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The role of public contributions and party ideology[ϕ]

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Abstract

This article analyzes the effects of public financing of electoral campaigns on policies announced by ideologically oriented parties, subject to pre-electoral lobbying. Parties' ideologies make politicians announce divergent platforms, even though it means losing some votes. Divergent platforms, in turn, make lobbies actually contribute to parties' electoral campaigns. The announced platforms are biased in favor of the parties' ideology and interest groups' preferred policies. Finally, increasing public financing of electoral campaigns may generate unequal electoral competition and may significantly raise the chances of one party becoming hegemonic, wiping out party competition in the long run.

Key words: Public campaign financing, private political contributions, party ideology, electoral competition.

JEL classification codes: D72, C72

1. Introduction

Democracy has made impressive progress over the last 30 years in Latin America. Since the begining of the "third wave" of democratization in 1978, the Index of Electoral Democracy has raised from below 0.3 in 1977 to above 0.9 in 2002 (UNDP, 2004), confirming that most citizens in the region live in highly electoral democratic countries. However, that positive situation has been constantly upset by political challenges. Over the 13-year period 1990-2002 there have been 12 cases of elections in which significant irregularities were detected (UNDP, 2004) in Latin America. 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 prison, 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 (Griner & Zovatto, 2005).

The concern about political corruption in Latin America has called attention to electoral campaign finances. There is presently a renewed debate on what should be the appropriate form of campaign financing regulation both at the academic and at the policy front (Poiré, 2005). At the policy front, a

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symptomatic data appears in Transparency International's 2004 Global Corruption Report (Transparency International, 2004), which is dedicated to political corruption. The report's country studies analyse seven Latin American countries during the period spanning from July 2002 to June 2003 (Argentina, Brazil, Chile, Costa Rica, Guatemala, Nicaragua and Peru). Four of the studied countries modified their political campaign financing law (Argentina, Brazil, Chile and Peru) in that short period of time. Moreover, one of the countries that did not make legislative modifications (Costa Rica) witnessed a clear call for such reform[1] and, as a consequence, the Constitutional Court ruled that "the movements and balances of current accounts held by political parties in state or private commercial banks or in any other non-banking financial entity can, in principle, be accessed by anybody". Therefore, five out of the seven countries studied in the report made significant changes to the electoral campaign financing procedures.

Although Latin America strikes out as a region of constant campaign legislation reforms, more traditional democracies also display their shares of procedural changes. Public financing of electoral campaigns was implemented in the United Stated in 1904 and several additional rules were established since then, mainly motivated by fundraising scandals (Watergate investigations) or by the increasing cost of electoral campaigns. A new change occurred in 2003 with the Bipartisan Campaign Reform Act, which prohibits transfers from parties to candidates (soft money) if the money was obtained from illegal sources[2].

Germany initiated public electoral financing of in 1959, but it was in 1992 reformed due to a concern that public financing might reduce incentives for financial support from party members and sympathetic citizens[3]. In that country there was originally a "Parties Financing Act" that set government disbursement levels for parties based on numbers of votes received, but, since a new revision to the Party Law in 1994, public financing is based on party membership and private contributions as well as the number of votes received[4]. Moreover, anonymous private donations must not exceed US$ 500 and detailed information must be provided for donors of more than US $ 10,000[5].

On June 11, 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 directly to federal parties. Even the individual donation was limited to a maximum of US$ 5,000 per person. A new system of public funding has been established to compensate for the funding

[1] According to Transparency International, 2004, "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".

[2] See "A Framework for Political Party Financing", by Felix Ulloa at www.aceproject.org/main/english/ei/eix_a040.htm, and at www.cbc.ca/news/features/ campaign_contributions030128.html.

[3] See "A Framework for Political Party Financing", by Felix Ulloa, Magistrate of the Supreme Electoral Tribunal of El Salvador, at www.aceproject.org/main/english/ei/eix_a040.htm.

[4] See www.germany-info.org/relaunch/info/publications/infocus/Elections/Political_parties.html.

[5] See www.cbc.ca/news/features/campaign_contributions030128.html.

shortfall, which is based on the number of votes received by a party in the previous election, in the form of US$ 1,75 per taxpayer subsidy[6].

Focusing back on Latin America, Brazil's recent history presents a clear example of constant electoral reform. In 1971, Law 5682 imposed a total ban on direct private political donations to parties at the time it created a public fund for supporting electoral campaigns. Eighty percent (80%) of the total amount of the fund resources were distributed among existing parties according their proportional representation in Congress, whereas the remaining 20% were equally shared among all parties[7]. On December 29, 1992 Congress impeached Brazilian President Fernando Collor de Mello after a several-months trial characterized by strict respect to 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 illegally received[8]. The Collor scandal highlighted the fact that it is basically impossible to ban private political donation. Therefore, a new campaign financing legislation was passed in 1995, Law 9096, allowing private financing. Furthermore, the legislation established new norms for the working of the public fund, the Parties' Fund (Fundo Partidário). According to the new rules, the Treasury transfers every year to the Fund an amount equivalent to the number of registered voters by the month of December of the previous year, multiplied by R$ 0.35 (35 cents of a *Real*, the Brazilian currency). Ninety nine percent (99%) of the Fund's resources are distributed among parties according to their Congressional representation, whereas the remaining 1% is equally shared among all parties. Although private financing became legal after the 1995 law, the huge discrepancy between the candidates' declared donations suggests that there might still be an important market for illegal contributions[9,10]. Presently, several projects for a new electoral law are being voted in the Brazilian Congress. A project passed in the Senate on April 26, 2001 eliminates private donations and increases the amount of per-voter-equivalent Treasury

[6] See www.cbc.ca/news/features/campaign_contributions030128.html.

[7] The distribution of public resources according to the parties' proportions in the Legislatures seems to be the most usual way of distributing public resources to finance campaigns , taking place in countries such as Belgium, France, Italy and Spain.

[8] According to a parliamentary inquiry committee (Comissão Parlamentar de Inquérito), there were over US$350 million of unexplained funds. See "O Esquema PC", Section "Fique de Olho", Veja On Line, http:/www.veja.com.br, Editora Abril, 2000.

[9] To Samuels (2001), the electoral system in Brazil is such that the resources are obtained individually, that is to say, candidates, not parties, are responsible for obtaining the resources for their campaigns. This feature creates distortions in their declared expenses, and turns elections in Brazil relatively more expensive than in the United States, for example.

[10] For example, in the election of 1998, the winning governor of the State of Paraíba, José Maranhão, declared having spent a campaign budget of US$110,400 whereas the winning governor of the nearby (and smaller) State of Sergipe, Albano Franco, declared his campaign budget to be of US$1.1 million. Also the runner-up candidate for presidency, Luiz Inácio Lula da Silva, declared a budget of US$3.4 million, whereas the winner, Fernando Henrique Cardoso, declared more than 11 times that amount: US$37 million. (See "O Caixa Dois de Volta à Luz", Edition nº 1.676, Veja magazine, 11/20/2000; the amounts in *reals* were converted to dollars based the exchange rate of July, 1998).

transfer from the current R$ 0.35 to the much higher R$ 7.00[11]. However, the proportional rule for distribution of public funds among parties remains unchanged[12].

The previous examples suggest that the effect of different types of electoral financing have not yet been clearly sorted out in the applied policy debate. The theoretic literature's seminal article is Baron (1994) that models an electoral competition in which candidates may favor interest groups in order to receive contributions to their campaigns and, consequently, influence uninformed voters. The article introduces public financing by means of an equal lump sum amount 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. However, one may argue that Baron (1994)'s mechanism is highly unlikely to exist in practice, as it suggests that the same amount of public money should be given to large and small parties, regardless the size. In fact, according to Zovatto (2003)'s 18 Latin-American country study, all 15 nations that adopted direct public financing of electoral campaigns have at least part of the resources based on party size in the previous elections[13]. Therefore, the present paper's models assume this type of public financing proportional to party-representation.

In a more recent article, Roemer (2006) analyzes two different institutions of public financing in a model where each lobbyist group contributes only to a specific party. In one of the public financing institutions, each informed voter receives a voucher worth *k* dollars to be donated to the party of her choice, and in the other, public funds match the private contributions. The study finds that parties would propose policies closer to the ideal point of the informed voters in the former public financing system, and that the distortion caused by private financing would be magnified in the latter matching system. Thus, public financing would succeed in reducing policy distortion when it is based on a system that resembles the party's representation criterion discussed.

The present paper attempts to analyze parties' electoral financing mechanism in a more general framework. Our model allows for public funds (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, and for parties being both office and policy motivated. The main objective is to assess how policy decisions (and consequently voters' welfare) are affected by public and/or private contributions when parties have differing ideologies and to what extent the type of financing affects parties' representation in Congress in the short and long run, as a proxy to party competition inequality.

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[11] Brazilian Senate Projects 151/99 and 353/99, passed on 04/26/2001 (Project 4593/01 in the House of Representatives).

[12] Recently, a special commission was designated in the House of Representatives 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 – in the House of Representatives.

[13] Argentina, Bolivia, Brazil, Colombia, Costa Rica, The Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay and Uruguay.

The electoral competition model focuses on elections for the Legislature, using as its main tool the probabilistic voting approach introduced in Lindbeck and Weibull (1987). The hypothesis that campaign spending can influence voters follows Baron (1994), and the idea of obtaining endogenously lobbyists' private contributions is borrowed from Grossman and Helpman (1996) and Persson and Tabellini (2000, chapter 3).

Our model shows that, in equilibrium, parties tend to announce divergent platforms. This divergence reflects parties' rigid ideology, leading to policies that differ from the socially optimal one. Moreover, parties' announced policies are biased in favor of lobby's interests due to the competition for private contributions. If it is possible to enforce a ban on private contributions, then the bias in favor of interest groups disappears. However, the bias due to parties' ideology still remains, so that a campaign that is completely financed by public funds will not promote social welfare.

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 prefer to contribute to a party whose preferred platform is more distant from the group's preferred one, but that is less rigid in contraposition[14]. The private contributions, in turn, can directly affect the chances of success of a party, switching the balance in favor of a party that originally represents 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' platforms announcement decisions, since public financing is predetermined and does not change with parties' political positions, it does not have any effect on parties' platform announcements. Its direct effect in the short run reduces to changing parties' probability of obtaining the majority of seats in the Legislature. However, in the long run, the mechanism of public financing according to the parties' relative size in the Legislature may provide an extreme advantage to a party, leading to a predominance of that party in the long run. Furthermore, such an advantage may arise even in a situation where that party is extremely ideologically oriented and therefore may not be very attractive to the majority of the population to start with.

Our model results confirm the ones in Baron (1994) and Roemer (2006) about policy convergence to a socially superior policy if there are no private contributions and the parties' ideologies are not very rigid. However, the results related to the private contributions and to the probability of a party getting a increasing number of votes completely differ from the ones reached by those studies. In fact, in our model, lobbies may even contribute to a party that they do not initially identify with, if it has a very flexible ideology, which affects party competition in the short run.

[14] This captures the idea of lobbying without restricting that a group can only contribute to a specific party (contrary to Roemer, 2006) and shows the flexibility of our model.

Moreover, under some circumstances, public financing will completely determine a dominant party in the long run, in spite of society or interest lobbyists. One important caveat is that the effect of public financing depends strongly on its amount. Indeed, if public financing is too small, it has an insignificant long run effect. On the other hand, if it is high enough, it may entirely jeopardize party competition in the long run. Therefore, the present study contributes to the discussion about the optimal regulation of campaign financing by showing that there may not be a fast, clear-cut answer to that question, and that issues regarding the amount of the public financing may be in fact very important to the resulting political equilibrium. It also highlights 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 be welfare enhancing.

The rest of the paper is divided as follows. Section 2 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. Section 3 deals with long run parties' representation in the Legislature in an infinitely iterated version of the electoral competition game. Section 4 briefly discusses the shortcomings and possible extensions of the present study. Finally, Section 5 presents the main conclusions.

2. A Model of Electoral Competition with Public and Private Electoral Financing and Office and Policy- Motivated Parties

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 or not to make political contributions based on these announcements. Parties use the private contributions and the public funds they receive in order to influence voters during the electoral campaign. After the electoral campaign, each voter receives stochastic signals that affect his preferences for the parties, observes the announced platform of each party and vote sincerely, i.e., for the party that best represents his 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[15].

The basic model extends Persson and Tabellini (2000, chapter 3), in order to allow for a discussion on 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. Third, we allow for the parties to be policy motivated in addition to office motivated.

[15] The model assumes that the Legislature is composed of an odd number of seats. Therefore, one party always has a majority of seats.

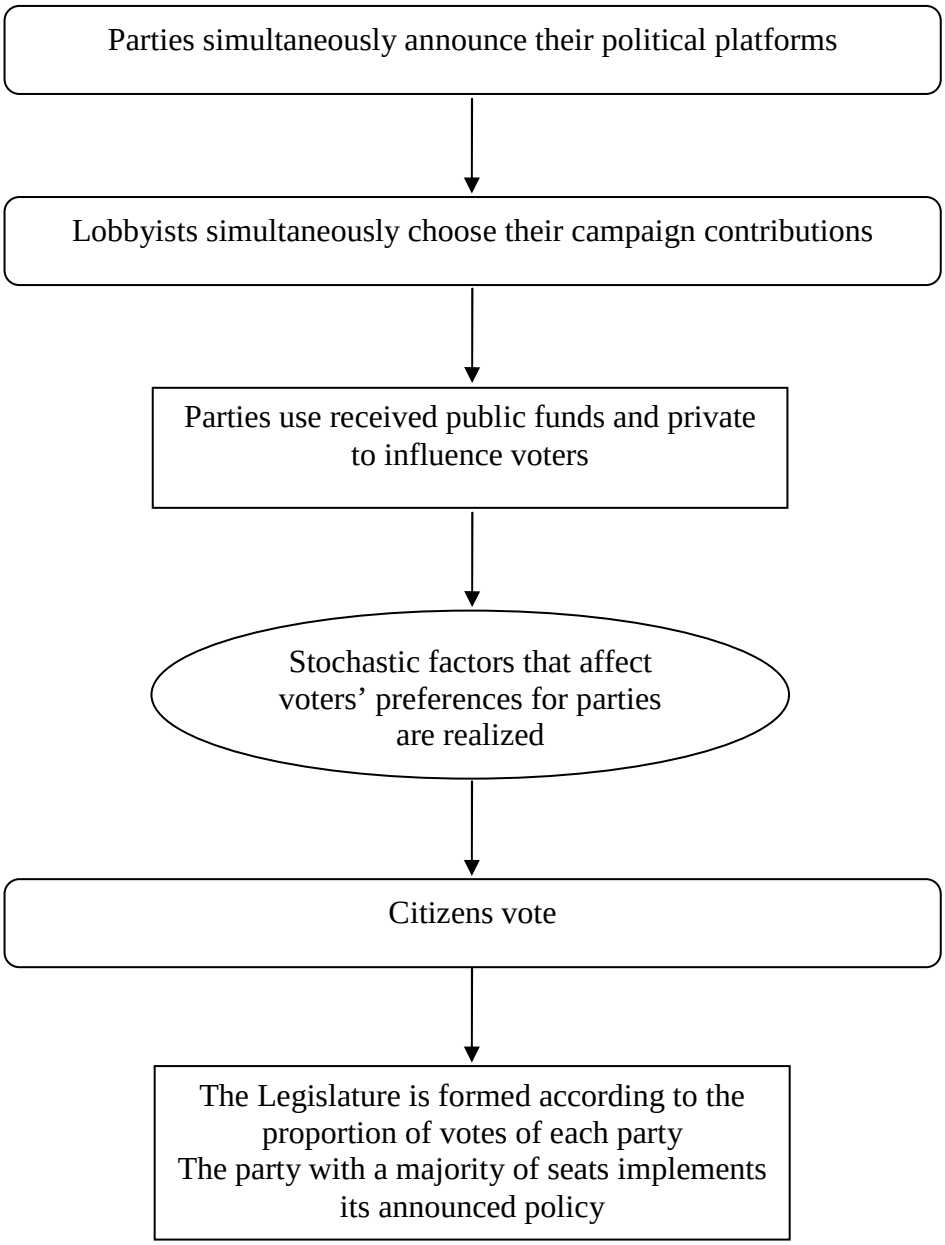


Figure 1: The Electoral Competition Game

Note that only the wider, curved rectangles correspond to real strategic decision in Figure 1. The top one corresponds to parties' platform announcement; the second one from the top to lobbyists' campaign contributions 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 that there is no decision about deviation of resources out of the campaign in the present model. The ellipsis represents the realization of random variable that are out of the control of the players and the last (squared) box states the typical assumption of full commitment made in models of electoral competition, i.e., the majority party implements its announced policy.

In what follows we detail the main elements of the electoral competition model and, simultaneously, solve the game by backwards induction.

2.1. Voters' electoral decision

There is a continuum of unit mass of voters, $\Omega=[0,1]$. Each voter belongs to one of three social classes according to his income. The upper class *R* ("rich") is composed of voters with high-income y^R; the middle class *M* is formed by voters of average income y^M; finally, the lower class *P* ("poor") encloses voters with low income y^P. Thus, $y^R > y^M > y^P$. A social class *J*, *J*=*R*, *M*, *P*, has mass α^J, so that $\sum_J \alpha^J = 1$[16].

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 τ, which is the same for all voters. All tax-collected resources are converted into the public good and public funding for parties' campaigns. Let *c* be the government's *per capita* cost of public funding of electoral campaigns. Then the government budget constraint is $\sum_J \alpha^J \tau y^J = \tau y = g + c$, where $y = \sum_J \alpha^J y^J$ represents the average income of voters.

A voter's utility has two components: a pragmatic (or sociotropic) and an ideological (or idiosyncratic) one[17]. The pragmatic part of the utility represents the voter's decisions as an economic agent, and depends on the consumption of a private good, as well as the consumption of the public good provided by the government. Suppose platform *g* wins the election. Then, an agent of class *J*'s 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. Therefore, the pragmatic part of the utility of a voter of class *J* is shown below, where the utility of public good consumption is given by the function *H*, which is assumed to be strictly increasing and strictly concave.

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

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

[16] The three-class model is a simple way to characterize differences in wealth among citizens. However, it is straight forward to extend it to any finite number of classes.

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

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

The ideological component of a voter's utility function is represented by two random variables corresponding to the voter's bias towards party *B*, or equivalently, party *B*'s popularity at the time elections are held. The first random variable is common to all voters and is associated to the realization of a state of nature that affects the entire population. A war, an abrupt change in international prices of a commodity that is important to the country and a country-wide energy crisis are examples of such phenomenon. A clear example is the popularity of the U.S. president after the terrorist attack on September 11th, 2001, which increased from 57% in February to 90% in September[18]. That process is described by a random variable $\tilde{\delta}$, which the model assumes uniformly distributed on $\left[-\frac{1}{2\psi},\frac{1}{2\psi}\right]$. The parameter $\psi>0$ measures the level of sensibility of society to aggregate shocks: the lower the value of ψ, the more those shocks may affect society.

The second random variable is particular to each voter *i* in group *J* and reflects his personal bias towards party *B*. This bias is modeled as a random variable σ^{iJ}, which is uniformly distributed on $\left[-\frac{1}{2\phi^J},\frac{1}{2\phi^J}\right]$. Hence, the greater the parameter ϕ^J, the more homogeneous is class J. For simplicity, and in order to avoid electoral effects of class heterogeneity, we normalize all the classes' random variable parameters to $\phi=\phi^J$, $J=P,\ M,\ R$.

Therefore, if party *B* wins a majority of seats in the Legislature with the announced platform g_B, a voter *i* in the social class *J* derives utility $W^J(g_B)+\sigma^{iJ}+\tilde{\delta}$.

Note that positive values for σ^{iJ} and for $\tilde{\delta}$ indicate a favorable bias towards party *B*, whereas negative values indicate a favorable bias towards party *A*. Also note that the realization of the global random variable can be favorable to party *B* and at the same time, the realization of the individual-specific random variable can favor party *A*, and vice-versa.[19]

Consider now the role of campaign contributions in the model. For simplicity we assume that overall campaign spending will affect the ideological component of his 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 (respectively, party *A*'s) campaign spending is C_B (respectively, C_A) and party *B* wins the majority of the Legislature seats is:

[18] See "Poll Analyses", Section "Gallup Poll News Service", The Gallup Organization, http:/www.gallup.com, 09/24/2001.
[19] Suppose, for example, that the country faces an economic expansion, so that society approves the incumbent for overall conduct of the economy, but the president is involved in a sexual scandal, which can affect voters differently.

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

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

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

This comparison determines voters' electoral decision.

2.2. A benchmark for welfare comparison

Suppose party P with 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 θ_P is the party index function, θ_P=1 if P=B and 0 otherwise. Suppose, moreover, that voters cannot be influenced by the electoral campaign expenditure, i.e., h=0. Then, the expected utility of that voter (before the random variables are realized) 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. Then, we should 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 will be our benchmark for welfare comparison in what follows.

2.3. Lobbyists contributions' decision

From voters' electoral decision, one can identify for each class J a voter that is indifferent between the two parties, who is called the s*wing voter* of class J. That voter corresponds to the realization of σ^{iJ}, defined as σ^J by:

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

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

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

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 getting the majority of seats is $p_A = prob[\pi^A > 1/2] = prob[\tilde{\delta} < W(g_A) - W(g_B) + h(C_A - C_B)]$

Equivalently:

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

Now, by symmetry:

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

Let us now determine the total amount of campaign resources available to the parties, C_A and C_B.

Given the proportional public-financing distribution rule widely used in Latin America (Zovatto, 2003) discussed in the introduction, we assume that the total amount of resources directed to a party P ($P = A, B$) is proportional to P's representation in Congress during the previous Legislature. Let β_P be the percentage of the total legislative seats held by party P, $P = A, B$. Then, $\beta_A+\beta_B=1$ and the *per capita* funds received by each party from the government is $\beta_P.c$, where c is the *per capita* cost for 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 (Olson, 1971) are able to make private contributions. Let the parameter O^J represent weather class J is organized, i.e., $O^J=1$ if class J is organized and 0 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 $\sum_J O^J \alpha^J C_P^J$.

In order to allow for the possibility that the law bans private contributions, we introduce the parameter $\lambda \in (0,1]$ that measures how efficient the electoral authorities are in exposing illegal contributions[20]. If private contributions are allowed, then $\lambda=1$; otherwise, the unlawful contributions may be unvailed 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 party P receives is:

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

In order to determine group J's private contributions to a party P, C_P^J , let us analyze the interest groups' problem. An organized class' 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 form:

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

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

[20] The authors are indebted to Marco Bonomo for highlighting this issue.

cost function models the fact that contributions typically involve not only a monetary transfer, but also personal involvement of organized voters. Note that the ideological components of voters' utilities do not appear in the above equation because the stochastic components σ^{iJ} and $\tilde{\delta}$ are realized after the contribution decisions are taken and have zero expected value.

Therefore, organized class *J*'s maximization problem is presented below, where p_A is given by equation (5).

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

Note that, if the utility an interest group obtains from platforms g_A and g_B are the same, then the group decides not to contribute, so that $C_A^J = C_B^J = 0$. However, if one platform gives more utility than the other, the group contributes only to the party that announces the better platform, i.e., 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:

$$\begin{aligned} C_A^J &= \max\{0, \lambda \psi h\, O^J \alpha^J [W^J(g_A) - W^J(g_B)]\} \\ C_B^J &= \max\{0, \lambda \psi h\, O^J \alpha^J [W^J(g_B) - W^J(g_A)]\} \end{aligned} \tag{8}$$

The above expression elucidates the lobbyists' contribution decisions.

2.4. Parties' platform announcement decision

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

$$C_A^J - C_B^J = \lambda \psi h\, O^J\, \alpha^J [W^J(g_A) - W^J(g_B)] \tag{9}$$

$$C_A - C_B = \lambda^2 \psi h \sum_J O^J (\alpha^J)^2 [W^J(g_A) - W^J(g_B)] + (\beta_A - \beta_B) c \tag{10}$$

Plugging in equation (10) into equation (5), one obtains party *A*'s probability of obtaining a majority of votes.

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

Parties care about winning a majority of votes. However, we assume that parties also care about which policy is implemented. That is, parties have ideological preferences, 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 functional form below.

$$U_A(p_A, p_B) = p_A(g_A, g_B)K - \gamma_A \mid \bar{g}_A - g_A \mid$$
$$U_B(p_A, p_B) = p_B(g_A, g_B)K - \gamma_B \mid \bar{g}_B - g_B \mid$$

The first summand of a party's utility represents its office-seeking motivation, the pragmatic or sociotropic part of their utility[21]. The term *K* represents the return to the party of gaining a majority in the Legislature, so 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 different policy from its established optimal policy, the ideological or idiosyncratic part of their utility. There are two parts to this ideological component. First, the further away the proposed policy from the party's ideal policy, the costlier for the party. That is the term $\left|\bar{g}_P - g_P\right|$ which represents the pure *ideological bias*. Second, the coefficient γ_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. Moreover, according to Fiorina's studies (1988, 1992, 1996), we assume that parties' optimal platforms are more extreme than society's, due to two reinforcing phenomena. First, there is a self selection problem, as founding a party is a very demanding activity and only those who have strong and extreme policy positions accept to bear the corresponding cost. Second, parties are old and society has evolved over time towards the center of the political spectrum, whereas parties have kept their original, more extreme political positions. Therefore, we 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[22].

As party *A* takes a "leftist" position (a small $\bar{g}_A$), it is expected that any deviation in the platform to increase p_A will occur in such a way that g_A will automatically increase. So, one expects that, in equilibrium, $\mid \bar{g}_A - g_A \mid = g_A - \bar{g}_A$. 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, one expects that $|\bar{g}_B - g_B| = \bar{g}_B - g_B$. We assume that deviation pattern in what follows and confirm it once political parties' problems are solved. Hence, the parties' utility functions can be written as:

$$U_A = p_A(g_A, g_B) - \gamma_A(g_A - \bar{g}_A)$$
$$U_B = p_B(g_A, g_B) - \gamma_B(\bar{g}_B - g_B) \qquad (12)$$

[21] See Ferejohn (1986) for a discussion on the pragmatic/sociotropic part of the utility function *vis a vis* its ideological/idiosyncratic part.

[22] Note that this assumption is not essential for the model, but it makes the solution to the game much simpler and the analysis of the corresponding equilibria more precise.

Moreover, we assume that:

$$\bar{g}_A < (H')^{-1}\left(\frac{y^R}{y}+\frac{\gamma_A}{\psi}\right) < g_R^* = (H')^{-1}\left(\frac{y^R}{y}\right) \quad \text{and} \quad \bar{g}_B > (H')^{-1}\left(\frac{y^P}{y}-\frac{\gamma_B}{\psi}\right) > g_P^* = (H')^{-1}\left(\frac{y^P}{y}\right)$$

Let g_{inf} denote $(H')^{-1}\left(\frac{y^R}{y}+\frac{\gamma_A}{\psi}\right)$ and g_{sup} denote $(H')^{-1}\left(\frac{y^P}{y}-\frac{\gamma_B}{\psi}\right)$. Then the relationship with the preferred policy variable is presented in the next figure.

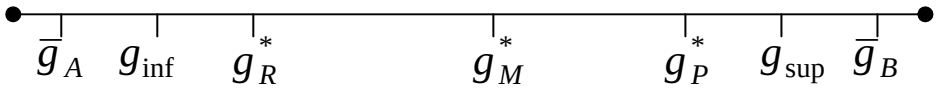


Figure 2 - Groups' and Parties' Optimal Platforms

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 (12). The resulting dominant strategies Nash equilibrium is given by:

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

where $\hat{y} = \dfrac{\sum_J \alpha^J (1+\psi(\lambda h)^2 O^J \alpha^J) y^J}{\sum_J \alpha^J (1+\psi(\lambda h)^2 O^J \alpha^J)}$ and $\hat{\alpha} = \sum_J \alpha^J (1+\psi(\lambda h)^2 O^J \alpha^J)$

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

$$\sum_J \alpha^J [1+\psi(\lambda h)^2 O^J \alpha^J] y^P < \sum_J \alpha^J [1+\psi(\lambda h)^2 O^J \alpha^J] y^J < \sum_J \alpha^J [1+\psi(\lambda h)^2 O^J \alpha^J] y^R$$

Therefore, the simplification made in (12) is justified, i.e., $\tilde{g}_A > \bar{g}_A$ and $\tilde{g}_B < \bar{g}_B$.

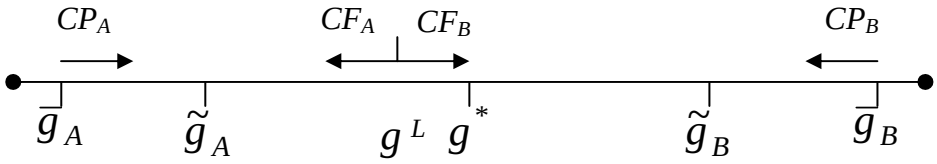
Let us analyze expressions (13). First note that public funds *c* do not enter any of the expressions for the equilibrium announcements. Therefore, public funding of electoral campaigns has no effect on the parties' announced policies.

Second, in the absence of lobby (O^J=0, *J*=*P,M,R*) and with no party ideology (γ_A=γ_B=0), then both party converge to the same socially optimal equilibrium announcement: $\tilde{g}_A = \tilde{g}_B = g*$. Therefore, all deviations from the optimal policy is due either to the existence of lobby or to party ideological rigidity, or yet to the combined effect of both factor.

Third, in the presence of lobby but with no party ideology, then both parties still converge to the same announcements, but now $\tilde{g}_A = \tilde{g}_B = g^L = H^{-1}\left(\frac{\hat{y}}{y}\right) \neq g^*$. Therefore, the very presence of lobbyist groups makes the parties announce a suboptimal policy. The expression of $\hat{y}$ shows clearly that the deviation occurs towards the preferred policies of 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 circumvent if it is possible to totally ban private contributions, i.e., λ=0, which does not seem to be feasible in Latin America nor in any other region of the world.

Fourth, in the presence of lobby and parties' ideological rigidity (i.e., positive values of γ_A and γ_B), then 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 therefore, there will be private contribution in equilibrium, which will affect the probability of each party winning a majority of legislative seats.

Therefore one may decompose parties' decisions into two movements. First, a centripetal movement (*CP*) towards platform g^L. Next, a centrifugal movement (*CF*) away from g^L towards each parties' respective ideological preference, $\bar{g}_A$ and $\bar{g}_B$ (Figure 3). Parties' final announcements, $\tilde{g}_A$ and $\tilde{g}_B$, are the compositions of these two opposing movements. A balance between the search for interest groups support and the degree of the ideological rigidity will determine the optimal announcement.



CP_P: party *P*'s centripetal movement, *P* = *A*,*B*

CF_P: party *P*'s centrifugal movement, *P* = *A*,*B*

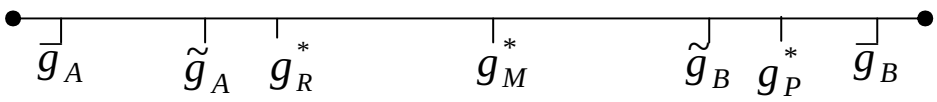
Figure 3 – Parties' Centripetal and Centrifugal Movement

Note that the higher the ideological rigidity (i.e. the higher value of γ_P), the higher the centrifugal movement, that is, the higher the deviation from the platform g^L towards parties' optimal platforms ($\bar{g}_A$ and $\bar{g}_B$), .i.e: $\frac{\partial \tilde{g}_A}{\partial \gamma_A} < 0$ 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^* and g_P^*, are such that the higher the income of a class, the lower the optimal platform value for this class in

the interval [0, *y*–*c*]. Considering that parties' respective ideologies are extreme, moving towards the center at different rates, one may expect that the rich and poor classes will be better represented by parties *A* and *B*, respectively. If those classes are organized, this encourages them to contribute to the electoral campaign of the party that better represents them.

On the other hand, because the announced platforms are both away from the utility of an organized middle income group, this group will generically be less likely to finance electoral campaigns. Figure 4 illustrates the situation in which the poor group ends up being more likely to contribute than the middle income one.



$$|W^P(\tilde{g}_A) - W^P(\tilde{g}_B)| > |W^M(\tilde{g}_A) - W^M(\tilde{g}_B)|$$

Figure 4 – Utility difference between poor and middle groups

Therefore, our model suggests a polarization in society so that the groups that will spend the most in electoral campaigns will be the rich and the poor ones. This polarization occurs because higher contributions are commensurate with the larger utility difference[23]. So that, in countries with predominantly middle income voters, elections may be cheaper than in countries where the middle class is small; this is consistent with Samuels' (2001) indication that elections in Brazil are relatively more expensive than in the United States, for example.

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

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

Note that if party *A*'s ideological rigidity is sufficiently high, then the right had side may become negative. This indicates, for example, that even if the rich organized group prefers *a priori* party *A*, its support to this party will decrease with that party's rigidity. Thus, it is even possible that this group will support party *B*. As party *A* would have a lower centripetal movement due to its high ideological rigidity, party *B*, with relatively lower ideological rigidity, would provide more utility to the rich group. This

[23] This result would occur even if there were more than two parties. This is because a third ideological party that would defend a more centrist platform would be financed by the middle income group if this group has a risk aversion high enough to compensate the cost of this financing when compared with the expected utility of this group with more extreme platforms announced by the other parties.

effect may be heightened if one considers a situation in which party *B* has low ideological rigidity, extending its centripetal movement and approaching the platform that would be optimal to the rich group (Figure 5).

Figure 5 – Comparison between parties' ideological rigidities

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

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

The summands inside the brackets in the above expressions summarize each one of the three factors that affect the probability of victory. The first summand, $W(\tilde{g}_A) - W(\tilde{g}_B)$, 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, $\psi(\lambda h)^2 \sum_J O^J (\alpha^J)^2 [W^J(\tilde{g}_A) - W^J(\tilde{g}_B)]$, reflects the battle for lobbyists contributions. Finally, the third summand, $hc(\beta_A - \beta_B)$, reflects the effect of public funding.

Hence, although public funding of electoral campaigns does not affect the equilibrium announced policies, as we have seen previously, 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. Note here the important role of the size of the per capita funds, *c*: if *c* is reduced, than the effect of public funding may be insignificant; however, if *c* is large, it may outset the other effects and transform a low probability of victory into a high one. This issue will be discussed in more detail when we consider an iterated version of the game in order to assess long run effects of public financing.

3. The iterated electoral competition game

Suppose now that the electoral competition game is repeated an infinite number of times. Then, 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 next period. In order to simplify the analysis, we limit the intertemporal strategic choices of parties by assuming that in each period a party takes only into consideration its utility in that period. This restriction allows us to disregards strategies in

which a party would have a reduced 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 but then with higher public funds to run their electoral campaigns[24]. This would be a reasonable assumption if politicians have low discount factors, i.e., if they highly value the present as compared to the future.

Under these assumptions, the iterated game starts at the end of period t=0, where party A holds β_A^0 percent of the seats of 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 in order to influence voters, voters take their ballots based on the platform announcement, the influence of electoral campaigns and the realization of the stochastic shocks. Then, a new legislature is formed in period t=1 where the seats occupied by each party are proportional to the quantity of votes received. The party with a majority of voter 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, the evolution of party representation in the Legislature can be analyzed using the following proposition that relates the probability of winning a majority of seat in the Legislature in one period with the expected representation in the Legislature next period. The corresponding proof can be found in the Appendix.

Proposition: In a proportional electoral unicameral system, the expected proportion of seats party A occupies in period t+1, β_A^{t+1}, relates to the probability of winning a majority of votes in period t according to the following equation, where $\kappa^t = \phi \sum_J \alpha^J \kappa_t^J$ and $\kappa_t^J = W^J(g_A^t) - W^J(g_B^t) + h(C_A^t - C_B^t)$.

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

In order to simplify notation, we identify $E[\beta_A^t]$ with β_A^t. Also, since public funds do not affect the announce policy, it must be the case that $\tilde{g}_P^t = \tilde{g}_P$, the solution to the base game, for P=A, B, for all t. Plugging in the announced platforms as well as expressions (10) and (14) into (15), yields the equations below[25], in which $\tilde{W} = \sum_J \alpha^J \left[W^J(\tilde{g}_A) - W^J(\tilde{g}_B)\right]$ and $\hat{W} = \sum_J O^J \left(\alpha^J\right)^2 \left[W^J(\tilde{g}_A) - W^J(\tilde{g}_B)\right]$.

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

[24] We are grateful to Ernesto Dal Bo for suggesting the use of the "iterated" term and to Ernesto Dal Bo and Ian Ayres for contributions to this discussion.

[25] This study postulates that the terms on the right side of expressions (24) and (25) are small enough to guarantee that $0 \le \beta_A^t, \beta_B^t \le 1$.

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

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

Case 1: Suppose that $c < \frac{1}{2\phi h}$.

The parties' proportions in the Legislature can be rewritten as:

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

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

In this case, where the *per capita* public contribution is small, it follows that:

$$\lim_{t\to\infty}(2\phi h c)^t = 0 \quad \text{and} \quad \lim_{t\to\infty}\frac{1-(2\phi h\, c)^t}{1-2\phi h c} = \frac{1}{1-2\phi h c}$$

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

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

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

Therefore, public contributions become less determinant of parties' representation in the long run. Since $(1-2\phi h c) > 0$, 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 ($\hat{W}$).

Thus, if society prefers a party and interest groups prefer the other, their effects are opposite, so that one cannot predict, *a priori*, which party is going to be the larger one in the long run. Note that one possible outcome is that a party with a strong ideology (and not preferred by the majority of social classes) will perpetuate itself in the long run because of the support of lobbyists. In this sense, party ideology may even become an advantage to a rigid party. This is so because, by receiving financial support from interest groups, an ideologically rigid party guarantees its existence by influencing voters during the electoral campaigns.

In general, one expects that the second summand in above limiting expected representation to be small enough so that both parties are represented in the Legislature. In particular, given the stochastic shocks, one may expect a change of party as well as implemented policy over time.

However, it is noteworthy that even though public funds have no decisive effect on the long run party equilibrium, the fact that $(1-2\phi hc)<1$ shows that public funds increase the second summand in the long-run party representation expression, i.e., it reduces party competition in the sense that it amplifies the party that has a positive value for the term in brackets.

Case 2: Suppose now that $c=\frac{1}{2\phi h}$.

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

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

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

The above expression shows that there will be a dominance of one party over the other in the long run. The balance between factors $\tilde{W}$ and $\hat{W}$ will still determine which party will dominate the Legislature, i.e., the one for which the term in the brackets is positive. Note that in the very specific case where those effects are opposite and equal, the initial legislative composition will be maintained in the long run as $\lim_{t\to\infty}\beta_A^t=\beta_A^0$ and $\lim_{t\to\infty}\beta_B^t=\beta_B^0$ 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: Suppose now that $c>\frac{1}{2\phi h}$.

The parties' proportions in the Legislature can be rewritten as:

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

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

In this case where public contributions are significant, the last summand of the above expression increases indefinitely in absolute value. Therefore, in the long run one of the two parties will become hegemonic, 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 is the party at the outset $\left(\beta_A^0-\frac{1}{2}\right)$ and the volume of public funds $\left[2\phi hc-1\right]$.

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

Note that a high volume of public contributions may bias the above term so that the third summand dominates the sum of the first two ones. In this case, an initial, possibly minor advantage of party *A* in term of representation in the Legislature, i.e., β_A^0 higher than 0.5 but very close to it, may transform that party into the hegemonic one 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 due, for example, to an unlikely realization of the shock variables, such as a war, an unanticipated terrorist attack or a severe economic crisis.

This remark calls attention to possible opportunistic changes in the financial campaign legislation in order to favor a party that obtains a one-time majority in the Legislature. Indeed, a party that newly acquired a majority of seat in the Legislature may arbitrarily vote a significant increase in the value of per capita public finance *c* in order to ensure increasing (expected) representation[26].

Therefore, a country must be extremely careful when changing its electoral campaign financing legislation, especially with respect to large increases in public funding.

It is noteworthy that the potentially negative effect of public finance resides entirely in the fact that different sized parties receive different amounts of funds. Indeed, if both parties receive the same amount of contribution, then in the present model there is no effect of public funds on the probability of obtaining a majority of votes neither on the lung run party representation in the Legislature. Although, as we have discussed in the introduction, such egalitarian rule is not used in any of the 18 Latin American countries studied in Zovatto (2003), it may be important to address possible benefits of other rules for distribution of public funds.

4. Limitations and Extensions

This paper's study is part of a wider research about the incentives created by public and private campaign financing on economic and political agents and its consequences to society. The model presented here makes a series of strong assumptions that need to be extended in order to assess its true theoretical and policy contribution.

One of its main weaknesses relates to the lobbyists' motivations for contributing to parties. Here the only reason a lobbyist contributes is in order to increase the probability of victory of the party that announces a policy that better represents his interests. Although this is clearly part of a lobbyist's motivation, the empirical evidence in Latin America may suggest that lobbyists also profit from benefits the winning party directs to them (Transparency International, 2004). In that case, it may be profitable for

[26] We are grateful for Ian Ayres for emphasizing this issue.

the lobbyist to contribute to several, rather than only one party, as some sort of electoral insurance. One possible way to analyze such incentives is to include more detailed micropolitical foundations into the utility of lobbyists, in order to assess his specific individual benefit from supporting a candidate[27]. An alternative timing may also be considered, in order to model a possible negotiation between the lobbyist and the parties before the platform announcement, à la Grossman & Helpman (1996, 2001)[28].

There may also be some important information revelation role to the electoral campaign, as several voters may have only imperfect information about important characteristics of the parties, such as the true quality of the politicians or the real policy to be implemented by the winning party, and the money spent during the electoral campaign may help voters obtain better information[29]. In this case a certain amount of public financing will always be desirable, although it maybe desirable to limit it to a minimum and distribute it equally among parties[30]. More generally, we would like to analyze the equilibrium effects of alternate forms of distribution of public funds.

Moreover, the iterated game is a weak approximation for the dynamic game, as it does not allow for rich enough dynamic strategies for the parties. If parties are willing to lose some utility by deviating from their optimal policy in one period but gain a majority of votes and then, in the next period, return to its preferred policy, then we may expect that the centripetal movement will dominate the centrifugal movement and we may observe a return to converging platform announcement[31].

An interesting extension relates to the possibly different effect of money spend on campaigns by different parties. Are there more "trustful" parties in the eyes of voters, so that they are more sensitive to these parties' electoral campaigns? If so, cheaper campaigns may be as effective for these parties and the electoral equilibrium may be a very different one. What should the optimal distribution of public funds in this case? Moreover, we like to explore the results of the model when 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, given Transparency International (2004)'s evidence on post-electoral direct benefits to lobbyists in Latin American, one could significantly enrich the model by including a post-electoral game. In that case, the opportunity of corruption should be contemplated. Therefore, voters should consider that possibility in their electoral decision, which, in turn, will lead to a voters' concern 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 optimally the composition of the Legislature in order to minimize corruption opportunities, as suggested in Bugarin (1999) and (2003).

[27] The authors are grateful to Ernesto Dal Bo for this insight.
[28] The authors are indebted to Francisco Ferreira for this suggestion.
[29] See Bennedsen and Feldmann (2002) for a careful discussion on informational lobbying.
[30] We gratefully acknowledge Eduardo Engel, Rafael Di Tella and Marco Bonomo contributions to this discussion.
[31] We are indebted to Ian Ayres and Ernesto Dal Bo for their contributions to this discussion.

These ideas are discussed here as suggestions for future research.

5. Conclusion

The present article studies the interaction between public and private financing of electoral campaigns and party ideology. The starting point was the basic modeling in Persson and Tabellini (2000), to which we added the hypothesis that parties have preferences regarding the political platforms they announce and that electoral campaigns may be financed by public funds as well as private contributions.

The model highlights two opposing movements in terms of equilibrium platforms. On one hand, there is a centripetal movement that makes parties tend to converge to the lobbyists' preferred platform in order to get private financing. On the other hand, 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 where parties distinguish themselves by choosing different policies, typically distinct from the median voter's preferred platform. It is noteworthy that public financing affects the likelihood that a party will win a majority of votes in the Legislature, but 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 mean a cost that, in the absence of ideology, these groups would not have to face. In equilibrium, ideological rigidities will be very important in determining how much private financing a party will receive from private lobby groups. In the limit, there could be a situation where a lobby decides to finance a party that has a very different ideological position but is more flexible in ideological terms.

Due to the divergence of the announced policies, the model suggests that poor and rich organized groups tend to participate more in the electoral process and give away higher amounts of 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 more reduced middle class) than in a country like the US (with a more significant middle class), as argues Samuels (2003).

The model highlights two extreme effects of public financing on electoral competition. On the one hand, public financing per se does not affect how political parties decide which platforms they will announce during the electoral campaign. This is a consequence of the fact that public contributions are given and fixed, and a party's platform announcement if a strategic decision aimed at gaining direct voters or obtaining private contributions. On the other hand, public funds allow stronger parties to better influence voter, giving them a higher probability of obtaining a majority of votes. In the long run, high amounts of public financing may lead to a limiting situation where one party becomes hegemonic in the

Legislature, which corresponds, in fact, to no party competition at all. This implies that there will be no expected change in the policy chosen by the hegemonic party, 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 in order to improve their political institutions. The main policy implication of the study is that governments should be extremely careful in their decisions to allocate high amounts of public funds to electoral campaigns. Furthermore, governments may find it useful to consider new forms of distribution of public funds that more closely approaches an equal-share rule in order to reduce the large party advantage highlighted here.

Appendix

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 party *P*, *P=A, B,* proposes policy g_P and collects C_P dollars in private and/or public funds. Then, the expected proportion of seats party *A* wins in the Legislature relates to the probability that party wins 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.

(i) Proportion of votes. Recall expression (4) for party *A*'s total number of votes:

$$\pi^A = \sum_J \alpha^J \left[\sigma^J + \frac{1}{2\phi}\right]\phi \qquad \text{(A.1)}$$

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 $\kappa^J = W^J(g_A) - W^J(g_B) + h(C_A - C_B)$, one can write:

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

Let now $\kappa = \sum_J \alpha^J \phi \kappa^J$. The expression above 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:

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

(ii) Expected representation. Given expression (A.2) and the proportional electoral system, the expected representation of party *A* in the Legislature is: $E[\beta_A] = E[\pi^A] = \frac{1}{2} + \kappa$

(iii) Probability of getting the majority in the Legislature. Party *A*'s probability of getting the majority in the Legislature $p_A = prob\,[\pi^A \geq 1/2\,]$, can be expressed as:

$$p_A = prob\left[\pi^A \geq \frac{1}{2}\right] = prob\left[\frac{1}{2} + \kappa - \tilde{\delta}\phi \geq \frac{1}{2}\right] = prob\left[\tilde{\delta} \leq \frac{\kappa}{\phi}\right]$$

Thus,

$$p_A = \frac{1}{2} + \kappa\frac{\psi}{\phi} \qquad \text{(A.3)}$$

From (A.2) and (A.3) it follows that $E[\beta_A] = p_A + \left(1 - \frac{\psi}{\phi}\right)\kappa$. □

Bibliography

Baron, D. 1994. 'Electoral competition with informed and uninformed voters'. *American Political Science Review*, 88: 33–47.

Bennedsen, M. 1998. 'Vote buying through resource allocation in government controlled entreprises'. University of Copenhagen. Mimeographed.

Bennedsen, M. and Feldmann, M. 2002. 'Lobbying Legislatures'. *Journal of Political Economy*, 110: 919–46.

Bugarin, M. 1999. 'Vote Splitting as Insurance Against Uncertainty'. *Public Choice*, 98: 153–69.

Bugarin, M. 2003. 'Vote Splitting, Reelection and Electoral Control: Towards a Unified Model'. *Social Choice and Welfare*, 20: 137–54.

Bugarin, M. and Portugal, A. 2003. 'Financiamento público e privado de campanhas eleitorais: efeitos sobre bem-estar social e representação partidária no Legislativo'. *Economia Aplicada*, Vol. 7, nº 3: 549–584.

Downs, A. 1957. *An Economic Theory of Democracy*. New York: Harper and Row.

Ferejohn, J. 1986. 'Incumbent performance and electoral control'. *Public Choice*, 50: 5-26.

Fiorina, M. P., 1988, The reagan years: Turning toward the right or groping toward the middle? In A. Kornberg & W. Mishler, eds., *The Resurgence of Conservatism in Anglo-American Democracies*. Durham, NC: Duke University Press.

Fiorina, M. P., 1992, An era of divided government. *Political Science Quarterly* 107, 387–410.

Fiorina, M. P., 1996, *Divided Government*, 2nd. ed. Boston: Allyn and Bacon.

Griner, S. and Zovatto, D. 2005. *Funding of Political Parties and Election Campaigns in the Americas*. San José: OAS.

Grossman, G. and Helpman, E. 1996. 'Electoral Competition and Special Interest Politics'. *Review of Economic Studies*, 63: 265-286.

Grossman, G. and Helpman, E. 2001. *Special Interest Politics*. Cambridge: MIT Press

Hotelling, H. 1929. 'Stability in competition'. *Economic Journal*, 39: 41-57.

Lindbeck, A. and Weibull, J. 1997. 'Balanced-budget redistribution as the outcome of political competition'. *Public Choice*, 52: 273-297.

Olson, M. 1971. *The Logic of Collective Action*. Cambridge: Harvard University Press.

Osborne, M. 1995. 'Spatial models of political competition under plurality rule: a survey of some explanations of the number of candidates and positions they take'. *Canadian Journal of Economics*, 27: 261–301.

Osborne, M. and Slivinsky, A. 1996. 'A model of political competition with citizen-candidates'. *Quarterly Journal of Economics*, 111: 65-96.

Persson, T. and Tabellini, G. 2000. *Political Economics – Explaining Economic Policy*. The MIT Press.

Poiré, A. 2005. "The Problem of Money in Electoral Politics: A Latin American Perspective". Presented as the Robert F. Kennedy Professorship Lecture, David Rockefeller Center for Latin American Studies. October 17, 2005. (http://drclas.fas.harvard.edu/papers/files/4575c321922ca/05-06-1_poire.2.pdf)

Roemer, J. 2006. 'Party Competition under Private and Public Financing: A Comparison of Institutions'. *Advances in Theoretical Economics*, 6 (1), article 2.

Samuels, D. 2003. 'Financiamento de campanha e eleições no Brasil: o que podemos aprender com o "caixa um" e propostas de reforma', Câmara dos Deputados. Mimeographed.

Schefold, D. 1995. 'Financiamiento de los partidos políticos: análisis comparado de los sistemas europeus', in *Partidos Políticos el la Democracia*, edited by Josef Thesing and Willem Hofmeister, Argentina.

Transparency International. 2004. *Global Corruption Report 2004*. London: Pluto Press.

UNDP (United Nation Development Programme). 2004. *Democracy in Latin America*. Buenos Aires: Agilar, Altea, Taurus, Alfaguara.

Zovatto, D. 2003. The Legal and Practical Characteristics of the Funding of Political Parties and Election Campaigns in Latin America. In Austin, R. and Tjernström, M. (editors): *Funding of Political Parties and Electoral Campaigns*. Stockholm: IDEA.