

Electoral Cycles through Lobbying*

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Abstract

In this paper we build a framework where the interplay between the lobby power of special interest groups and the voting power of the majority of the population leads to political business cycles. We apply our set up to explain electoral cycles in government expenditure composition as well as to cycles in aggregate expenditures and in real exchange rates.

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1 Introduction

Over the last decade, there has been a great progress on the understanding of the mechanisms by which lobbying affects economic outcomes (Grossman and Helpman 1994, 1996, 2001). In this literature, special interest politics and elections are linked through campaign contributions. Those are provided by lobbies in exchange for a tilted economic policy in favor of the interests they represent.

Another older strand of the political economy literature relates electoral cycles on macroeconomic variable to either partisan (classical references are Hibbs 1977, and Alesina 1987) or opportunistic motives (e.g. Nordhaus 1975, Lindbeck 1976, Cukierman and Meltzer 1986, Rogoff and Silbert 1988, Persson and Tabellini 1990, and Rogoff 1990), both unrelated to lobby activity of special interest groups.

While the lobby activity of special interest groups is often associated with microeconomic policy, the electoral cycle models explain cycles on aggregate macroeconomic variables. In this paper we propose a framework in which the influence of lobbies impact macroeconomic variables that have a distributive effect in society, generating electoral cycles in those variables.

In the simple framework we propose, opposite interests divide the society in two groups: one with lobby power¹, and the other with the majority of votes. Government policy may affect the distribution of resources in the society between those two groups. The lobby group offers the policymaker personal benefits for a tilted policy in its favor, which is interpreted as corruption, as further discussed below. Differently from the special interest literature, we model lobby activity as happening at all times, not only before elections. This is in line with the fact that lobby activities go well beyond campaign financing. They

¹By lobby power we denote the capacity to influence policy decisions for reasons unrelated to the number of votes of the group.

have an impact on drafting legislation, as well as influence executive decisions between elections.

Our approach can explain cyclical variation of several macroeconomic variables around election (e.g. budget variables, inflation, nominal and real exchange rate). It is further motivated by the empirical evidence provided by Shi and Svensson (2006). They find that corruption and rent seeking indicators are positively related to the size of the electoral fiscal cycle. They also find that the fiscal balance deterioration in election years is only statistically significant for the group of developing countries. However, when controlling for corruption and rent seeking indicators, the electoral fiscal cycles are no longer related to development². The evidence that corruption and rent seeking activities are the relevant variables to explain electoral cycles is consistent with our model.

In our proposed framework, electoral cycles are generated by the interplay between political influence of a special interest group and the voting power of the majority of the population. The mechanism behind the cycle is engendered by the incumbent trying to signal that she is not close to the special interest group, biasing her policy in favor of the majority of the population before election.

Take as an example Brazilian exchange rate policy. Before presidential election in 1998, president Cardoso assured the population that the exchange rate would be kept close to its existing overvalued level, despite substantial pressure from industrialists for devaluation. A few months after reelection he fired the Central Bank governor, who opposed any change in exchange rate policy, and the exchange rate was devalued³.

We consider deals that are informal agreements, where the policymaker bi-

²Alesina et al. (2007) provide evidence of a positive link between corruption and fiscal variation along business cycles. Thus it seems that countries more prone to corruption activities are subject to more variability in government budget induced by both the business cycle and the electoral calendar.

³Bonomo and Terra (2001) showed that this was not an isolated episode. In an econometric study with Brazilian data from 1964 to 1998, therefore not including the devaluation of January 1999, they found strong evidence of exchange rate cycles around elections.

ases policy to benefit the lobby group and, in return, is compensated after the policy is chosen.⁴ Such deals are not self enforcing, hence they depend on a repeated relationship between the policymaker and the lobbyist, in an environment where some agents interact in several instances over time, possibly while performing different roles. This dependence of repeated interactions to enforce a deal is a wider phenomenon, permeating the economic relations in economies where the formal institutions are not well developed (see Dixit 2004). For example, Schneider (2004) points out that informal personal networks have had significant influence on policymaking in Brazil and Mexico.

It is, then, reasonable to assume that those agreements may fail to be implemented. That is, with some probability the deal is implemented and the policymaker receives the agreed upon amount, but there is some probability the deal falls apart and the policymaker is not compensated. We think of the success probability of a deal as depending on factors such as how well the lobby and the policymaker know each other, how much they trust each other, and other relations and connections they have between them.

Voters do not observe the success probability of a deal between the lobby and the incumbent because they are not aware of all connections between them. They can not perfectly infer that information either, for we assume economic policy is observed with noise.⁵ Voters are rationally retrospective, insofar as the noisy observation of the policy chosen before election conditions their vote.

The median voter would like to pick the politician with less connections with the lobby, since she will choose a policy closer to the median voter's interests. To increase her reelection probability, in the period before election the policymaker

⁴In the special interest literature, such as Grossman and Helpman (1994 and 1996), the policymaker first receives the campaign contributions from the lobbies and then implements the agreed upon policy. Here, the policymakers receive illegal or unethical personal benefits, which should be hidden from the public. This prevents contracts to be written and enforced.

⁵This assumption is consistent with Downs' (1957) analysis, according to which an individual voter does not have the incentive to spend resources to get informed, since she cannot affect the election results.

close to the lobby has an incentive to disguise her proximity. She does so by choosing a policy less favorable to the special interests group than the one she would choose if there were no reelection concerns. Analogously, the policymaker far from the lobby, in turn, will tilt her policy in favor of the majority group to signal her distance. This behavior generates policy variables cycles around election.

Two characteristics of the environment may make our mechanism more important in some countries than in others. First, the extent to which the political parties are programmatic. Politicians are more prone to opportunistic behavior such as the one described in this paper when political parties are not very programmatic. According to Stein et al. (2005), that is the case of Latin American countries.⁶

Second, the degree of formality of the countries' institutions. Since formal mechanisms may limit the scope for unethical deals, their absence should favor political deals based on personal relations. Notice, however, that the existence of formal institutions would not necessarily prevent the existence of an informal mechanism like ours. Informal relationships based on personal networks may also function in parallel to the formal mechanisms, since personal relations could still play an important role in shaping the outcomes within formal interactions.

This setup has several applications. With regard to the overall government budget, the distribution in the population of the benefit of government expenses net of the costs of taxation is unequal. For several countries, it is plausible to assume that the fiscal situation is such that the large majority of the population would benefit from an increase in government expenses. A smaller group, for which the cost would exceed the benefit, would have an incentive to organize themselves to lobby for lower taxation. According to our approach, the result

⁶Chile, El Salvador and Ecuador would be the only countries in the region with programmatic parties.

would be a budget cycle around election, which, depending on institutional details, could yield either a simultaneous increase in expenses and taxation or an increase of the fiscal deficit before elections. This is consistent with the above mentioned evidence in Shi and Svensson (2006).

When the public expenditures are specific to groups in society our model is able to generate electoral cycles in the composition of government expenditures. This is in line with the recent empirical evidence of electoral cycles on the composition of the fiscal budget (on Canada, see Kneebone and McKenzie 2001; on Mexico, see Gonzalez 2004; on Colombia, see Drazen and Eslava 2006a).

Our model can also be applied to explain real exchange rate cycles around elections. Exchange rate depreciations have a distributive impact, favoring citizens whose income is positively related to prices of tradable goods in detriment to citizens with income linked to nontradable prices. In countries where the non-tradable group entails the majority of the population while the tradable group has lobby power, one could expect to see more appreciated exchange rates before than after elections. There is strong empirical evidence of this type of cycle in Latin American countries (see Frieden, Ghezzi and Stein, 2001, and Stein, Streb and Ghezzi, 2005, for cross-country evidence, Bonomo and Terra, 2001, Grier and Hernández-Trillo, 2004, and Pascó-Fonte and Ghezzi, 2001, for evidence for Brazil, Mexico and Peru, respectively).

There are three dimensions in which our model departs from previous electoral cycle models. First, the key tension is the distribution of resources between two groups in society: one with the lobby power, and the other with the voting power. This allows us to generate cycles not only in the level of macroeconomic variables that have distributive impact, but also directly in distributive variables.

Second, the incumbent's motivation for being reelected is the possibility of receiving personal benefits for favoring the lobby after elections, which will

depend on her policy choice. Hence, we have built in an endogenous rent from being in office, instead of resorting to the usual exogenous ‘ego rents’.

Third, it mixes adverse selection and moral hazard features. The first generation of rational electoral cycle models, initiated by Rogoff and Silbert (1988) and Rogoff (1990), is characterized by hidden information about the policymaker’s competence, who chooses an action to signal her type. In equilibrium her type will be revealed. An unappealing feature of these models is that only the most competent incumbent distorts policy.⁷

A more recent generation of electoral models proposes a moral hazard framework to handle this problem (e.g. Lohmann 1998, Persson and Tabellini 2000, and Shi and Svensson 2006). They propose a simple twist in adverse selection models: the incumbent chooses her action before knowing her own type. This assumption impels both types of incumbents to choose the same policy. Those models generate the desired result - in equilibrium both types distort policy-, at the expense of an unappealing one - both types choose the same policy.

In our framework, different types of incumbents choose different policies, as in the adverse selection models, and distort policies before elections, as in the moral hazard models. The main departure from adverse selection models which drives our results is that policy is observed with noise. This assumption yields the incentive for both types to distort policy, as the incumbent’s type can never be perfectly inferred by the voters.

Alt and Lassen (2006) embed partisan politicians into a PBC model under moral hazard. In their model politicians differ in two dimensions: their preferences over policies, which is known by the public, and their competence, which changes over time and is unknown before elections by both the public and the policymaker. Politicians of different parties choose different policies, and both

⁷One may argue that Rogoff and Silbert (1988) and Rogoff (1990) also comprise a moral hazard feature inasmuch as one dimension of the policy choice is not directly observed by the public. See Ferreira and Bugarin (2005) for a discussion on this issue.

parties distort policy before election to signal higher competence. However, differently from our model, their signaling distortion does not differ across the dimension which is their source of information asymmetry.

One interesting implication of a noisy signal in our model is that a large range of results is consistent with the equilibrium strategies, each one leading to a different belief on the incumbent's type. Then, the equilibrium does not depend on the arbitrary specification of out of equilibrium beliefs, which is common in signaling models. Moreover, we do not need to assume an exogenous popularity or 'looks' shock to make the election result uncertain, as in the adverse selection models.

A somewhat related paper is Alesina et al. (2007). They build a model that also explains budget cycle variation but along another dimension: the business cycle. As in our model, they rely on information asymmetries between the policymaker and voters. In order to limit the benefits of government officials when surplus is high, voters demand higher expenditure and/or lower taxes when they see the economy booming, generating procyclical fiscal policy. One implication of their framework is that one should see more pronounced cycles in democracies with more corruption, which is corroborated by their empirical work.

Other models relate to this paper in generating cycles in distribution of resources. In Bonomo and Terra (2005), an exchange rate cycle distributes income between tradable and nontradable sectors. Voters are unsure about the weight given to their group in the policymaker's preference, and observe policy with a noise. Exchange rate cycles around elections are thereby generated. In Drazen and Eslava (2006b), voters suffer from the same information asymmetry with respect to the incumbent's preferences but they are also uncertain about how sensitive is their group's voting behavior to government expenditures. The result is a cycle in expenditure composition. Another alternative model of cycle

in the expenditure composition is provided by Drazen and Eslava (2005a), where policymakers preferences are formulated in terms of types of expenditures.

We start by presenting the model in the next section. In section three we provide three applications. In the first one, presented in more detail, government chooses the composition of expenditure between the two groups. In the second application, we generate political budget cycles by assuming that increases in government expenditures benefit the majority of the population, while the lobby group is hurt when taxes are increased. Finally, we have an exchange rate model, engendering real exchange rate cycles around election, when we associate the tradable sector to the lobby while the nontradable sector is assumed to have the voting power. In this context, the policy variable is the real exchange rate level. The last section concludes.

2 Model

2.1 Set up

Society is divided into two groups. One group, which we call people, is the majority (proportion n of the population, $n > 0.5$), and defines the election outcome. The other group is organized and effective in lobbying for policies that favor their interests.

Government chooses an economic policy, which, for convenience, we model as a strictly positive variable g . This policy affects utility of the two groups in opposite directions. Let $v_i(g)$ be the indirect utility function of a citizen of group i , $i = p$ (people), l (lobby), when the policymaker implements policy level g . Without loss of generality, we assume that the people benefit from higher values of g , whereas, for the lobby, the lower the g the better. That is, $v_p'(\cdot) > 0$ and $v_l'(\cdot) < 0$. We also assume $v_i(\cdot)$ to be concave.

We assume that the utility function of a benevolent policymaker is utilitar-

ian:

$$U(g) = nv_p(g) + (1 - n)v_l(g), \quad (1)$$

hence she would optimally choose:

$$g^* \equiv U'^{-1}(0). \quad (2)$$

We add the possibility that the policymaker receives some personal benefit from the lobby in exchange of a policy choice favoring this group. We extend the lobby and policymaker preferences to contemplate this more complex interaction between them. Now, the policymaker's utility depends not only on the direct impact of her policy choice g on the groups' utilities but also on the personal benefits that may result from her interaction with the lobby group c .

As discussed in the introduction, we think of those deals as informal agreements where the policy is chosen first and the personal benefits will be received in the future. Therefore, it is possible that the policymaker does not receive the contribution, since such deals are not self enforcing. The probability that the policymaker will receive the agreed upon benefit later on depends on factors such as extent of their repeated interaction, on the ability of the policymaker to punish the lobbyist in other dimensions. We take these connections between the lobbyist and the policymaker as exogenous, and determining the probability π that the deal is successful. This probability will be the source of information asymmetry between the policymaker and the median voter. Since this probability will vary across policymakers we will refer to it as being the policymaker's type.

We write the utility function of the policy maker as function of her policy choice g and its type π :

$$W(g, \pi) = nv_p(g) + (1 - n) \left[v_l(g) - \frac{\pi c}{1 - n} \right] + \theta \pi c, \quad (3)$$

where θ is the relative weight the policymaker gives to receiving personal benefits

vis-a-vis citizens' utility. In the above equation πc is the expected contribution from the lobby group to the policymaker, which enters multiplied by θ as an additional source of satisfaction to her. Notice also that $\pi c / (1 - n)$ is deducted from the utility of a lobby group citizen, since this is the expected per capita contribution paid by each one of them to the policymaker. We assume that $\theta > 1$, meaning that the policymaker values more her personal benefit than citizens' utility. Thus, the policymaker has a net benefit from receiving transfers from the lobby group.

The personal benefits she receives from the lobby depends on the distortion of policy in favor of this group. More specifically, we assume that she is able to take hold of a portion B from the net gain she creates to the lobby group by distorting policy in its favor, that is:

$$c(g) = \max \{B(1 - n)[v_l(g) - v_l(g^*)], 0\}. \quad (4)$$

This can be interpreted as being a result of a Nash bargain, where B depends on the bargaining power of the policymaker vis-a-vis the lobby group.⁸ Note that we impose that this contribution cannot be negative.

Substituting (4) into (3) and rearranging, the utility function of the policymaker becomes:

$$W(g, \pi) = nv_p(g) + (1 - n)v_l(g) + \pi b \max \{v_l(g) - v_l(g^*), 0\} \quad (5)$$

$$= U(g) + \pi b \max \{v_l(g) - v_l(g^*), 0\}, \quad (6)$$

where $b \equiv (1 - n)(\theta - 1)B$. Notice that the policymaker utility will differ from the benevolent utility by an additive term that increases with b . Thus, the incentive to distort policy is increasing in the size of the lobby group $(1 - n)$, the weight the policymaker attributes to personal benefits (θ) , and her bargaining power vis a vis the lobby group (B) .

⁸One may argue that, once the policy is chosen, the lobbyist has all the bargaining power. However, we think of this bargaining as being determined by the repeated interaction between the policymaker and the lobbyist along their lives.

We solve the dynamic problem, where there is an election every other period. The main features of our story can be told in a simpler and clearer two-period setup, with an election between them. In the Appendix we sketch a more general multi-period framework to show the results obtained in the two period set up described in this section would still hold.

We assume that there are two types of policymakers, f and c , differing with respect to the strength of their connection to the lobbyist, which is captured in the probability of a successful deal π . We assume that $\pi_f < \pi_c$, reflecting the connection strength between the policymaker and the lobbyist.⁹ Those connections are likely to be persistent, since they are forged in a long-run relationship between the incumbent and the lobbyist. However, the deal is established by individuals in government and lobby key positions. The assignment to those positions may change, even over the same mandate. Schneider (2004), in his analysis of Mexico's informal networks, reports that personal connections between businessmen and the state are likely to be temporary.

In order to capture those features in a simple way we assume that the types are randomly assigned to the politician in the period before election according to a Bernoulli distribution, with $\Pr(\pi = \pi_f) = p$ and $\Pr(\pi = \pi_c) = 1 - p$.¹⁰

2.2 After election problem

Since the after election period is the last one, there is no signaling component in the government's policy decision.¹¹

⁹In our notation, f stands for "far from the lobby" and c for "close to the lobby".

¹⁰A popular alternative used in the literature is to assume that the policymaker's specific characteristic is determined by a $MA(1)$ process, as, for example, in Rogoff (1990). This would generate equilibria with four different policy choices for the government at each period, unnecessarily complicating the analysis.

¹¹Note that it is also true that there is no signaling component in the government's policy decision after election in the multiperiod setting, since there is a new draw for the policymaker's type in between elections.

The after election policy chosen by a policymaker type j , G_{+1}^j , is defined by:

$$G_{+1}^j = \arg \max W(g, \pi_j),$$

which is implicitly defined by the first order condition:

$$W_g(G_{+1}^j, \pi_j) = U'(G_{+1}^j) + \pi_j b v_l'(G_{+1}^j) = 0. \quad (7)$$

Proposition 1 *The after election policy choice for a policymaker of type j favors the lobby group to the detriment of the people when compared to the utilitarian policy, that is, $G_{+1}^j < g^*$. Furthermore, the policymaker close to the lobby chooses a policy more distant from the utilitarian level, that is, $G_{+1}^c < G_{+1}^f$.*

Proof. Using equation (2), we have that $W_g(g^*, \pi) = \pi b v_l'(g^*) < 0$. Since $W(\cdot)$ is concave in g , $G_{+1}^j < g^*$. Using the implicit function theorem in the first order condition (7), we have that $\frac{dG_{+1}^j}{d\pi_j} = -\frac{b v_l'(G_{+1}^j)}{U''(G_{+1}^j) + \pi_j b v_l''(G_{+1}^j)} < 0$. Since $\pi_f < \pi_c$, we have that $G_{+1}^c < G_{+1}^f$. ■

Thus, we established that after elections the policymaker close to the lobby will distort more the policy than the one far from the lobby.

2.3 Pre-election problem

2.3.1 The voter's problem

We assume that the government policy is observed with noise. Specifically, we assume that the people observe the variable \hat{g} , which is given by:

$$\hat{g} = g e^v,$$

where v is a Gaussian shock with mean zero and variance σ^2 . This can be rationalized as resulting from voters' rational inattention.¹² Thus, the density function of the observed government policy \hat{g} given the policy choice g , $f(\cdot|\cdot)$,

¹²Citizens have limited information capacity and they have several other decision problems to solve that depend on information. Thus, it is reasonable to assume that, as a result, they will be imperfectly informed about most of the relevant variables. See Sims (2003) for some applications of rational inattention to economic problems.

is the density function of the noise v that would yield \hat{g} when the policy level is g :

$$f(\hat{g}_t = \hat{g} | g_t = g) = \phi \left(\frac{\ln \hat{g} - \ln g}{\sigma} \right) \quad (8)$$

where ϕ is the density function of the standard normal distribution. This density is illustrated in Figure 1.

We also assume that the people do not observe the policymaker's type π . Hence, voters will try to infer π , given the observed policy. There will be a signaling game between the incumbent and the voters.

The median voter, not belonging to the lobby group, would like to vote for the policymaker who will choose a policy more favorable to the people after election. It is clear from Proposition 1 that this will be the policymaker far from the lobby, π_f .

The median voter chooses her candidate by comparing the (updated) probability of the incumbent being of type π_f to that of the opponent.¹³ Since there is no information about the opposition, it is assumed that the probability of it being far from the lobbyist is equal to the unconditional probability p . Thus, if the updated probability about the incumbent's type is larger than p , people will vote for the incumbent, and she will be reelected. Otherwise the opponent will win the election. If the updated probability is equal to the unconditional probability, we assume that the incumbent is reelected with probability $\frac{1}{2}$. Let ρ be the median voter's conjecture that the incumbent is far from the lobby, and vo his vote. Then:

$$vo = \begin{cases} inc, & \text{if } \rho > p \\ opp, & \text{if } \rho < p \\ inc \text{ with probability } \frac{1}{2} & \text{if } \rho = p \end{cases} .$$

How do voters form their belief ρ ? Given the lognormality assumption for the noise, any level of observed policy could result from any given policy. Therefore,

¹³Like in Rogoff and Sibert (1988), voters are rationally retrospective. While in Rogoff and Sibert (1988) competence has some persistence, here the proximity between the lobby group and the policymaker is the same before and after election.

every positive level for the observed policy is on the equilibrium path. The median voter's belief ρ is generated by the updating of his prior belief p over the incumbent's type using Bayes' rule:

$$\begin{aligned} \rho &= \Pr(\pi_t = \pi_f | \hat{g}_t = \hat{g}) = \\ &= \frac{p \times f(\hat{g}_t = \hat{g} | \pi_t = \pi_f)}{p \times f(\hat{g}_t = \hat{g} | \pi_t = \pi_f) + (1 - p) \times f(\hat{g}_t = \hat{g} | \pi_t = \pi_c)}, \end{aligned} \quad (9)$$

where \hat{g} is the observed policy level, and $f(\cdot | \cdot)$ is the conditional density function of \hat{g} given the policymaker's type.¹⁴ The voter will vote for the incumbent, that is $\rho > p$, if and only if:

$$f(\hat{g}_t = \hat{g} | \pi_t = \pi_f) > f(\hat{g}_t = \hat{g} | \pi_t = \pi_c). \quad (10)$$

This rule is intuitive. The voter revises upwards his prior that the government is of the distant type if, and only if, the observed policy level is more likely under the distant type's policy than under the policy chosen by the type closer to the lobby.

2.3.2 Reelection probability

Now we can calculate the incumbent's reelection probability as a function of the chosen policy level. To do so, it is necessary to specify the incumbent's actions prescribed by the equilibrium strategy in the period before election, $\{G^f, G^c\}$, which will be used by the voter to update his beliefs. The conditional density function of \hat{g} given the policymaker's type i is given by the conditional density of \hat{g} when the policy is the one chosen by this type in equilibrium G^i :

$$f(\hat{g}_t = \hat{g} | \pi_t = \pi_i) = f(\hat{g}_t = \hat{g} | g_t = G^i) \quad (11)$$

$$= \phi\left(\frac{\ln \hat{g} - \ln G^i}{\sigma}\right) \quad (12)$$

¹⁴Notice that although we have a discrete probability distribution for each type, we have a continuous distribution for observed policy levels given the policy chosen. Thus, each observed policy corresponds to a probability density level for a given equilibrium policy choice. The fact that the voter must update his prior about the policymaker's type based on the observed policy level leads to a comparison of densities of this policy level under alternative equilibrium policy choices.

where the second equality uses equation (8).

Then, we can write the condition for reelection in equation (10) as:

$$\phi\left(\frac{\ln \hat{g} - \ln G^f}{\sigma}\right) > \phi\left(\frac{\ln \hat{g} - \ln G^c}{\sigma}\right). \quad (13)$$

In the case of a separating equilibrium, with $G^f > G^c$, the policy has a cutoff level \bar{g} , such that, whenever the observed policy level is larger than \bar{g} ($\hat{g} > \bar{g}$), the median voter reelections the incumbent. This policy cutoff level is implicitly defined by:

$$\phi\left(\frac{\ln \bar{g} - \ln G^f}{\sigma}\right) = \phi\left(\frac{\ln \bar{g} - \ln G^c}{\sigma}\right)$$

which, due to the symmetry of the normal distribution, is:

$$\bar{g} = \exp\left[\frac{\ln G^f + \ln G^c}{2}\right].$$

Figure 2 depicts the density functions of the observed policy when the policy level is the one chosen by each type of incumbent in equilibrium, π_f and π_c . The figure also shows the cutoff level of the observed policy \bar{g} . Note that condition (13) is satisfied for $\hat{g} > \bar{g}$.

For a chosen policy g , the reelection probability, $q(\cdot)$, is the probability that the observed policy, \hat{g} , exceeds the cutoff point, \bar{g} ,¹⁵ that is:

$$\begin{aligned} q(g, G^f, G^c) &\equiv \Pr[\hat{g} > \bar{g}] = \Pr[ge^v > \bar{g}] = \\ &= \Pr[v > \ln \bar{g} - \ln g], \end{aligned}$$

which can be written as:

$$q(g, G^f, G^c) = 1 - \Phi\left(\frac{\ln \bar{g} - \ln g}{\sigma}\right),$$

where $\Phi(\cdot)$ is the normal cumulative distribution function. The reelection probability is increasing in g , and it is greater than $\frac{1}{2}$ if, and only if, $g > \bar{g}$. Figure

¹⁵More precisely, the probability of reelection is equal to the probability that the observed expenditure is strictly greater than the cutoff level, plus half the probability of the observed expenditure that coincides exactly with the cutoff level. However, under our assumption of a continuous distribution, the latter probability is zero.

3 illustrates the probability of reelection for a chosen policy level g and for the two types of incumbent equilibrium strategies, G^f and G^c , which determine \bar{g} .

Suppose, alternatively, that there is a separating equilibrium with $G^c > G^f$ (we will see in section 2.4 that this equilibrium is not possible). Then, since voting is prospective, the median voter will still prefer the policymaker far from the lobby, although she will choose a lower policy level before election. As a consequence, the inference problem is reversed, and the probability of reelection as a function of policy level and equilibrium strategy will become:

$$q(g, G^f, G^c) = \Phi\left(\frac{\ln \bar{g} - \ln g}{\sigma}\right),$$

Now q is decreasing in g , since a lower g increases the probability that the incumbent is of the distant type.

Finally, in the case of a pooling equilibrium, we have always $\rho = p$. Thus, the probability of reelection is $\frac{1}{2}$ and will not be affected by any deviation from equilibrium strategy.

Then, we can summarize the dependence of the probability of reelection function on the various types of candidate equilibria as follows:

$$q(g, G^f, G^c) = \begin{cases} 1 - \Phi\left(\frac{\ln \bar{g} - \ln g}{\sigma}\right), & \text{if } G^f > G^c \\ \Phi\left(\frac{\ln \bar{g} - \ln g}{\sigma}\right), & \text{if } G^f < G^c \\ \frac{1}{2} & \text{if } G^f = G^c \end{cases}, \quad (14)$$

where $\bar{g} = \exp\left[\frac{\ln G^f + \ln G^c}{2}\right]$.

2.3.3 The Incumbent's Strategy

Let $FW(\pi_i)$ be the after election utility of the type π_i government, when reelected:

$$FW(\pi_i) \equiv W(G_{+1}^i, \pi_i)$$

where G_{+1}^i is the policy optimally chosen after elections by the reelected incumbent of type π_i (refer to section 2.2). Note that the policymaker will be strictly

better off being reelected since her proximity to the lobby enables her to get rents from being in power. Thus:

$$FW(\pi_i) > U(g^*), \quad (15)$$

When the incumbent is not reelected her utility will be the benevolent one, since we assume that there is no additional source of personal income when the policymaker is not in office. Alternatively, we can motivate this specification by assuming that the policymaker will become a member of the majority group with probability p and a member of the lobby group with probability $1 - p$. Let FU be the expected after election utility of the incumbent, when she is not reelected:

$$FU = pU(G_{+1}^f) + (1 - p)U(G_{+1}^c).$$

Since the policymaker will have no rents when she is not reelected, the best outcome for her is to have the new incumbent setting the socially optimal policy level g^* . Since both possible opposition types choose to distort policy, the defeated policymaker will have a lower utility compared to that resulting from g^* :

$$FU < U(g^*). \quad (16)$$

Combining equations (15) and (16), we have that:

$$FU < FW(\pi_i). \quad (17)$$

This last inequality implies that the policymaker always strictly prefers to be reelected. Note that the benefit from being in power is generated by the personal benefits received from the lobby group. Since this benefit will depend on the policy implemented, it is endogenous. The difference $FW(\pi_i) - FU$ has the same role as the exogenous “ego rents” from being in power extensively used in the political economy literature.

In equilibrium, the policy level will be chosen so as to solve:

$$\begin{aligned} \max_g V(g, \pi_i, G^f, G^c) \\ \text{s.t. } g > 0, \end{aligned} \quad (18)$$

where:

$$\begin{aligned} V(g, \pi_i, G^f, G^c) \equiv & W(g, \pi_i) + \\ & + \beta [q(g, G^f, G^c) FW(\pi_i) + (1 - q(g, G^f, G^c)) FU], \end{aligned} \quad (19)$$

and where β is the incumbent's discount rate and the function q is given by equation (14).

Equation (19) can be rewritten as:

$$\begin{aligned} V(g, \pi_i, G^f, G^c) = \\ W(g, \pi_i) + \beta q(g, G^f, G^c) [FW(\pi_i) - FU] + \beta FU, \end{aligned} \quad (20)$$

which makes clear that a higher reelection probability increases the utility of the incumbent.

Since reelection increases utility, the incumbent policymaker will choose a policy which will depart from the static optimal level, which maximizes only $W(g, \pi_i)$. As we will show below, the only type of equilibrium consistent with this possibility has $G^f > G^c$. This makes q increasing in g (see equation (14)), and the optimal level of g higher than the static one for both types. Since the after election policy choices coincide with the static optimal choices, there will be policy cycles around elections, with policy favoring more the people before elections than after elections.

Formally, since $\frac{\partial W(G_{+1}^j, \pi_i)}{\partial g} = 0$, for $g = G_{+1}^j$, we have that:

$$\begin{aligned} \frac{\partial V(G_{+1}^j, \pi_i, G^f, G^c)}{\partial g} &= \frac{\partial W(G_{+1}^j, \pi_i)}{\partial g} + \beta \frac{\partial q(G_{+1}^j, G^f, G^c)}{\partial g} [FW(\pi_i) - FU] \\ &= \beta \frac{\partial q(G_{+1}^j, G^f, G^c)}{\partial g} [FW(\pi_i) - FU] > 0. \end{aligned}$$

Hence the optimal pre-election policy is higher than G_{+1}^j .

Notice that it is well possible that the electoral incentive is strong enough to induce a choice of a policy level above g^* before election. The incentive to win the election could be indeed very strong. If the policymaker loses the election not only she will no longer receive her personal benefits but she will also suffer from being subject to a policy different from her preferred one.¹⁶ Nevertheless there is a bound to such incentive, since the marginal increase in the reelection probability tends to zero as the policy level gets very large.

2.4 Equilibrium

An equilibrium requires a fixed point in the solution of the incumbent problem (18). That is:

$$\begin{aligned} G^c &= \arg \max_g \{V(g, \pi_e, G^f, G^c)\} & (21) \\ \text{s.t. } & g > 0, \end{aligned}$$

and:

$$\begin{aligned} G^f &= \arg \max_g \{V(g, \pi_f, G^f, G^c)\} & (22) \\ \text{s.t. } & g > 0. \end{aligned}$$

A perfect Bayesian equilibrium in pure strategies, when it exists, should satisfy the following conditions:

1. After election, an incumbent of type j sets policy level G_{+1}^j that is implicitly defined by equation (7);
2. Before election, the policy level chosen by each type of policymaker is a fixed point, that solves problems (21) and (22), respectively.

¹⁶In an earlier draft we had a numerical example where one of the policymakers chose a policy level above g^* before election.

This will produce an equilibrium with the following features:

i) After election the policymaker far from the lobby chooses a policy more favorable to the people than the close one, that is, $G_{+1}^f > G_{+1}^c$, which is established in Proposition 1.

ii) It must also be the case that before election $G^f > G^c$. An equilibrium with $G^f < G^c$ is not possible for the following reason. Since the type π_c has higher rents from being reelected, his policy before election will be more distorted in order to increase his reelection probability. However, if the reelection probability function is decreasing in g , type π_c would choose a policy level before election actually *lower* than that of type π_f , which is a contradiction. A pooling equilibrium, where $G^f = G^c$, is not possible either. At least one of the policymakers would have an incentive to deviate to her preferred off-election policy, which would increase her current utility without affecting her reelection probability.

iii) There will be policy cycles around elections, that is, before election policy is more favorable to the people than after election.

2.5 Discussion

The intuition for the equilibrium in our model is as follows. After election, there are no electoral concerns. As a result the incentive to distort policy takes into account the trade-off between the utilitarian utility and the rents generated by a policy that departs from it to benefit the lobby group. The policy chosen before election has an additional signalling role. A policy more favorable to the lobby increases the probability that the median voter will perceive the policymaker as being of a type close to the lobby. As a result, each policymaker type favors less the lobby group before than after election generating electoral policy cycles.

Notice that in our model the off-election policy is distorted, and electoral concerns counteract this distortion moving policy closer to the optimal one.

These features are not present in other electoral cycle models. In Rogoff and Sibert (1988) and Shi and Svensson (2006), for instance, the policy distortion increases in election years.¹⁷

An alternative specification for the policymakers' preferences could lead to different welfare analysis. If the policymaker were endowed with the median voter's preferences, the lobby activity, by voicing the interest of the minorities, would bring the off-election outcome closer to the Benthamite ideal. In this case, electoral concerns would amplify populism in policies, instead of increasing social welfare.

One could speculate how our results would change in the presence of campaign contributions. Campaign contributions could be used as part of the benefits offered to the policymaker in exchange of a policy bias in favor of the lobby group. In order to incorporate the effect of campaign contributions on election probability the model would have to be extended to contemplate probabilistic voting. In the extreme case that campaign contributions are offered only to the incumbent, this type of benefit would increase her reelection probability, counteracting the negative impact of favoring the lobby group, as discussed in the previous paragraph. Electoral cycles of the sort proposed in this paper would still occur, although attenuated, if the negative impact through signalling prevailed over the positive campaign contribution effect. On the other hand, if campaign contributions were given to both incumbent and opponent its impact on reelection probability would be mitigated.

¹⁷We thank two of the referees for calling our attention to this point.

3 Applications

3.1 Government expenditure cycles

3.1.1 Expenditure composition cycles

We now show how the framework developed above can be applied to generate electoral cycles in expenditures composition. In the simple formulation we choose the budget is always balanced, taxes are fixed and there are two types of public goods, specific to each of the two groups. The government budget constraint is represented by:

$$\tau = (1 - n)g_l + ng_p,$$

where τ are taxes per capita that are uniform over the population, g_l and g_p are expenditures for the lobby and for the people, respectively (all per capita).

It can be rearranged as:¹⁸

$$g_l = \frac{\tau - ng_p}{1 - n}.$$

The utility function of a citizen of group i , u_i , is represented by:

$$u_i(c_i, g_i) = c_i + \log g_i, \text{ for } i = p, l, \text{ and } \alpha > 1,$$

where c_i is her private consumption, and g_i is the amount of the public expenditure available to her group. Given that $c_i = y_i - \tau$, indirect utility functions may be written as:

$$v_l(g) = y_l - \tau + \log \left(\frac{\tau - ng}{1 - n} \right), \text{ and} \quad (23)$$

$$v_p(g) = y_p - \tau + \log g, \quad (24)$$

where we use $g \equiv g_p$ for simplicity.

¹⁸Note that, in this case, it is economically reasonable to impose an upper bound for g_p ($0 < g_p \leq \frac{\tau}{n}$) to prevent a negative value for g_l . However, this new restriction is never binding in equilibrium.

Substituting equations (23) and (24) into the utilitarian welfare function of a benevolent policymaker, represented by equation (1), we get:

$$U(g) = y - \tau + n \log g + (1 - n) \log \left(\frac{\tau - ng}{1 - n} \right), \quad (25)$$

where $y = ny_p + (1 - n)y_l$ is the average per capita income. The benevolent policymaker would optimally choose:

$$g^* = \tau = gl, \quad (26)$$

that is, all citizens would receive the same spending level.

The optimal spending level after elections, that is, the spending level that satisfies equation (7), is given by:

$$G_{+1}^j = \frac{\tau}{1 + \pi_j b}. \quad (27)$$

Note that in this application we have an explicit solution for the spending level. It is easy to check Proposition 1: $G_{+1}^c < G_{+1}^f < g^*$.

Following the setup above, we are able to show that there will be an electoral cycle in expenditures composition, with more spending for the people before than after election.

3.1.2 Aggregate expenditure cycles

Electoral cycles in aggregate expenditures can be generated by a simple change in the model described above. Suppose that the people are not taxed and receive the only public good. Indirect utility functions become:

$$v_l(g) = y_l - \tau, \text{ and} \quad (28)$$

$$v_p(g) = y_p + \log g. \quad (29)$$

We still assume a balance budget: $g = \tau$.

An utilitarian policymaker without lobby influence and electoral incentives will choose:

$$g^* = \frac{n}{1 - n}.$$

After election, a type j policymaker will choose:

$$G_{+1}^j = \frac{n}{1 - n + \pi_j b} = \frac{g^*}{1 + \frac{g^* \pi_j b}{n}}. \quad (30)$$

With information asymmetry about the two different policymaker types, π_c and π_f , as before, the model generates electoral cycles in aggregate expenditures. This result is in line with the empirical evidence, as in Brender and Drazen (2004), Shi and Svensson (2006), and Persson and Tabellini (2002).¹⁹

3.2 Exchange rate cycles

Bonomo and Terra (2005) presents a model that generates real exchange rate electoral cycles, in a setting with informational asymmetry over the policymaker's preferences. Here we derive the same result in a simpler model based on lobby politics proposed in this paper.

Consider an endowment economy with two sectors: a tradable and a nontradable sector. The nontradable sector has the majority of the population, while the tradable sector has the lobby power. All consumers are assumed to have the same CES utility function:

$$u(N_i, T_i) = \left(N_i^{\frac{r}{1+r}} + T_i^{\frac{r}{1+r}} \right)^{\frac{1+r}{r}}, \quad (31)$$

where N_i and T_i are the amount consumed of nontradable and tradable goods, respectively, and $r > 1$. Now let e be the tradable good relative price, which is the real exchange rate. Define $g \equiv \frac{1}{e}$. As expected, the indirect utility function is decreasing in the real exchange rate for a citizen in the nontradable sector, and increasing for the tradable sector:

$$v_N(g) = (1 + g^{-r})^{-\frac{1}{r}} E^N, \text{ and} \quad (32)$$

$$v_T(g) = (1 + g^r)^{-\frac{1}{r}} E^T, \quad (33)$$

¹⁹Note that the balanced budget assumption also generates a counterfactual electoral tax cycle. In a more complex version of the model, we could assume, instead, that taxes are hard to change and that any eventual budget imbalances could be financed by government debt. This setting would generate an intertemporally balanced budget equilibrium with electoral cycle in expenditures and budget deficits.

where E^N and E^T are the per capita endowment for the nontradable and tradable sectors, respectively.

A benevolent (utilitarian) policymaker would choose to set the exchange rate at a level:²⁰

$$g^* = \left(\frac{nE^N}{(1-n)E^T} \right)^{\frac{1}{r-1}}. \quad (34)$$

The policymaker chooses to set a more depreciated exchange rate, $g < g^*$ (which means $e > e^* \equiv \frac{1}{g^*}$) in order to favor the tradable sector and get a share of its gain, that is:

$$G_{+1}^j = \left(\frac{nE^N}{(1-n)E^T + \pi_j b E^T} \right)^{\frac{1}{r-1}} \quad (35)$$

$$= g^* \left(\frac{1-n}{1-n + \pi_j b} \right)^{\frac{1}{r-1}} \quad (36)$$

By assuming that there are two types of policymakers, π_c and π_f , information asymmetry engenders a mechanism by which exchange rate electoral cycles are generated. The policymaker will choose a more appreciated exchange rate before than after election.

4 Empirical Implications: Lobbying vs. Competence

In this section, we compare the implications of our model to those of Rogoff's (1990) framework, and relate them to the empirical literature. The two mechanisms are not mutually exclusive, and have some similar implications. Therefore, part of the empirical facts found in the literature could be explained by either approach. However, some new empirical findings can only be accounted for by our model.

²⁰We implicitly assume that the government manipulates its expenditure level in nontradable goods to make the chosen exchange rate consistent with equilibrium in both nontradable and tradable goods markets. The government budget can be balanced intertemporally by a fixed lump sum tax on each citizen. Cyclical government budget imbalances are financed by foreign investors. For an example of a model where the relation between fiscal policy and exchange rate is explicitly taken into account, see Bonomo and Terra (2005).

The electoral cycles generated by competence signaling in Rogoff's model are also generated by our lobbying model. The government expenditure cycles around elections, traditionally modeled as a result of competence signaling can also be engendered by our mechanism when the fiscal policy has a distributive character (see section 3.1.2 above). Exchange rate electoral cycles have also been modeled through the competence mechanism (Stein, Streb, and Ghezzi, 2005), but are naturally modeled in our framework, as changes in the exchange rate redistribute resources between tradable and nontradable sectors (see Bonomo and Terra, 2005, and section 3.2 above).

Additionally, our model is able to generate distributive cycles, such as the electoral cycle in government expenditures composition (see section 3.1.1). The cycle should entail a pre-election increase in expenditures that benefit the majority of the population at the expense of a reduction in expenditures that favor lobby groups. Competence based models may also generate government expenditure composition cycles, but of a different type. Visible expenses should increase before election in detriment of those less easily observable.

Recent empirical studies have uncovered electoral composition cycles in government spending that is consistent with both models. In a cross-country analysis involving 35 developing countries, Schuknecht (1994) unveils larger capital expenditures before elections. Drazen and Eslava (2005) and Khemani (2004) show similar cycles in country studies for Colombia and India, respectively. Capital expenditure can be interpreted as spending that benefits a large part of the population, what makes this electoral cycle consistent with our model. If the capital expenditures are made in visible items, it may also be consistent with the competence model.

Our business cycle mechanism has some distinctive features, since it is based on lobby and/or corruption activities. A necessary condition for our mechanism to be relevant is that the country's institutional environment does not prevent

those activities. There is evidence that lobby/corruption activities do happen in numerous countries, benefiting firms involved in them. Faccio (2006), examining a sample of 47 countries, finds that firm's political connections are more common in countries with less stringent regulation of conflict of interests, being particularly common in countries that are perceived as being highly corrupt. Furthermore, political connections are found to increase the firms' value, corroborating country specific evidence provided by Fisman (2001) and Claessens et al. (2005) for Indonesia and Brazil, respectively.

Shi and Svensson (2006) offer a more directly supportive evidence of our mechanism. They investigate the existence of political budget cycles in a sample of 85 countries, from 1975 to 1995. First, they use the entire sample and found that the fiscal balance deteriorates in election years. When they split the sample in developed and developing countries, the cycle appears only in the developing countries sample. Finally, using one country level indicator of corruption and another one for rent seeking activities they find that those two indicators are significantly related to the budget electoral cycle. Furthermore, controlling for those indicators, the development dummy does not significantly alter the cycle. The results indicate that corruption and rent seeking are positively related to the size of political budget cycles. The earlier evidence that those cycles were related to the development of the country were due to the correlation between corruption and rent seeking, on one side, and the level of development, on the other.

5 Conclusion

In this paper we propose a mechanism by which lobbying may generate electoral cycles. We build a framework where the lobby power of an economic group interacts with the voting power of the majority of the population, leading to

electoral cycles.

We showed that those same ideas could be applied to generate cycles around election in other economic variables, such as government expenditures, and the real exchange rate.

The mechanism we propose in this paper does not exclude the operation of traditional electoral cycle channels, as proposed by the opportunistic and partisan literature. However, the evidence provided by Shi and Svensson (2006) that electoral cycles are stronger in countries with higher corruption and rent seeking indicators does suggest that our proposed mechanism may be indeed important. The relative importance of our proposed channel in explaining the electoral cycle in different variables should be investigated in future research.

References

- [1] Alesina, A. (1987), “Macroeconomic Policy in a Two-Party System as a Repeated Game,” *Quarterly Journal of Economics* 102: 651-78.
- [2] Alesina, A., F. Campante and G. Tabellini. (2008) “Why is Fiscal Policy often Procyclical?”, *Journal of the European Economic Association*, Vol. 6 No. 5, 1006-1036.
- [3] Bonomo, M. and C. Terra (2005). “Elections and Exchange Rate Policy Cycles,” *Economics and Politics* 17(2): 151-176.
- [4] Bonomo, M. and C. Terra (2001), “The Dilemma of Inflation vs. Balance of Payments: Crawling Pegs in Brazil, 1964-98,” in: J. Frieden and E. Stein, eds., *The Currency Game: Exchange Rate Politics in Latin America* (IDB, Washington).

- [5] Brender, Adi and Allan Drazen (2005), "Political Budget Cycles in New Versus Established Democracies," *Journal of Monetary Economics* 52(7): 1271-1295.
- [6] Cukierman, A. and A.Meltzer (1986), "A Positive Theory of Discretionary Policy, the Costs of Democratic Government, and the Benefits of a Constitution," *Economic Inquiry* 24: 367-88.
- [7] Dixit, A. (2004), *Lawlessness and Economics* (Princeton University Press).
- [8] Downs, Anthony (1957), *An Economic Theory of Democracy* (Addison Wesley).
- [9] Drazen, A. and M. Eslava (2006a), "Electoral Manipulation via Expenditure Composition: Theory and Evidence," NBER Working Paper 11085.
- [10] Drazen, A. and M. Eslava (2006b), "Political Budget Cycles When Politicians Have Favorites," mimeo, University of Maryland.
- [11] Faccio, M. (2006), "Politically connected firms", *American Economic Review* 96(1): 369-386.
- [12] Ferreira, I. and M. Bugarin (2005), "Political Budget Cycles in a Fiscal Federation: The Effect of Partisan Voluntary Transfers," mimeo.
- [13] Frieden, J. and E. Stein (2001), *The Currency Game: Exchange Rate Politics in Latin America* (IDB, Washington).
- [14] Frieden, J., P. Ghezzi and E. Stein (2001), "Politics and Exchange Rates: A Cross Country Study," in: J. Frieden and E. Stein, eds., *The Currency Game: Exchange Rate Politics in Latin America* (IDB, Washington).
- [15] Stein, E., J. Streb and P. Ghezzi (2005), "Real Exchange Rate Cycles around Elections," *Economics and Politics* 17(3): 297-330.

- [16] Gonzalez, Maria de los A. (2002), "Do Changes in Democracy Affect the Political Budget Cycle?," *Review of Development Economics* 6(2): 204-224.
- [17] Grier, Kevin B. and Fausto Hernández-Trillo (2004), "The Real Exchange Rate Process and Its Real Effects," *Journal of Applied Economics* VII(1): 1-25
- [18] Grossman, Gene and Elhanan Helpman (1994), "Protection for Sale," *American Economic Review* 84: 833-50.
- [19] Grossman, Gene and Elhanan Helpman (1996), "Electoral Competition and Special Interest Politics," *Review of Economic Studies* 63: 265-286.
- [20] Grossman, Gene and Elhanan Helpman (2001), *Special Interest Politics* (MIT Press).
- [21] Hibbs, D. (1977), "Political Parties and Macroeconomic Policy," *American Political Science Review* 71: 146-87.
- [22] Holmstrom, Bengt (1999), "Managerial Incentive Problems: A Dynamic Perspective," *Review of Economic Studies* 66: 169-182.
- [23] Khemani, S. (2004), "Political Cycles in a Developing Economy: Effect of Elections in the Indian States. *Journal of Development Economics* 73, 125-154.
- [24] Kneebone, R. and K. McKenzie (2001), "Electoral and Partisan Cycles in Fiscal Policy: an Examination of Canadian Provinces," *International Tax and Public Finance* 8: 753-774.
- [25] Lindbeck, A. (1976), "Stabilization Policies in Open Economies with Endogenous Politicians," *American Economic Review Papers and Proceedings*, 1-19.

- [26] Lohmann, Susanne (1998). “Rationalizing the Political Business Cycle: A Workhorse Model,” *Economics and Politics* 10(1): 1-17.
- [27] Nordhaus, W. (1975), “The Political Business Cycle,” *Review of Economic Studies* 42: 169-90.
- [28] Pascó-Fonte, A. and P. Ghezzi (2001), “Exchange Rates and Interest Groups in Peru, 1950-1996,” in: J. Frieden and E. Stein, eds., *The Currency Game: Exchange Rate Politics in Latin America* (IDB, Washington).
- [29] Peltzman, S. (1992), “Voters as Fiscal Conservatives,” *Quarterly Journal of Economics* 107: 327-361.
- [30] Persson, T. and G. Tabellini (2000), *Political Economics: Explaining Economic Policy* (The MIT Press).
- [31] Rogoff, K. (1990), “Equilibrium Political Budget Cycles,” *American Economic Review* 80: 21-36.
- [32] Rogoff, K. and A. Silbert (1988), “Elections and Macroeconomic Policy Cycles,” *Review of Economic Studies* 55: 1-16.
- [33] Schneider, B. R. (2004), *Business Politics and the State in Twentieth-Century Latin America* (Cambridge University Press).
- [34] Shi, E. and J. Svensson (2006), “Political budget cycles: Do they differ across countries and why?,” *Journal of Public Economics* 90: 1367– 1389.
- [35] Sims, C. (2003), “Implications of Rational Inattention,” *Journal of Monetary Economics* 50(3): 665-690.
- [36] Stein, Ernesto, Mariano Tommasi, Koldo Echebarría, Eduardo Lora and Mark Payne (2005). *The Politics of Policies: Economic and Social Progress in Latin America* (IDB Washington).

- [37] Veiga, F. and L.Veiga (2007), “Political Business Cycles at the Municipal Level,” *Public Choice* 131(1-2), 45-64.

Appendix: A multi-period framework

Here we sketch the problem in a multi-period framework. The main modification is in defining a value function for the incumbent problem and solving it by dynamic programming. Instead of breaking the value function into one period pieces, as usual, here it is appropriate to break it into two-period pieces.

Let $Y(\pi_i)$ be the value function for the type i . Then we have a pair of Bellman equations:

$$Y(\pi_i) = \max_{g, I} W(g, \pi_i, I) + \beta \left[q(g, G^f, G^c) FW(\pi_i) + \frac{FU}{1-\beta} \right] + \beta^2 q(g, G^f, G^c) [pY(\pi_f) + (1-p)Y(\pi_c)] \quad \text{for } i = f, c$$

where we assumed that once the incumbent loses the election, she will be a regular citizen forever.

As before, in equilibrium G^f, G^c solves the problem for $i = c, f$. Then, we have:

$$Y(\pi_i) = W(G^i, \pi_i, I^i) + \beta \frac{FU}{1-\beta} + \beta q(G^i, G^f, G^c) \times \left[FW(\pi_i) + \beta (pY(\pi_f) + (1-p)Y(\pi_c)) - \frac{FU}{1-\beta} \right] \quad \text{for } i = f, c$$

The term between square brackets represents the gain from being reelected, and we will show that it is strictly positive and greater than the rents from being reelected once, $FW(\pi_i) - FU > 0$. It can be rewritten as:

$$FW(\pi_i) - FU + \beta \left[(pY(\pi_f) + (1-p)Y(\pi_c)) - \frac{FU}{1-\beta} \right]. \quad (37)$$

In order to evaluate the term between square brackets, note that:

$$Y(\pi_i) \geq U(g^*) + \beta \frac{FU}{1-\beta} \quad \text{for } i = f, c,$$

since in the first period the incumbent is in charge and g^* is in her policy choice set. As for the continuing utility, if she is not reelected, she will get FU thereafter. If she is reelected, her continuing utility is greater than FU , as shown in equation (17).

Furthermore, using equation (16), we also have that:

$$U(g^*) + \beta \frac{FU}{1-\beta} > \frac{FU}{1-\beta}.$$

Combining the two inequalities above, we have that:

$$Y(\pi_i) > \frac{FU}{1-\beta} \quad \text{for } i = f, c.$$

which implies:

$$pY(\pi_f) + (1-p)Y(\pi_c) - \frac{FU}{1-\beta} > 0.$$

Hence, this result renders the incumbent a gain greater than $FW(\pi_i) - FU$ from being reelected. Thus, the incentives for getting reelected are even higher, leading to more pronounced cycles, in this multi-period setting.

Figure 1: Observed policy density function

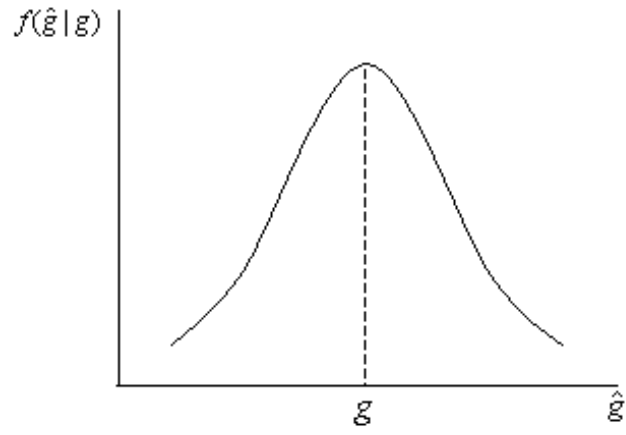


Figure 2: Policy Cutoff Level

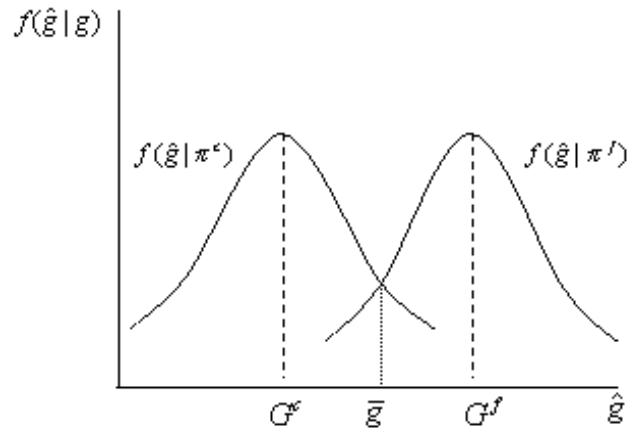


Figure 3: Probability of reelection

