) and private contributions from interest groups; we also allow for parties to be both office and policy motivated. The main objectives are to assess how policy decisions (and consequently voters' welfare) are affected by public and private contributions when parties have differing ideologies and to determine the extent to which the type of financing affects parties' representation in congress in the short and long run, as a proxy for unequal party competition.

The electoral competition model focuses on elections for the legislature, using as its main tool the probabilistic voting approach introduced by Lindbeck and Weibull.<sup>20</sup> The hypothesis that campaign spending can influence voters follows Baron, and we borrow the idea of endogenously obtaining lobbyists' private contributions from Grossman and Helpman and from Persson and Tabellini.<sup>21</sup>

Our model shows that in equilibrium, parties tend to announce divergent platforms that reflect the parties' rigid ideology. This leads to policies that are not socially optimal. Moreover, parties' announced policies are biased in favor of lobbyists' interests as a result of the competition for private contributions. If policymakers can enforce a ban on private contributions, then the bias in favor of interest groups disappears. However, the bias stemming from party ideology remains, so a campaign that is completely financed by public funds still will not promote social welfare.

19. Roemer (2006).

20. Lindbeck and Weibull (1987).

21. Baron (1994); Grossman and Helpman (1996); Persson and Tabellini (2000, chapter 3).

In terms of party competition, the fact that policies diverge ensures that interest groups will effectively contribute to electoral campaigns, with a real effect on the parties' probability of success. However, a party's strong ideological rigidity may reduce its received contributions, because strong ideology decreases the bias in favor of interest groups. This effect may be so strong that some interest groups may opt to contribute to a party whose preferred platform is more distant from the group's stance, but that is less rigid in contraposition.<sup>22</sup> Private contributions, in turn, can directly affect a party's chances of success, changing the balance in favor of a party that originally represented only a small part of society. This is the static effect of lobbying on parties' chances of success.

Although the existence of private contributions affects parties' platform announcement decisions, public financing does not have any such effect as it is predetermined and does not change with parties' political positions. Its direct effect in the short run reduces to changing a party's probability of obtaining the majority of seats in the legislature. In the long run, however, the mechanism of public financing based on the parties' relative size in the legislature may provide an extreme advantage to one party, leading to that party's predominance. Such an advantage may arise even when the party is extremely ideologically oriented and therefore may not be very attractive to the majority of the population.

Our results confirm Baron's and Roemer's finding that policy converges to a socially superior policy if there are no private contributions and the parties' ideologies are not very rigid.<sup>23</sup> However, our results related to private contributions and the probability of a party's getting an increasing number of votes completely differ from the conclusions of those two studies. In fact, in our model, lobbyists may even contribute to an opposing party if the party has a very flexible ideology, which affects party competition in the short run.

Under some circumstances, public financing will completely determine a dominant party in the long run, despite the preferences of society or lobbyists. One important caveat is that the effect of public financing depends strongly on its amount. If public financing is too small, it has an insignificant long-run effect, but if it is high enough, it may entirely jeopardize long-term party competition. Our study contributes to the discussion on the optimal regulation of campaign financing by showing that the solution may not be clear-

22. This captures the idea of lobbying without imposing the restriction that an interest group can only contribute to one party (contrary to Roemer 2006) and shows the flexibility of our model.

23. Baron (1994); Roemer (2006).

cut and that issues regarding the amount of the public financing may be very important to the resulting political equilibrium. We also highlight the potential negative effects of distributing public funds according to the size of each party in the legislature, which suggests that a more balanced distribution may enhance welfare.

The rest of the paper is organized as follows. The next section presents and solves the model, in which parties are office and policy motivated and electoral campaigns can be financed by interest groups and by the government. We then address long-run party representation in the legislature in an infinitely iterated version of the electoral competition game. A subsequent section briefly discusses the shortcomings and possible extensions of the present study, and the final section presents our main conclusions.

## A Model of Electoral Competition

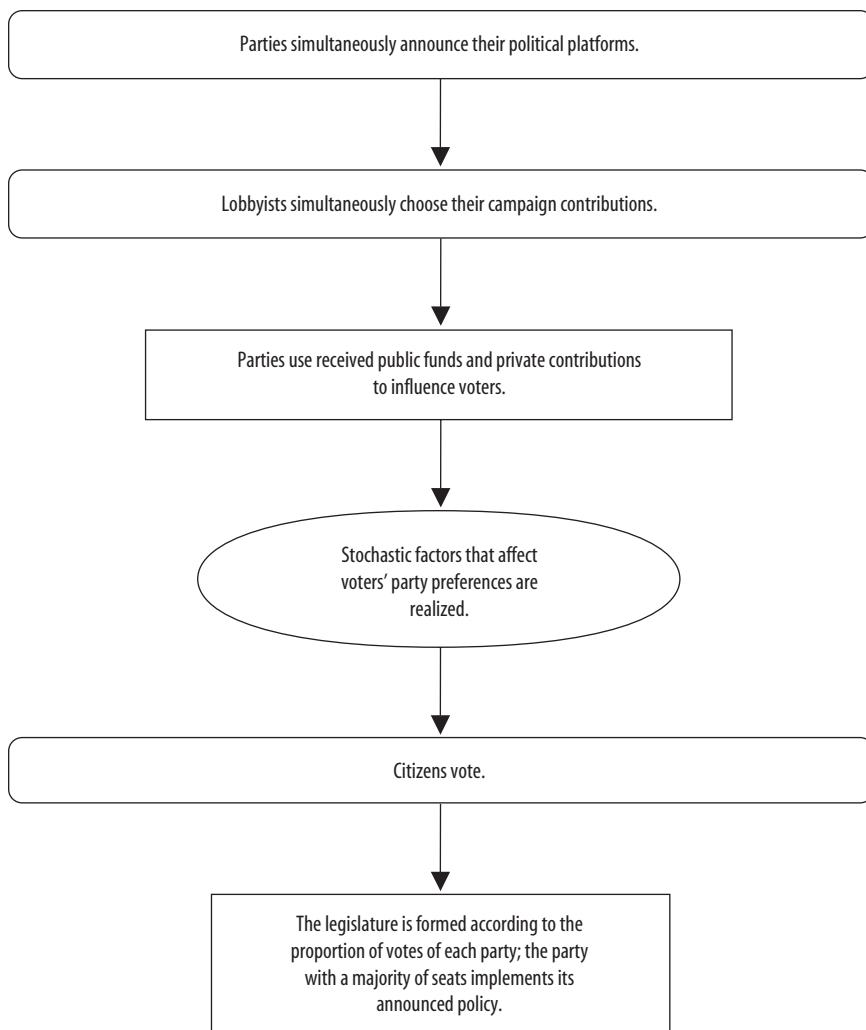
The electoral competition game between parties, lobbyists, and voters is presented in figure 1. The main modeling hypothesis here is that parties announce their policies first, and then lobbyists decide whether to make political contributions based on these announcements. Parties use the private contributions and public funds they receive to influence voters during the electoral campaign. After the electoral campaign, each voter receives stochastic signals that affect his or her preferences for the parties, observes the announced platform of each party, and votes sincerely—that is, for the party that best represents his or her preferences. There is one national electoral district in which each voter has one vote. After elections, each party is assigned a quantity of seats in the legislature that corresponds to the percentage of received votes. Once the new legislature is formed, it decides which policy to implement according to the following rule: the party that has a majority of seats is able to implement its campaign platform.<sup>24</sup> The basic model extends Persson and Tabellini's approach to incorporate three main points: first, we allow for public funding of electoral campaigns in addition to private contributions; second, we allow for partial control of the executive over private contribution; and finally, we allow for the parties to be policy motivated as well as office motivated.<sup>25</sup>

In the figure, only the wider, curved rectangles correspond to real strategic decisions. The top one corresponds to parties' platform announcement;

24. The model assumes that the legislature has an odd number of seats, so one party always has a majority.

25. Persson and Tabellini (2000, chapter 3).

FIGURE 1. The Electoral Competition Game



the second one from the top to lobbyists' campaign contribution decisions; and the second one from the bottom to voters' choices. The third (squared) box from the top states the assumption that parties use all available resources in their electoral campaign, so they make no decisions about deviating resources out of the campaign. The ellipse represents the realization of random variables that are out of the players' control, and the last (squared) box

states the typical assumption of full commitment made in models of electoral competition (that is, the majority party implements its announced policy).

The remainder of this section details the main elements of the electoral competition model and, simultaneously, solves the game by backward induction.

### *Voters' Electoral Decision*

There is a continuum of unit mass of voters,  $\Omega = [0, 1]$ . Each voter belongs to one of three social classes based on income: the upper class,  $R$  (rich), comprises voters with a high income,  $y^R$ ; the middle class,  $M$ , encompasses voters with an average income,  $y^M$ ; and the lower class,  $P$  (poor), covers voters with a low income,  $y^P$ . Thus,  $y^R > y^M > y^P$ . A social class,  $J$  ( $J = R, M, P$ ), has mass  $\alpha^J$ , so that  $\sum_J \alpha^J = 1$ .<sup>26</sup>

There are two parties ( $P = A, B$ ), which compete by announcing the level of production of a per capita public good,  $g$ , that will be implemented if the party obtains the majority of seats in the legislature. Public good provision is financed by an income tax given by the rate  $\tau$ , which is the same for all voters. All tax resources are converted into the public good and public funding for the parties' campaigns. Let  $c$  represent the government's per capita cost of public funding of electoral campaigns. The government budget constraint is then  $\sum_J \alpha^J \tau y^J = \tau y = g + c$ , where  $y = \sum_J \alpha^J y^J$  represents the average income of voters.

A voter's utility has two components: a pragmatic component (or socio-tropic) and an ideological (or idiosyncratic) component.<sup>27</sup> The pragmatic part of the utility represents the voter's decisions as an economic agent; it depends on the consumption of both a private good and the public good provided by the government. Suppose platform  $g$  wins the election. Then, an agent of class  $J$  has the following income, net of taxes:

$$c^J = (1 - \tau) y^J = (y - g - c) \frac{y^J}{y},$$

which is normalized to be the agent's private consumption utility. The pragmatic part of the utility of a voter of class  $J$  is shown in equation 1. The utility of public good consumption is given by the function  $H$ , which is assumed to be strictly increasing and strictly concave.

26. The three-class model is a simple way to characterize differences in wealth among citizens; it is straightforward to extend the model to any finite number of classes.

27. This is the most general way of characterizing an economic agent who also has political concerns. For more on this topic, see Ferejohn (1986) or Bugarin (1999, 2003).

$$(1) \quad W^J(g) = (y - g - c) \frac{y^J}{y} + H(g).$$

Thus, each class has its own optimal policy for the public good provision. These optimal policies are obtained by maximizing each class's utility function and are given by:

$$g_J^* = (H')^{-1} \left( \frac{y^J}{y} \right),$$

where  $J = P, M, R$ .

The ideological component of a voter's utility function is represented by two random variables corresponding to the voter's bias toward party  $B$  or, equivalently, to party  $B$ 's popularity at the time elections are held. The first random variable is common to all voters and is associated with the realization of a state of nature that affects the entire population. Examples include a war, an abrupt change in international prices of a commodity that is important to the country, or a countrywide energy crisis. That process is described by a random variable,  $\tilde{\delta}$ , which the model assumes uniformly distributed on  $[-(1/2\psi), (1/2\psi)]$ . The parameter  $\psi > 0$  measures the level of society's sensitivity to aggregate shocks: the lower the value of  $\psi$ , the stronger the effect of the shocks.

The second random variable is particular to each voter  $i$  in group  $J$  and reflects his or her personal bias toward party  $B$ . This bias is modeled as a random variable,  $\sigma^{ij}$ , which is uniformly distributed on  $[-(1/2\phi'), (1/2\phi')]$ . Hence, the greater the parameter  $\phi'$ , the more homogeneous is class  $J$ . For simplicity, and to avoid electoral effects of class heterogeneity, we normalize all the classes' random variable parameters to  $\phi = \phi', J = P, M, R$ . Therefore, if party  $B$  wins a majority in the legislature with the announced platform  $g_B$ , a voter  $i$  in the social class  $J$  derives utility  $W^J(g_B) + \sigma^{ij} + \tilde{\delta}$ .

Positive values for  $\sigma^{ij}$  and for  $\tilde{\delta}$  indicate a favorable bias toward party  $B$ , whereas negative values indicate a favorable bias toward party  $A$ . The realization of the global random variable can be favorable to party  $B$  at the same time that the realization of the individual-specific random variable can favor party  $A$ , and vice versa.<sup>28</sup>

28. Suppose, for example, that the country faces an economic expansion, so that society approves of the president on the overall conduct of the economy, but the president is involved in a sexual scandal, which can affect voters differently.

Consider now the role of campaign contributions in the model. For simplicity we assume that overall campaign spending will affect the ideological component of a voter's utility function, in a way that is linear to the difference between the total parties' expenditure. Then, the utility of a voter  $i$  of class  $J$  when party  $B$ 's (party  $A$ 's) campaign spending is  $C_B$  ( $C_A$ ) and party  $B$  wins the majority of the Legislature seats is

$$(2) \quad W^J(g_B) + \sigma^{iJ} + \tilde{\delta} + h(C_B - C_A).$$

The parameter  $h > 0$  represents the effectiveness of campaign spending, that is, how much the difference between party campaign expenditures can affect its the parties' popularity. If  $C_B$  is greater than  $C_A$ , then party  $B$  gains popularity during the electoral campaign. Otherwise, overall campaign expenditures reduce party  $B$ 's popularity.

Suppose now that party  $P$  announces policy  $g_P$ , where  $P = A, B$ . Then a voter  $i$  in group  $J$  will prefer party  $A$  to party  $B$  if  $W^J(g_A) > W^J(g_B) + \sigma^{iJ} + \tilde{\delta} + h(C_B - C_A)$ . This comparison determines voters' electoral decisions.

### *A Benchmark for Welfare Comparison*

Suppose party  $P$  wins the election with policy  $g_P$ . Then an agent  $I$  of class  $J$  derives utility

$$W^J(g_P) + \theta_P(\sigma^{iJ} + \tilde{\delta}) + h(C_B - C_A),$$

where  $\theta_P$  is the party index function, which is equal to 1 if  $P = B$  and zero otherwise. Suppose, moreover, that voters cannot be influenced by the electoral campaign expenditure, that is,  $h = 0$ . The expected utility of that voter (before the random variables are realized) then reduces to

$$W^J(g_P) = (y - g_P - c) \frac{y^J}{y} + H(g_P).$$

We want to determine what policy maximizes aggregate welfare according to the Bentham social welfare criterion. We should thus maximize

$$W(g_p) = \sum_J \alpha^J W^J(g_p),$$

which yields the socially optimal policy,  $g_p = g^* = (H')^{-1}(1)$ . This is our benchmark for welfare comparison in what follows.

### Lobbyists' Contributions Decision

From voters' electoral decision, we can identify for each class  $J$  a voter that is indifferent between the two parties, who is called the swing voter of class  $J$ . That voter corresponds to the realization of  $\sigma^J$ , defined as  $\sigma^J$  by:

$$(3) \quad \sigma^J = W^J(g_A) - W^J(g_B) + h(C_A - C_B) - \tilde{\delta}.$$

Therefore, the number of votes cast for party  $A$  is

$$(4) \quad \pi^A = \sum_J \alpha^J \left( \sigma^J + \frac{1}{2\phi} \right) \phi = \frac{1}{2} + \sum_J \alpha^J \sigma^J.$$

Then, writing  $W(g_A) = \sum_J \alpha^J W^J(g_A)$  and  $W(g_B) = \sum_J \alpha^J W^J(g_B)$ , the probability of party  $A$ 's getting the majority of seats is  $p_A = \text{prob}(\pi^A > 1/2) = \text{prob}[\tilde{\delta} < W(g_A) - W(g_B) + h(C_A - C_B)]$ . Equivalently,

$$(5) \quad p_A = \frac{1}{2} + \psi[W(g_A) - W(g_B) + h(C_A - C_B)].$$

Symmetrically,

$$(6) \quad p_B = \frac{1}{2} - \psi[W(g_A) - W(g_B) + h(C_A - C_B)] = 1 - p_A.$$

We now determine the total amount of campaign resources available to the parties,  $C_A$  and  $C_B$ . As discussed in the introduction, we follow the proportional public financing distribution rule widely used in Latin America.<sup>29</sup> We thus assume that the total amount of resources directed to party  $P$  (where  $P = A, B$ ) is proportional to  $P$ 's representation in congress during the previous session. Let  $\beta_P$  denote the percentage of the total legislative seats held by party  $P$ . Then,  $\beta_A + \beta_B = 1$ , and the per capita funds received by each party from the government is  $\beta_P \cdot c$ , where  $c$  is the per capita cost to the government of the public funding of electoral campaigns.

As for private financing, the main distinction among classes is that only organized classes who have solved the collective action problem are able to make private contributions.<sup>30</sup> Let the parameter  $O^J$  represent whether class  $J$

29. Zovatto (2003).

30. See Olson (1971).

is organized (that is,  $O^J$  equals 1 if class  $J$  is organized and zero otherwise). Thus, if each class  $J$  makes the private contribution  $O^J C_P^J$  to party  $P = A, B$ , the total amount of private contributions to a party  $P$  is  $\sum_J O^J \alpha^J C_P^J$ .

To allow for the possibility that the law bans private contributions, we introduce the parameter  $\lambda \in (0, 1]$ , which measures how efficient the electoral authorities are in exposing illegal contributions.<sup>31</sup> If private contributions are allowed, then  $\lambda = 1$ ; otherwise, the unlawful contributions may be unveiled and confiscated by the electoral authorities with probability  $1 - \lambda$ . The hypothesis that  $\lambda > 0$  implies that it is never possible to completely block illegal contributions. Therefore, the total amount of contributions that party  $P$  receives is

$$C_P = \beta_P c + \lambda \sum_J O^J \alpha^J C_P^J, P = A, B.$$

We analyze the interest groups' problem to determine group  $J$ 's private contributions to party  $P$  ( $C_P^J$ ). An organized class's utility depends on the implemented policy, as well as on the amount of resources spent on political contributions. The present model assumes it takes the following form:

$$(7) \quad p_A W^J(g_A) + (1 - p_A) W^J(g_B) - \frac{1}{2} (C_A^J + C_B^J)^2.$$

The first two terms in the above equation reflect the expected economic utility of a member of class  $J$ , whereas the last term reflects the utility cost of campaign contributions. The quadratic form of the cost function models the fact that contributions typically involve not only a monetary transfer, but also the personal involvement of organized voters. The ideological components of voters' utilities do not appear in the above equation because the stochastic components,  $\sigma^{iJ}$  and  $\tilde{\delta}$ , are realized after the contribution decisions are made and have zero expected value.

Therefore, organized class  $J$ 's maximization problem is as follows, where  $p_A$  is given by equation 5.

$$\max_{C_A^J, C_B^J \geq 0} p_A W^J(g_A) + (1 - p_A) W^J(g_B) - \frac{1}{2} (C_A^J + C_B^J)^2.$$

If the utility an interest group obtains from platforms  $g_A$  and  $g_B$  is the same, then the group decides not to contribute, so that  $C_A^J = C_B^J = 0$ . If one platform

31. We are indebted to Marco Bonomo for highlighting this issue.

gives more utility than the other, the group contributes only to the party that announces the better platform—that is,  $C_p^J$  will be equal to zero for party  $P$  if  $g_p$  gives less utility to the group, where  $P = A, B$ . The solution to the interest groups' problem is

$$(8) \quad C_A^J = \max \left\{ 0, \lambda \psi h O^J \alpha^J \left[ W^J(g_A) - W^J(g_B) \right] \right\};$$

$$C_B^J = \max \left\{ 0, \lambda \psi h O^J \alpha^J \left[ W^J(g_B) - W^J(g_A) \right] \right\}.$$

The above expression elucidates the lobbyists' contribution decisions.

### *Parties' Platform Announcement Decision*

Parties anticipate the contributions they will receive from interest groups by sequential rationality. It follows from equation 8 that

$$(9) \quad C_A^J - C_B^J = \lambda \psi h O^J \alpha^J \left[ W^J(g_A) - W^J(g_B) \right];$$

$$(10) \quad C_A - C_B = \lambda^2 \psi h \sum_J O^J (\alpha^J)^2 \left[ W^J(g_A) - W^J(g_B) \right] + (\beta_A - \beta_B) c.$$

Plugging equation 10 into equation 5, we obtain party  $A$ 's probability of receiving a majority of votes.

$$(11) \quad p_A(g_A, g_B) = \frac{1}{2} + \psi \left\{ \begin{aligned} & W(g_A) - W(g_B) \\ & + \psi (\lambda h)^2 \sum_J O^J (\alpha^J)^2 \left[ W^J(g_A) - W^J(g_B) \right] \\ & + hc(\beta_A - \beta_B) \end{aligned} \right\}$$

Parties care about winning a majority of votes, but they also care about which policy is implemented. That is, parties have ideological preferences, with party  $A$  strictly preferring policy  $\bar{g}_A$  and party  $B$ , strictly preferring  $\bar{g}_B$ . The main rationale here is that parties are committed to their founding principles, which establish their preferred political platforms. Thus, announcing a platform that deviates from their optimal one involves a utility loss. This is modeled by introducing a cost of announcing a policy away from the party's optimal one, according to the following functional form:

$$U_A(p_A, p_B) = p_A(g_A, g_B)K - \gamma_A |\bar{g}_A - g_A|;$$

$$U_B(p_A, p_B) = p_B(g_A, g_B)K - \gamma_B |\bar{g}_B - g_B|.$$

The first summand of a party's utility represents its office-seeking motivation, which is the pragmatic or sociotropic part of its utility.<sup>32</sup> The term  $K$  represents the return to the party of gaining a majority in the legislature, such that the term is the expected utility of being a majority party. The second summand represents the utility cost that a party bears by announcing a policy other than its established optimal policy, which is the ideological or idiosyncratic part of its utility. This ideological component has two parts. First, the further away the proposed policy is from the party's ideal policy, the costlier for the party. This is the term  $|\bar{g}_P - g_P|$ , which represents the pure ideological bias. Second, the coefficient  $\gamma_P$  represents how strongly this deviation affects a party's utility and measures the party's ideological rigidity.

For simplicity, we normalize the return,  $K$ , to 1. We further assume that parties' optimal platforms are more extreme than society's, as a result of two reinforcing phenomena.<sup>33</sup> First, there is a self-selection problem, since founding a party is a very demanding activity and only those who have strong and extreme policy positions are willing to bear the corresponding cost. Second, society has evolved over time toward the center of the political spectrum, whereas parties have kept their original, more extreme political positions. We therefore assume that  $\bar{g}_A < g_R^* < g_M^* < g_P^* < \bar{g}_B$ , where  $g_J^*(J = R, M, P)$  represents the optimal policy of the classes.<sup>34</sup>

Since party A takes a leftist position (a small  $\bar{g}_A$ ), we expect that any deviation in the platform increasing  $p_A$  will automatically cause  $g_A$  to increase. We thus expect that, in equilibrium,  $|\bar{g}_A - g_A| = g_A - \bar{g}_A$ . On the other hand, party B will deviate from its optimal policy (a large  $\bar{g}_B$ ) in such a way that  $g_B$  will decrease. Thus, in equilibrium, we expect that  $|\bar{g}_B - g_B| = \bar{g}_B - g_B$ . We assume this deviation pattern in what follows and confirm it once we solve the political parties' problems. Hence, we can write the parties' utility functions as

$$(12) \quad U_A = p_A(g_A, g_B) - \gamma_A (g_A - \bar{g}_A);$$

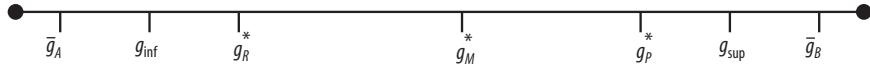
$$U_B = p_B(g_A, g_B) - \gamma_B (\bar{g}_B - g_B).$$

32. See Ferejohn (1986) for a discussion of the pragmatic or sociotropic part of the utility function vis-à-vis the ideological or idiosyncratic part.

33. We are following Fiorina (1988, 1992, 1996).

34. This assumption is not essential for the model, but it simplifies the solution to the game and supports a more precise analysis of the corresponding equilibria.

FIGURE 2. Groups' and Parties' Optimal Platforms



Moreover, we assume that

$$\bar{g}_A < (H')^{-1} \left( \frac{y^R}{y} + \frac{\gamma_A}{\psi} \right) < g_R^* = (H')^{-1} \left( \frac{y^R}{y} \right)$$

and

$$\bar{g}_B > (H')^{-1} \left( \frac{y^P}{y} - \frac{\gamma_B}{\psi} \right) > g_P^* = (H')^{-1} \left( \frac{y^P}{y} \right).$$

Let  $g_{inf}$  denote  $(H')^{-1}[(y^R/y) + (\gamma_A/\psi)]$  and  $g_{sup}$  denote  $(H')^{-1}[(y^P/y) + (\gamma_B/\psi)]$ . The relationship with the preferred policy variable is presented in figure 2.

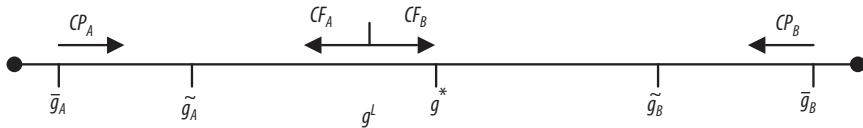
When all effects of the parties' platform announcement are introduced in the expression of  $p_A(g_A, g_B)$  and  $p_B(g_A, g_B)$ , then sequential rationality reduces the original extensive-form game to a normal-form game between parties A and B, where the utilities are given by equation 12. The resulting dominant-strategy Nash equilibrium is given by

$$(13) \quad \tilde{g}_A = (H')^{-1} \left( \frac{\hat{y}}{y} + \frac{\gamma_A}{\psi \hat{\alpha}} \right) \text{ and } \tilde{g}_B = (H')^{-1} \left( \frac{\hat{y}}{y} - \frac{\gamma_B}{\psi \hat{\alpha}} \right),$$

$$\text{where } \hat{y} = \frac{\sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right] y^J}{\sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right]} \text{ and } \hat{\alpha} = \sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right].$$

Since  $y^P \leq y^J \leq y^R$  for all  $J = R, M, P$ , with at least one strict inequality, it must be the case that

$$\begin{aligned} \sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right] y^P &< \sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right] y^J \\ &< \sum_J \alpha^J \left[ 1 + \psi(\lambda h)^2 O^J \alpha^J \right] y^R. \end{aligned}$$

FIGURE 3. Parties' Centripetal and Centrifugal Movement<sup>a</sup>

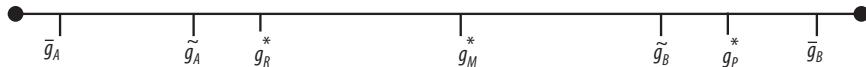
a.  $CP_P$ : party  $P$ 's centripetal movement, where  $P = A, B$ ;  $CF_P$ : party  $P$ 's centrifugal movement, where  $P = A, B$ .

The simplification made in equation 12 is thus justified, that is,  $\tilde{g}_A > \bar{g}_A$  and  $\tilde{g}_B < \bar{g}_B$ .

Let us analyze the two expressions in equation 13. First, note that public funds,  $c$ , do not enter any of the expressions for the equilibrium announcements. Therefore, public funding of electoral campaigns has no effect on the parties' announced policies. Second, in the absence of both a lobby ( $O^J = 0$ ,  $J = P, M, R$ ) and party ideology ( $\gamma_A = \gamma_B = 0$ ), the two parties converge to the same socially optimal equilibrium announcement:  $\tilde{g}_A = \tilde{g}_B = g^*$ . All deviations from the optimal policy are due either to the existence of a lobby or to ideological rigidity, or to the combined effect of both factors. Third, in the presence of a lobby and the absence of party ideology, the two parties still converge to the same announcements, but now  $\tilde{g}_A = \tilde{g}_B = g^L = H^{-1}(\hat{y}/y) \neq g^*$ . Thus, the very presence of lobbyist groups causes the parties to announce a suboptimal policy. The expression of  $\hat{y}$  shows clearly that the deviation occurs toward the preferred policies of the organized groups, although there is no private contribution in equilibrium, since both parties announce the same policy. This is the effect of  $O^J$  on  $\hat{y}$ . This lobby effect can only be circumvented if it is possible to totally ban private contributions (that is, if  $\lambda = 0$ ), which does not seem to be feasible in Latin America or in any other region of the world. Fourth, in the presence of both a lobby and ideological rigidity (that is, positive values of  $\gamma_A$  and  $\gamma_B$ ), the two parties will differentiate themselves by announcing opposing policies, with  $\tilde{g}_A < g^L < \tilde{g}_B$ . In this case, there will be no convergence of announced platforms, and there will be private contribution in equilibrium, which will affect the probability of each party's winning a majority of legislative seats.

We can thus decompose parties' decisions into two movements: a centripetal movement ( $CP$ ) toward platform  $g^L$  and a centrifugal movement ( $CF$ ) away from  $g^L$  toward the parties' respective ideological preference,  $\bar{g}_A$  and  $\bar{g}_B$  (figure 3). The parties' final announcements,  $\tilde{g}_A$  and  $\tilde{g}_B$ , are the combination

FIGURE 4. Utility Difference between Poor and Middle-Income Groups



of these two opposing movements. A balance between the desire for interest groups' support and the degree of ideological rigidity will determine the optimal announcement. Note that the higher the ideological rigidity (that is, the higher the value of  $\gamma_p$ ), the higher the centrifugal movement, that is, the higher the deviation from the platform  $g^L$  toward parties' optimal platforms,  $\bar{g}_A$  and  $\bar{g}_B$ . In other words,

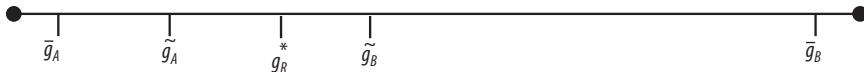
$$\frac{\partial \tilde{g}_A}{\partial \gamma_A} < 0 \text{ and } \frac{\partial \tilde{g}_B}{\partial \gamma_B} > 0.$$

Given the income of each of the three classes, their respective optimal platforms ( $g_R^*, g_M^*, g_P^*$ ) are such that the higher a class's income, the lower the optimal platform value for this class in the interval  $[0, y - c]$ . Given that the parties' respective ideologies are extreme and moving toward the center at different rates, we expect that the rich and poor classes will be better represented by parties A and B, respectively. Note that in the present model, a "leftist" policy means low government expenditure,  $g$ , and lower taxes, which reflects the preferences of the rich, contrary to the conventional wisdom. If the classes are organized, they will be likely to contribute to the electoral campaign of the party that better represents them. The middle-income group, in contrast, will generically be less likely to finance electoral campaigns, since the announced platforms are both away from their utility. Figure 4 illustrates the situation in which the poor group ends up being more likely to contribute than the middle-income group.

Our model thus points to a polarization in society, according to which the rich and the poor spend the most on electoral campaigns. This polarization occurs because higher contributions are commensurate with the larger utility difference.<sup>35</sup> Elections may be cheaper in countries with predominantly middle-income voters than in countries where the middle class is small; this

35. This result would occur even if there were more than two parties. A third ideological party with a more centrist platform would be financed by the middle-income group if the group's risk aversion is high enough to compensate for the cost of electoral financing relative to the group's expected utility under the more extreme platforms announced by the other parties.

FIGURE 5. Comparison of Parties' Ideological Rigidities



is consistent with Samuels's indication that elections in Brazil are relatively more expensive than in the United States.<sup>36</sup>

The influence of the ideological bias on the level of private contributions is given by the following equation:

$$\frac{\partial (C_A^J - C_B^J)}{\partial \gamma_A} = \lambda \psi h \sum_J O^J \alpha^J \left( \frac{\hat{y} - y^J}{y} + \frac{\gamma_A}{\psi \hat{\alpha}} \right) \left\{ \frac{1}{\psi \hat{\alpha} H'' \left[ (H')^{-1} \left( \frac{\hat{y}}{y} + \frac{\gamma_A}{\psi \hat{\alpha}} \right) \right]} \right\}.$$

If party A's ideological rigidity is sufficiently high, then the right-hand side may become negative. This indicates, for example, that even if the organized rich group prefers party A a priori, its support to this party will decrease with the party's rigidity. This group could even support party B: since party A would have a lower centripetal movement owing to its high ideological rigidity, party B, with relatively lower ideological rigidity, would provide more utility to the rich group. This effect may be heightened if party B has low ideological rigidity, extending its centripetal movement and approaching the platform that would be optimal for the rich group (figure 5).

We now analyze parties' probabilities of winning a majority of votes (equation 11) in equilibrium:

$$(14) \quad p_B = \frac{1}{2} - \psi \left\{ \left[ W(\tilde{g}_A) - W(\tilde{g}_B) \right] + \psi(\lambda h)^2 \sum_J O^J (\alpha^J)^2 \left[ W^J(\tilde{g}_A) - W^J(\tilde{g}_B) \right] + hc(\beta_A - \beta_B) \right\}.$$

The summands inside the brackets in the above expression summarize each of the three factors that affect the probability of victory. The first summand,

$$W(\tilde{g}_A) - W(\tilde{g}_B),$$

36. Samuels (2001).

reflects voters' direct welfare concern: the closer the policy to the society's optimal policy,  $g^*$ , the higher the party's probability of victory. The second summand,

$$\psi(\lambda h)^2 \sum_J O^J(\alpha^J)^2 \left[ W^J(\tilde{g}_A) - W^J(\tilde{g}_B) \right],$$

reflects the battle for lobbyists' contributions. Finally, the third summand,

$$hc(\beta_A - \beta_B),$$

reflects the effect of public funding.

Hence, although the public funding of electoral campaigns does not affect the equilibrium announced policies, it does affect a party's probability of victory by giving additional advantage to a party that had a majority of seats in the previous legislature. The size of the per capita funds,  $c$ , is important: if  $c$  is reduced, then the effect of public funding may be insignificant, but if  $c$  is large, it may offset the other effects and transform a low probability of victory into a high one. We discuss this issue in more detail in the next section, when we consider an iterated version of the game to assess the long-run effects of public financing.

## The Iterated Electoral Competition Game

Suppose now that the electoral competition game is repeated an infinite number of times. The main dynamic connection between two successive electoral periods is the number of seats held by a party in one period, which defines the amount of public funding it will receive in the next period. To simplify the analysis, we limit the intertemporal strategic choices of parties by assuming that in each period a party only takes into consideration its utility in that period. This restriction allows us to disregard strategies in which a party would reduce its utility today by strongly deviating from its preferred policy in order to obtain more votes and then, in the future, return to announcing policies closer to its preferred policy, once it has obtained the public funds to run its electoral campaigns.<sup>37</sup> This is a reasonable assumption if politicians have low discount factors, that is, if they highly value the present relative to the future.

37. We thank Ernesto Dal Bó for suggesting the use of the iterated term and Ernesto Dal Bó and Ian Ayres for contributions to this discussion.

Under these assumptions, the iterated game starts at the end of period  $t = 0$ , where party A holds  $\beta_A^0$  percent of the seats in the legislature (and, consequently, party B holds  $\beta_B^0 = 1 - \beta_A^0$  percent of the seats). Parties make their policy announcements, lobbyists make theirs campaign contributions, parties receive public and private funds and use them to influence voters, and voters cast their ballots based on the platform announcement, the influence of electoral campaigns, and the realization of the stochastic shocks. A new legislature is then formed in period  $t = 1$ , where the seats occupied by each party are proportional to the quantity of votes received. The majority party implements its announced policy. At the end of period  $t = 1$  the game repeats itself, and so on for each period  $t > 1$ .

The main dynamic component of this iterated game—namely, the evolution of party representation in the legislature—can be analyzed using the following proposition, which relates the probability of winning a majority in the legislature in one period with the expected representation in the legislature next period. The corresponding proof is outlined in the appendix.

### *Proposition*

In a proportional electoral unicameral system, the expected proportion of seats that party A occupies in period  $t + 1$ ,  $\beta_A^{t+1}$ , relates to the probability of winning a majority of votes in period  $t$  according to the following equation,

$$(15) \quad E[\beta_A^{t+1}] = p_A^t + \left(1 - \frac{\Psi}{\phi}\right) \kappa^t,$$

where  $\kappa^t = \phi \sum_J \alpha^J \kappa_t^J$  and  $\kappa_t^J = W^J(g_A^t) - W^J(g_B^t) + h(C_A^t - C_B^t)$ .

To simplify the notation, we identify  $E[\beta_A^t]$  with  $\beta_A^t$ . Also, since public funds do not affect the announced policy, it must be the case that  $\tilde{g}_P = \tilde{g}_P$  (which is the solution to the base game), for  $P = A, B$  and for all  $t$ . Plugging the announced platforms and expressions 10 and 14 into equation 15 yields<sup>38</sup>

$$(16) \quad \beta_A^t = \frac{1}{2} + \phi \left[ \tilde{W} + \Psi (\lambda h)^2 \hat{W} \right] \sum_{i=0}^{t-1} (2\phi h c)^i + (2\phi h c)^t \left( \beta_A^0 - \frac{1}{2} \right)$$

38. This study postulates that the terms on the right-hand side of expression 16 are small enough to guarantee that  $0 \leq \beta_A^t, \beta_B^t \leq 1$ .

and

$$\beta_A^t = 1 - \beta_A^t,$$

where

$$\tilde{W} = \sum_J \alpha^J \left[ W^J(\tilde{g}_A) - W^J(\tilde{g}_B) \right] \text{ and } \hat{W} = \sum_J O^J (\alpha^J)^2 \left[ W^J(\tilde{g}_A) - W^J(\tilde{g}_B) \right].$$

The factors  $\tilde{W}$  and  $\hat{W}$  compare the weighted average utility of all social classes (welfare criterion) with the weighted average utility of interest groups from the announced platforms  $\tilde{g}_A$  and  $\tilde{g}_B$ , which, in turn, are related to lobbyists' influence. The long-run proportion of parties in the legislature depends fundamentally on the size of the per capita public contributions, as shown below.

*Case 1:  $c < 1/2\phi h$*

The parties' proportions in the legislature can be rewritten as follows:

$$\beta_A^t = \frac{1}{2} + \phi \left[ \tilde{W} + \psi(\lambda h)^2 \hat{W} \right] \left( \frac{1 - (2\phi h \alpha c)^t}{1 - 2\phi h \alpha c} \right) + (2\phi h \alpha c)^t \left( \beta_A^0 - \frac{1}{2} \right);$$

$$\beta_B^t = 1 - \beta_A^t.$$

In this case, the per capita public contribution is small, so it follows that

$$\lim_{t \rightarrow \infty} (2\phi h c)^t = 0$$

and

$$\lim_{t \rightarrow \infty} \frac{1 - (2\phi h c)^t}{1 - 2\phi h c} = \frac{1}{1 - 2\phi h c}.$$

Hence, the parties' expected representations in the long run converge to

$$\lim_{t \rightarrow \infty} \beta_A^t = \frac{1}{2} + \frac{\phi}{1 - 2\phi h c} \left[ \tilde{W} + \psi(\lambda h)^2 \hat{W} \right]$$

and

$$\lim_{t \rightarrow \infty} \beta_B^t = \frac{1}{2} + \frac{\phi}{1 - 2\phi h c} \left[ -\tilde{W} - \psi(\lambda h)^2 \hat{W} \right].$$

Therefore, public contributions become less determinant of parties' representation in the long run. Since  $(1 - 2\phi h c) > 0$ , the factors  $\tilde{W}$  and  $\hat{W}$  will determine the legislative composition, which shows the combined effect of the direct quest for votes ( $\tilde{W}$ ) and the competition for private contribution ( $\hat{W}$ ).

If society prefers one party and interest groups prefer the other, their effects are opposite, so we cannot predict, *a priori*, which party is going to be larger in the long run. One possible outcome is that a party with a strong ideology (but without the support of the majority of social classes) will perpetuate itself in the long run based on the support of lobbyists. In this sense, party ideology may even become an advantage to a rigid party: by receiving financial support from interest groups, an ideologically rigid party guarantees its existence by influencing voters during the electoral campaigns.

In general, we expect the second summand in the above limit to be small enough that both parties are represented in the legislature. In particular, given the stochastic shocks, we would expect a change in party and in implemented policy over time. However, even though public funds have no decisive effect on the long-run party equilibrium, the fact that  $(1 - 2\phi h c) < 1$  shows that public funds increase the second summand in the long-run party representation expression. In other words, it reduces party competition in the sense that it amplifies the party that has a positive value for the term in brackets.

*Case 2:  $c = 1/2\phi h$*

In this case, the parties' proportions in the long run become

$$\beta_A' = \phi \left[ \tilde{W} + \psi(\lambda h)^2 \hat{W} \right] + \beta_A^0$$

and

$$\beta_B' = \phi \left[ -\tilde{W} - \psi(\lambda h)^2 \hat{W} \right] + \beta_B^0.$$

One party will dominate the other in the long run. The balance between factors  $\tilde{W}$  and  $\hat{W}$  will still determine which party will dominate the legislature, that is, the party for which the term in the brackets is positive. In the very specific case in which those effects are opposite and equal, the initial legislative composition will be maintained in the long run as  $\lim_{t \rightarrow \infty} \beta_A' = \beta_A^0$  and  $\lim_{t \rightarrow \infty} \beta_B' = \beta_B^0$  if  $\tilde{W} = \psi(\lambda h)^2 \hat{W}$ . However, the main effect of public funding in this particular case is to foster the dominance of one party in the long run.

Case 3:  $c > 1/2\phi h$

The parties' proportions in the legislature can be rewritten as

$$\begin{aligned}\beta_A^t &= \frac{1}{2} - \frac{1}{2\phi hc - 1} \left[ \phi \tilde{W} - \phi \psi (\lambda h)^2 \hat{W} \right] \\ &+ \frac{(2\phi hc)^t}{2\phi hc - 1} \left[ \phi \tilde{W} + \phi \psi (\lambda h)^2 \hat{W} + \left( \beta_A^0 - \frac{1}{2} \right) (2\phi hc - 1) \right]\end{aligned}$$

and

$$\beta_B^t = 1 - \beta_A^t.$$

In this case, public contributions are significant, and the last summand of the above expression increases indefinitely in absolute value. Therefore, one of the two parties will become hegemonic in the long run, as in the previous case. Which party will dominate depends on the sign of the term below, which reflects how attractive the announced policy is to voters ( $\tilde{W}$ ), how attractive it is to lobbyists ( $\hat{W}$ ), how strong the party is at the outset ( $\beta_A^0 - 1/2$ ), and the volume of public funds ( $2\phi hc - 1$ ):

$$\phi \tilde{W} + \phi \psi (\lambda h)^2 \hat{W} + \left( \beta_A^0 - \frac{1}{2} \right) (2\phi hc - 1).$$

A high volume of public contributions may bias the above term so that the third summand dominates the sum of the first two. In this case, an initial, possibly minor advantage of party A in terms of representation in the legislature (that is,  $\beta_A^0$  higher than, but very close to, 0.5) may give that party hegemony in the long run. Therefore, although public financing has no effect on the announced policy, it may have the unexpected effect of perpetuating a party that obtains a majority as a result of an unlikely realization of the shock variables, such as a war, an unanticipated terrorist attack, or a severe economic crisis.

This reveals the potential for opportunistic changes in the financial campaign legislation to favor a party that obtains a one-time majority in the legislature. Indeed, a party that recently acquired a majority in the legislature may arbitrarily vote for a significant increase in the value of per capita public finance,  $c$ , to ensure increasing (expected) representation.<sup>39</sup> Countries must be extremely

39. We thank Ian Ayres for emphasizing this issue.

careful when modifying their electoral campaign financing legislation, especially with respect to large increases in public funding.

The potentially negative effect of public finance resides entirely in the fact that different-sized parties receive different amounts of funds. If both parties received the same amount of contributions, then in the present model public funds would have no effect on the probability of obtaining a majority of votes or on the long-run party representation in the legislature. Although none of the eighteen Latin American countries studied by Zovatto use this egalitarian rule, other rules for the distribution of public funds may offer important benefits.<sup>40</sup>

## **Limitations and Extensions**

This study is part of wider research on the different incentives created by public and private campaign financing and the associated consequences for society. The model presented here makes a series of strong assumptions that need to be extended before we can assess its true theoretical and policy contribution. This section explores ideas for addressing these issues in future research.

One of the model's main weaknesses relates to the lobbyists' motivations for contributing to parties. Here lobbyists only contribute to increase the probability of victory for the party that announces a policy that best represents their interests. Although this is clearly one of the lobbyists' motives, the empirical evidence in Latin America suggests that lobbyists also profit from direct benefits granted by the winning party.<sup>41</sup> In that case, it may be profitable for lobbyists to contribute to several parties at once, as a sort of electoral insurance. One option for analyzing such incentives is to include more detailed micropolitical foundations in the lobbyists' utility function, in order to assess their specific individual benefits from supporting a candidate.<sup>42</sup> We could also consider an alternative timing to model a possible negotiation between the lobbyists and the parties before the platform is announced, à la Grossman and Helpman.<sup>43</sup>

The electoral campaign may also play a significant role in revealing information. Many voters may have limited information about important characteristics of the parties, such as the true quality of the politicians or the real

40. Zovatto (2003).

41. Transparency International (2004).

42. We thank Ernesto Dal Bó for this insight.

43. Grossman and Helpman (1996, 2001). We thank Francisco Ferreira for this suggestion.

policy to be implemented by the winning party, and the money spent during the electoral campaign may help inform voters.<sup>44</sup> In this case, a certain amount of public financing will always be desirable, although it may be beneficial to limit the amount and distribute it equally among parties.<sup>45</sup> More generally, we would like to analyze the equilibrium effects of alternate mechanisms for distributing public funds.

Moreover, the iterated game is a weak approximation for the dynamic game, as it does not allow the parties to pursue dynamic strategies. If parties are willing to lose some utility by deviating from their optimal policy in one period to gain a majority of votes and then, in the next period, return to their preferred policy, then the centripetal movement could dominate the centrifugal movement. We might then observe a return to converging platform announcements.<sup>46</sup>

An interesting extension relates to the possibility that money spent on campaigns has different effects for different parties. Voters may trust one party more than the other, making them more sensitive to the party's electoral campaign. If so, cheaper campaigns may be as effective for the trusted party as a more expensive campaign, and the electoral equilibrium may be very different from what we modeled in this paper. The optimal distribution of public funds would depend on the equilibrium. We would also like to explore the results of the model using a more general form for including the cost of public contributions in the lobbyists' utility function, as well as the effect of the electoral campaign on voters' utility functions.

Finally, including a postelectoral game could enrich the model significantly, given Transparency International's evidence on direct benefits to lobbyists following elections in Latin America.<sup>47</sup> In that case, the model should incorporate the opportunity for corruption. Voters should consider that possibility in their electoral decision, which, in turn, will generate a concern among voters for the controlling role of the opposition party in the legislature. In such an extended model, the implemented policy would be the result of bargaining in the legislature, and voters may need to choose the composition of the legislature optimally to minimize corruption opportunities, as suggested by Bugarin.<sup>48</sup>

44. See Bennedsen and Feldmann (2002) for a careful discussion on informational lobbying.

45. We thank Eduardo Engel, Rafael Di Tella, and Marco Bonomo for contributions to this discussion.

46. We thank Ian Ayres and Ernesto Dal Bó for comments.

47. Transparency International (2004).

48. Bugarin (1999, 2003).

## Conclusion

The present paper studies the interaction between public and private campaign financing and party ideology. We took as our starting point the basic modeling developed by Persson and Tabellini.<sup>49</sup> We expanded their model to incorporate the hypotheses that parties have preferences regarding the political platforms they announce and that electoral campaigns may be financed by both public funds and private contributions.

Our model highlights two opposing movements in terms of equilibrium platforms. A centripetal movement makes parties tend to converge to the lobbyists' preferred platform to secure private financing. At the same time, moving away from a party's established ideological platform is costly, which results in a centrifugal movement when parties have opposing ideologies. This yields an intermediate movement, whereby parties distinguish themselves by choosing different policies, which are typically distinct from the median voter's preferred platform. Public financing affects the likelihood that a party will win a majority in the legislature, but it does not directly affect the equilibrium announced policies.

Since parties diverge in their announced policies, private contributions will be positive in equilibrium. Lobbyist groups will find it optimal to contribute to electoral campaigns, which implies a cost that these groups would not have to face in the absence of ideology. In equilibrium, ideological rigidities determine how much private financing a party will receive from private lobbying groups. In the limit, a lobby could decide to finance a party that has a very different ideological position from its own, but is more flexible in ideological terms.

Based on the divergence of the announced policies, the model suggests that organized poor and rich groups tend to participate more in the electoral process and make larger private contributions than the middle class. This result could explain why political campaigns seem to be relatively more expensive in a country like Brazil (with a relatively reduced middle class) than in the United States (with a more significant middle class), as Samuels argues.<sup>50</sup>

The model highlights two extreme effects of public financing on electoral competition. On the one hand, public financing *per se* does not affect how

49. Persson and Tabellini (2000).

50. Samuels (2003).

political parties decide which platforms they will announce during the electoral campaign. This reflects the fact that public contributions are fixed, while a party's platform announcement is a strategic decision aimed at gaining voters or obtaining private contributions. On the other hand, public funds give strong parties the means to better influence voters, raising their probability of obtaining a majority of votes. In the long run, high levels of public financing may lead to a limiting situation in which one party dominates the legislature, which essentially corresponds to no party competition at all. This implies that the hegemonic party will not change its policy, even though that policy may not maximize social welfare.

This paper's discussions are especially important in present-day Latin America, where several countries are amending their electoral legislation to improve their political institutions. The main policy implication of the study is that governments should be extremely careful in their decisions to allocate large amounts of public funds to electoral campaigns. Furthermore, governments may find it useful to consider new forms of distributing public funds, since an equal-share rule may reduce the large-party advantage highlighted here.

## Appendix

This appendix lays out the proof of the proposition stated in the main text regarding the evolution of party representation in the legislature, which relates the probability of winning a majority in the legislature in one period to the expected representation in the legislature next period.

### *Proposition*

Consider a proportional election, in which a party's representation in the legislature is given by the percentage of votes received by that party. Suppose that party P, where  $P = A, B$ , proposes policy  $g_P$  and collects  $C_P$  in private and public funds. Then, the share of legislative seats that party A can be expected to win relates to the probability that the party will win a majority of votes, as follows:

$$E[\beta_A] = p_A + \left(1 - \frac{\Psi}{\phi}\right)\kappa,$$

where  $\kappa = \sum_J \alpha^J \phi \kappa^J$  and  $\kappa^J = W^J(g_A) - W^J(g_B) + h(C_A - C_B)$ .

*Proof*

For simplicity of notation, we drop the time index.

**PROPORTION OF VOTES.** Recall expression 4 defining party A's total number of votes:

$$(A1) \quad \pi^A = \sum_J \alpha^J \left( \sigma^J + \frac{1}{2\phi} \right) \phi.$$

The swing voter's type is  $\sigma^J = W^J(g_A) - W^J(g_B) + h(C_A - C_B) - \tilde{\delta}$ . Thus, letting  $\kappa^J = W^J(g_A) - W^J(g_B) + h(C_A - C_B)$ , we can write

$$\pi^A = \frac{1}{2} + \sum_J \alpha^J \phi \left( \kappa^J - \tilde{\delta} \right).$$

Now let  $\kappa = \sum_J \alpha^J \phi \kappa^J$ . The above expression can be rewritten as

$$\pi^A = \frac{1}{2} + \kappa - \tilde{\delta} \phi.$$

Since  $E[\tilde{\delta}] = 0$ , party A's expected percentage of votes is

$$(A2) \quad E[\pi^A] = \frac{1}{2} + \kappa - \phi E[\tilde{\delta}] = \frac{1}{2} + \kappa.$$

**EXPECTED REPRESENTATION.** Given equation A2 and the proportional electoral system, the expected representation of party A in the legislature is

$$E[\beta_A] = E[\pi^A] = \frac{1}{2} + \kappa.$$

**PROBABILITY OF GAINING THE MAJORITY IN THE LEGISLATURE.** The probability that party A will win the majority in the legislature,  $p_A = \text{prob}[\pi^A \geq 1/2]$ , can be expressed as follows:

$$p_A = \text{prob}\left(\pi^A \geq \frac{1}{2}\right) = \text{prob}\left(\frac{1}{2} + \kappa - \tilde{\delta} \phi \geq \frac{1}{2}\right) = \text{prob}\left(\tilde{\delta} \leq \frac{\kappa}{\phi}\right).$$

Thus,

$$(A3) \quad p_A = \frac{1}{2} + \kappa \frac{\Psi}{\phi}.$$

From equations A2 and A3, it follows that

$$E[\beta_A] = p_A + \left(1 - \frac{\Psi}{\phi}\right) \kappa.$$

## Comment

**Ernesto Dal Bó:** Portugal and Bugarin build their paper around a standard model of electoral competition and campaign finance, as pioneered by Baron and by Grossman and Helpman.<sup>1</sup> The particulars of the modeling follow Persson and Tabellini's approach.<sup>2</sup> The basic model features two candidates or parties with ideological preferences who want to prevail in a winner-take-all election (although the paper refers repeatedly to a legislature, the model is developed for the case of a winner-take-all election). The authors analyze the cases of candidates receiving private and public funds. Campaign contributions are assumed to improve the candidates' "brand" value. That is, for a given platform pair, an increase in contributions to one party raises voters' inclination to choose that party. The purpose of the paper is to analyze the effects of public financing on platforms and welfare. The authors also explore whether public funds may alter electoral equilibrium in the long run, as defined more precisely below. As developed, the paper is better for achieving the second purpose than the first. Before commenting on that, I briefly lay out the reasons why the model is not well suited to explaining either the welfare implications of public campaign financing or the effects of public funds on platform choices.

In the model, the effect of contributions comes from a black box: the authors provide no microfoundation as to why a party that spends more has a better brand name and receives more votes. The literature analyzes two different possibilities for the connection between money and votes, which I briefly describe here. I then argue that establishing a precise microfoundation of the effects of money on votes is important if one wants to make welfare predictions.<sup>3</sup>

1. Baron (1994); Grossman and Helpman (1996).

2. Persson and Tabellini (2000).

3. The next two paragraphs borrow heavily from Prat (2006).

One possibility is that money allows parties to communicate information about their quality.<sup>4</sup> Suppose a lobby is interested in donating money to the candidate who is most likely to win because the winner will be able to return favors to the lobby. Assume also that voters care not just about policy, but also about the quality of candidates. When candidates obtain a contribution, they can pay for an ad that reveals their quality to voters. In this simple world of informative advertising, only high-quality candidates care to advertise, and only high-quality candidates obtain donations in exchange for policy favors. Money allows candidates to transmit valuable information to voters. What is important about money is not where it comes from, but that it is available to sustain communication so that voters can learn about the candidates' features. A second possibility involves a world where advertising *per se* is uninformative, but the fact that a party was able to raise money does convey information.<sup>5</sup> Why would big campaign spending convey any kind of information? Suppose again that lobbies try to guess who the winning candidate will be in order to decide to whom to donate money. If lobbies observe a better signal about the quality of one candidate versus the other, then lobbies will tend to give more to the candidate they perceive as being higher quality. When voters observe high levels of campaign spending by one candidate, they will think that candidate is more likely to be of high quality, and they will vote accordingly.

In both cases (that is, directly informative versus indirectly informative advertising), being able to spend is correlated with obtaining votes, and private contributions induce policy distortions. Banning private contributions would be desirable if the quality dimension is not very important for voters relative to the policy one. However, the welfare effect of public funds depends crucially on whether advertising is directly informative. In the world of directly informative ads, public funds will allow parties to communicate their quality without selling out to special interests. Thus, by funding campaigns themselves with tax money, voters can obtain valuable information without suffering the policy distortion induced by private contributions. In the world where ads are not directly informative, things are different. Public funds will convey no signal about candidate quality, and the incentives for parties to seek private donations will not be altered. Voters will thus be spending tax money on campaigns to no effect, leading to lower welfare. The conclusion is that because the model lacks a microfoundation for how campaign expenditures

4. Ashworth (2006); Coate (2004); Schultz (2007); Wittman (2007).

5. See, for instance, Potters, Sloof, and van Winden (1997) and Prat (2002).

earn votes, it is not well suited to making predictions on the welfare consequences of public campaign financing.<sup>6</sup>

Portugal and Bugarin's model will also have trouble making predictions about how public financing may affect private contributions and platform choices. The reason follows immediately from the model's construction. In the model, parties accept contributions and choose platforms to maximize an objective function in which the cross-partial between private and public funds is zero and the cross-partial between public funds and platform choice is zero. Not surprisingly, the model yields that public finance does not crowd out private funding or affect platforms.

The authors' analysis of an iterated version of their game has important limitations, but it is the freshest part of the paper. It is also the most applicable to Latin America. A natural concern with a system in which parties are financed in proportion to past vote shares is that it may promote entrenchment.<sup>7</sup> When a party receives a majority of the votes, it then obtains a majority of the funds, which reinforces its ability to obtain a majority of the votes. The iterated game captures those effects. The authors look for stable vote share solutions and platform choices. This amounts to a fixed-point solution, and it has some parallels in the model by Ortúñoo-Ortíñ and Schultz.<sup>8</sup> The latter, however, impose symmetry assumptions that prevent the analysis of the emergence of hegemonic parties.

The key idea in this section is that when vote shares are sensitive enough to campaign contributions, the initial value of those contributions will dictate the long-run outcome in terms of what party dominates elections. In other words, if a party initially attracts more private contributions, it will obtain more votes in the first election, which entitles it to more public funds and thus allows it to continue to obtain a majority of votes. This means that public funds could introduce a force resembling increasing returns in electoral competition. Although public funds may crowd out private contributions in real life, thereby reducing the exchange of policies for money, they present the danger that increasing returns will create hegemonic tendencies. This problem might be averted by avoiding the precise type of public funding according to

6. More cynical views of the role of campaign contributions reinforce the view that micro-foundations are necessary to make welfare statements. For example, if campaign money is used simply to buy votes, the particulars of the vote-buying process will be relevant. Dal Bó (2007) studies the inefficiency of vote buying and relates it to specific aspects of the purchase of votes.

7. Dal Bó, Dal Bó, and Snyder (2007) demonstrate the presence of entrenchment effects in democratic politics through the self-perpetuation of political dynasties.

8. Ortúñoo-Ortíñ and Schultz (2005).

which money tracks past vote shares. However, such a proportional system may already be in place, since the iterated model may well apply to the problem of illegal public campaign financing.

To illustrate this application, I keep the two-party model and suppose that after the election parties obtain control of government in proportion to their vote shares. That is, if a party gets 60 percent of the vote it will control 60 percent of the government machine, leaving the remainder to the other party.<sup>9</sup> Suppose next that parties extract rents from managing state resources in proportion to the share of government that they control, and they apply those rents to finance the party and its campaign activities. The ensuing situation would be formally similar to one in which some public funds are legally allocated to parties according to their past vote shares, but captures an illegal phenomenon that has been prevalent in some Latin American nations for decades. Party machines extract state-owned resources to fund their activities, and the larger the fraction of government “owned” by a party, the larger the amount of resources that are illegally appropriated. This combination of capture of state resources by victorious political parties and the increasing returns induced by such appropriation may explain the emergence of long-lasting hegemonic parties in Latin American politics, such as Peronism in Argentina and the Institutional Revolutionary Party (PRI) in Mexico.

The preceding comments are speculative for the following reason. The iterated model’s ability to capture dynamic play is limited, in that the iteration only mechanically repeats the static game. This approach does not allow for players who are aware of the future and who can condition their play on past events. A more definitive analysis of hegemonic tendencies in electoral competition under state financing (whether legally or through plundering) must await a fully dynamic approach.

9. This is for simplicity, given that in presidential systems the winner controls a much higher percentage of state resources than the typical winner vote share.

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