

Political Budget Cycles When Politicians Have Favorites*

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(Preliminary – Not for Quotation)

Abstract

We present a model of Political Budget Cycles in which incumbents influence voters without changing overall expenditures or deficits, by targeting government spending to specific interest groups at the expense of others. Extending Drazen and Eslava (2004), we study the incentives faced by incumbents to favor or neglect a specific interest group, given the group's political and fiscal preferences. Voters in any given interest group face a signal extraction problem: high pre-election spending targeted to the group may reflect opportunistic manipulation, but may also come from a sincere coincidence of interests of the incumbent with the group. In the latter case, high pre-election spending is an indication that post-election spending directed to the group will also be high if the incumbent is re-elected. We show the existence of a political equilibrium in which rational voters in a group support an incumbent who targets the group with pre-election spending, even though they recognize that such targeting may be electorally motivated. We show that voters in more “swing” groups are more targeted with pre-election spending, but only to the extent that those voters are unable to recognize that their group is especially attractive for electoral purposes. The implication is that electoral manipulation should arise along dimensions of spending that are correlated, but only weakly, with the interests of groups widely recognized as electorally attractive. Positive transfers to swing groups may be reflected in negative transfers to core groups or, if most groups are swing, in a reduction of types of spending not favored by voters.

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1 Introduction

Conventional wisdom is that incumbents use economic policy before elections to influence electoral outcomes, a practice commonly known as “election-year economics”. Fiscal policy, including higher expenditures and transfers and lower taxes, is considered an especially important tool. Though a number of recent studies (Shi and Svensson [2002a,b], Persson and Tabellini [2003]) find evidence on the existence of a political deficit cycle in a wide cross-section of countries, Brender and Drazen (2004) argue that the empirical findings in larger data sets are due to a subset of countries (termed “new democracies”) and their experience in the first few elections after the transition to democracy. In contrast, in “established” democracies, there is no statistically significant political cycle across countries in aggregate central government expenditure or deficits.

The lack of a political deficit cycle at the aggregate level in established democracies raises the following question: Is fiscal manipulation absent or (more likely) does it simply appear in different forms? That is, is it possible that in established democracies fiscal policy is also used to influence voters, but this is done in such a way that the overall government budget deficit is not affected? We argue that such electoral manipulation can take the form of a change in the *composition* of expenditures towards those that are highly valued by voters and away from those that are less valued.

The idea behind our argument is that voters may value some types of public services more than others. For instance, a voter may view some government expenditures as benefitting citizens and others as pure bureaucracy, or he may be particularly interested in specific types of expenditure (i.e. infrastructure projects for his own region or neighborhood, public services directed to his age group). If politicians also differ in their preferences over types of expenditures, a given voter will favor politicians whose fiscal preferences are closer to his own. As a result, an incumbent may target expenditures, transfers, and tax cuts at specific groups whose voting behavior is seen as especially susceptible to targeted fiscal policy. If such policies are paid for by expenditure cuts or tax increases on groups whose votes are much less sensitive to fiscal outcomes, we may not observe an electoral effect on overall spending or deficit, despite the fact that significant electoral budget manipulation is taking place.

An important part of electoral economics is in fact via policies or legislation targeted to specific groups of voters – geographically concentrated investment projects, expenditures that benefit a social or economic group more than others, or tax cuts benefitting specific groups. In spite of the widespread use of policies targeted at groups of voters before elections, there are no formal analyses integrating

targeted expenditures into an intertemporal model of the political cycle.¹ Existing models of targeting “swing voters” do not really answer the key question of why rational, forward-looking voters who are targeted by the incumbent before the election expect their utility to be higher after the election if the incumbent is re-elected (and hence vote for him). Lindbeck and Weibull (1987) and Dixit and Londregan (1996) present formal models of targeting voter groups to gain votes based on their characteristics. However, parties are assumed to be committed to whatever targeted expenditures they offer, so there is no voter inference problem about post-electoral utility based on pre-electoral economic magnitudes.

To expand on this last point, a key question in assessing electoral manipulation is: Why should rational voters respond to election-year economics?² In terms of existing models, the “only game in town” is that the unobservability of an incumbent’s ability underlies the response of rational voters to fiscal expansions, an approach introduced by Rogoff (1990) and Rogoff and Sibert (1988).³ Voters care about which candidate will give them higher welfare after the election; since more “competent” candidates can provide more public goods, they provide higher welfare and are therefore preferred by voters, all else equal. Competence is correlated over time, so that a more competent candidate can provide a higher level of public goods both before and after an election.⁴ Hence, voters rationally prefer a candidate who provides higher expenditures before an election.

In many of its versions, the Rogoff competence approach implies increases in total government expenditures in an election year (or in the government budget deficit in the Shi-Svensson version), a prediction that is inconsistent with the finding of Brender and Drazen (2004) that there is no statistically significant aggregate deficit or expenditure cycle in established democracies. It is also inconsistent with the view that voters are “fiscal conservatives” who punish (rather than reward) high spending or deficits at the polls, a finding put forward by Peltzman (1992) for the U.S. and Brender (2003) for Israel. Similarly, Alesina, Perotti, and Tavares (1998) argue that in the OECD there is no evidence of a systematic electoral penalty or fall in popularity for governments that enact policies of significant fiscal restraint.

¹More generally, though special interest politics is seen as especially important in many political economy analyses, it is almost entirely absent in models of macroeconomic policy in general. This project is part of a larger research agenda integrating special interest groups into the study of macroeconomic policy. See, for example, Drazen and Limao (2003).

²Only if voters respond to electoral manipulation will politicians engage in such manipulation.

³Other rational voter models include Persson and Tabellini (1990), González (2001), Stein and Streb (1999), and Shi and Svensson (2002a). All of these models depend on some version of the Rogoff approach, that is, the effect of pre-electoral fiscal expansion on expected aggregate activity or welfare after the election.

⁴A key innovation of Shi and Svensson (2002a) is that the policymaker chooses fiscal policy before he knows his competence level, so that all “types” choose the same level of expansion. That is, the model focusses on moral hazard rather than signaling, as do the other models. An implication is an aggregate deficit cycle.

A rational voter may indeed be averse to deficits, but may favor incumbents who spend more on the public goods and services the voter cares most about (for a given level of the deficit). Given these fiscal preferences of voters, an incumbent's optimal strategy prior to an election involves shifting spending from items with smaller political impact towards those that voters value most. This type of electoral fiscal policy aims at attracting specific groups of voters by giving them the public goods they value most, rather than attracting the electorate at large by boosting economic activity.

If manipulation takes the form of targeted expenditures to groups of voters or changes in the composition of spending, the competence argument does not provide a basis for rational voters responding to electoral fiscal policy. Rather, a voter who is targeted with expenditures before an election wants to know whether he will be similarly favored after the election. Why does giving to one group or choosing a type of expenditure before the election make it credible that the politician will continue to do so after the election?

The answer we provide in this paper is that the politician has *unobserved* preferences over groups or types of expenditure, preferences that have some persistence over time⁵. Hence, if a voter observes that the incumbent favors him before the election, he rationally expects to be favored after the election as well. Key to this approach, as in the Rogoff model, is the inference problem a rational voter must solve under asymmetric information, though over a politician's preferences rather than over his competence. An important difference with the traditional competence argument is that voters may respond to this type of manipulation even if they observe all the components of the budget. What is fundamental to our approach is the inability of voters to observe the fiscal preferences of the politician and the degree to which different groups are electorally attractive, rather than an inability to observe how much the government spends in different types of goods. That is, different from the competence literature, our argument does not depend on some components of fiscal policy being unobservable to voters.

Two different dimensions of election-year economics arise within the approach we suggest. On one hand, political budget cycles may take the form of changes in the composition of total expenditures between those that voters (as a whole) favor more and those that they favor less. We explore this possibility in Drazen and Eslava (2004). The incumbent's preferences over these categories of spending are unobserved and must be inferred from the actual composition of expenditures. Since politician preferences over types of expenditure display some persistence, voters may find it rational to vote for

⁵Another argument to explain why pre-election outcomes are credible indicators of what the incumbent would do if re-elected is that politicians who renege on the (implicit) commitment to continue a government program after the election lose the ability to use fiscal policy as a tool to influence voters in future elections.

an incumbent whose election year fiscal policy targets the types of expenditure that voters prefer. Drazen and Eslava (2004) present some empirical evidence on compositional effects without deficits in regional political budget cycles in Colombia.⁶

An alternative, studied here, is that the compositional effects are also over expenditures targeted to different groups of voters. Voters are unsure both of how heavily they are weighted in an incumbent's objective function (relative to other voters or non-targeted expenditures) and how "swing" they are, meaning how sensitive their group's voting behavior is to expenditures. That is, voters prefer a candidate who assigns higher value to goods the voter likes most, but have only imperfect information about the politicians' preferences over different voter groups (equivalently, over different types of expenditure). They therefore need to extract such information about an incumbent's preferences from his fiscal choices. Higher pre-election spending on a good signals high value placed on that good by the politician. Since a politician's preferences change slowly over time, high pre-election provision of the good is positively correlated with its provision after the election. We show the existence of a Perfect Bayesian Equilibrium in which voters rationally respond to election-year expenditures and politicians allocate expenditure across groups on the basis of this behavior. Politicians increase spending targeted to swing groups before elections, while they contract other types of expenditure to satisfy the no-deficit constraint. To repeat, a key result is that electoral manipulation arises even with fully rational voters.

The strength of the political cycle in our model depends on the distribution of ideological preferences, and the amount of information voters have about the political environment. In particular, we show that targeted spending increases more prior to elections if there is a larger fraction of swing voters. However, voters anticipate this behavior, and are therefore less likely to respond to pre-electoral manipulation of fiscal policy if they know their group is likely to be electorally targeted. As a result, there is a natural limit to pre-electoral increases of spending. On the other hand, the incumbent's ability to engage in this form of electoral manipulation is increased by its access to privileged information about the political environment. In particular, politicians have more information than voters about the potential electoral benefits of a given change in fiscal policy, and this increases their ability

⁶Pre-election composition effects are also consistent with findings in several other papers. Brender (2003) finds that voters in Israel penalize election year deficits, but also that they reward high expenditure in development projects in the year previous to an election. Similarly, Peltzman (1992) result that US voters punish government spending holds for current (as opposed to capital) expenditures, but loses power if investment in roads, an important component of public investment, is included in his policy variable. Kneebone and McKenzie (2001) look for evidence of PBC in fiscal data for Canadian provinces, and find no evidence of a cycle in aggregate spending, but do find a cycle in what they call "visible expenditures", mostly investment expenses such as construction of roads and structures. Very similar findings are reported for Mexico by González (2001), who also finds that other categories of spending, such as current transfers, contract prior to elections.

to obtain political benefits from increases in targeted expenses.

The paper proceeds as follows. Section 2 presents a basic model of the composition of government spending across different interest groups, and derive the result of pre-electoral compositional changes. In section 3 the model is expanded to account for the existence of non-targeted forms of expenditure (bureaucracy). Section 4 presents an example of solution, and section 5 concludes.

2 A Simple Model of Politicians Who Have Favorites

We consider a simple model with elections between an incumbent and a challenger, where incumbents use changes in the composition of expenditures to attract votes. Specifically, there is an election at the end of every other period $t, t + 2, etc.$ Voters value targeted transfers or expenditures, but dislike deficits. The incumbent has the ability to choose fiscal policy, and takes voter preferences into account in designing policy meant to increase his electoral prospects. We focus on the targeting of expenditures, and simply assume that the aversion of voters to deficits imposes a tight fiscal constraint: incumbents can neither raise taxes, nor incur in deficits. In short, the sum of all expenditures must always equal the fixed level of taxes. Of course, a voter could be targeted with both low taxes and high expenditures to gain his votes but, to simplify this exposition, it is assumed that only expenditures are used to target individual voters before elections.

2.1 The Government Budget

Total expenditures equal total tax revenues T , which are assumed fixed. Hence, the choice of fiscal policy is the choice of composition of the government budget, which comprises expenditures that can be targeted to specific groups of voters, and other types of expenditure. For simplicity, in this section, we assume that there are no expenditures other than targeted expenditures, which may go to either of two groups of voters, h_1 and h_2 , each of whom values expenditures targeted to his type, denoted g^1 and g^2 . Everyone in group h receives the same per-capita level of the expenditure. In section ?? we consider the effect of “office rents”, namely a good valued only by politicians.

Each period, the government faces the budget constraint:

$$T = \sum_{h=1}^2 g_s^h \quad s = t, t + 1, \dots \quad (1)$$

2.2 Voters

We assume that voters may differ in the group to which they belong (h_1 or h_2), and also in their preferences over policies other than targeted expenditures (termed “ideology”). Utility of an individual therefore depends on two factors, each of which may be influenced by government policy. First, there is the consumption of the government supplied good specifically targeted to the individual’s group $g_s^h \geq 0$ which provides utility directly. We abstract here from other types of consumption, which are affected by tax policy, since we are imposing fixed taxes. Second, an individual j also cares about the distance between his most desired position π^j over non-fiscal policies (ideology, which is assumed immutable) and the position π^I of the incumbent. We assume there are two parties L and R , with $\pi^L < \pi^R$. We take both π^L and π^R as given, and without loss of generality, assume that party L is the incumbent.

Within each group h_1 and h_2 , voters differ in their preferences toward non-fiscal policies. That is, for each group there is a non-degenerate distribution of preferences over ideology; we denote this distribution as $f_h(\pi)$ for group h , which for now we assume is fixed over time. We assume there is asymmetric information about how effective is fiscal policy to raise votes. In particular, we assume that the incumbent knows $f_{h_1}(\pi)$ and $f_{h_2}(\pi)$, while voters only have imperfect information about them, to be specified more precisely below.

Single period utility of individual j in group h in period s if politician $P \in \{L, R\}$ is in power may be written

$$U_s^{h,j}(P) = V\left(g_s^h(P)\right) - (\tilde{\pi}^j - \pi^P)^2 \quad (2)$$

where $V'(\cdot) > 0$, $V''(\cdot) < 0$, and $g_s^h(P)$ is expenditure given by policy-maker P to a member of group h . A voter j is thus characterized by $\tilde{\pi}^j$. (To help in following the exposition, note that $V(g_s^h)$ does not depend on j . Hence in discussing the central problem of inferring g_{t+1} from g_t , we may ignore the index j .)

An individual’s only choice is whether to vote for the incumbent or the challenger, and only in an election period. Consider the election cycle t and $t + 1$, with an election taking place at the end of t . (Our assumptions about the time series properties of politician’s preferences, specified below, imply that we can consider the individual’s problem over each election cycle independently.)

A forward-looking voter j in group h prefers the incumbent L over the challenger R if

$$E\left[V\left(g_{t+1}^h\right) \mid L, g_t^h\right] - (\pi^j - \pi^L)^2 > E\left[V\left(g_{t+1}^h\right) \mid R\right] - (\pi^j - \pi^R)^2 \quad (3)$$

Note that voters use information contained in g_t^h to learn about the preferences of the incumbent, but have no similar information about the challenger. The indifferent voter in group h , who receives g_t^h from the incumbent, may therefore be represented by the position $\tilde{\pi}(g_t^h)$, defined by

$$\tilde{\pi}(g_t^h) = \frac{E[V(g_{t+1}^h) | L, g_t^h] - E[V(g_{t+1}^h) | R] + (\pi^R)^2 - (\pi^L)^2}{2(\pi^R - \pi^L)} \quad (4)$$

Since g_t^h affects the utility voters expect to receive if the incumbent is re-elected, the indifferent position is a function of g_t^h . Then, within group h , all individuals characterized by $\pi^j < \tilde{\pi}(g_t^h)$ vote for the incumbent L party, while those with $\pi^j > \tilde{\pi}(g_t^h)$ vote for the R party.

We can then express the fraction of group h voters who vote for the incumbent as a function of the pre-election expenditure observed by voters. Denoting this fraction as $\phi_h(g_t^h)$ and the lower bound of π^j as $\underline{\pi}$, we obtain:

$$\phi_h(g_t^h) = \int_{\underline{\pi}}^{\tilde{\pi}(g_t^h)} f_h(\pi) d\pi = F_h(\tilde{\pi}(g_t^h)) \quad (5)$$

so that

$$\phi_h'(g_t^h) = f_h(\tilde{\pi}(g_t^h)) \frac{\partial \tilde{\pi}(g_t^h)}{\partial g_t^h} \quad (6a)$$

$$= f_h(\tilde{\pi}(g_t^h)) \cdot \left[\frac{\partial E(V(g_{t+1}^h) | L, g_t^h)}{\partial g_t^h} \cdot \frac{1}{2(\pi^R - \pi^L)} \right] \quad (6b)$$

where the last equality uses equation (4). Note that groups differ in the level of spending that they receive, and, as a result, in the ideological position of the indifferent voter $\tilde{\pi}(g_t^h)$, as well as in the distribution f_h . We choose the $f_h(\cdot)$ to have no mass points, so that a marginal increase in $\tilde{\pi}(g_t^h)$ cannot cause a discontinuous jump in the number of voters supporting the incumbent. As a result of this and the concavity of $V(\cdot)$, ϕ_h is also concave.

Note that the indifferent position $\tilde{\pi}(\cdot)$, and hence $\phi_h(\cdot)$, depend on $E(V(g_{t+1}^h) | g_t^h)$, that is, on the expectation of post-electoral utility conditional on observed g_t^h . That is, the politician's choice of g_t^h is used to form expectations of g_{t+1}^h and $V(g_{t+1}^h)$. The equilibrium expectation of $V(g_{t+1}^h)$ will thus depend on the politician's optimal choice in the pre-election period, for which we solve in the next section.

$\phi_h'(g_t^h)$ measures the electoral benefit to the politician from targeting an additional dollar to voters in group h . The size of this benefit depends first on how much that additional dollar expands the range of ideological positions where voters prefer the incumbent, characterized by the position of the

indifferent voter $\tilde{\pi}(g_t^h)$. If the utility voters expect under the incumbent in $t + 1$ increases, $\tilde{\pi}(g_t^h)$ increases (that is, moves closer to π^R) and the range of supporters for the incumbent expands. For a given change in expected utility, the increase of $\tilde{\pi}(g_t^h)$ is smaller the further apart π^R and π^L are, as the cost to voters from having their least preferred ideological position in power becomes larger. Second, $\phi'_h(g_t^h)$ depends on the mass of h voters at point $\tilde{\pi}(g_t^h)$, namely $f_h(\tilde{\pi}(g_t^h))$, which determines how many additional votes the incumbent obtains from increasing $\tilde{\pi}(g_t^h)$.

Note that, since there are only two groups and the total size of the budget is known (and equal to T), by observing the level of spending targeted to their own group voters also observe how much spending is targeted to the other group.

2.3 The Incumbent's Problem

We assume politicians have preferences over different types of spending, g^{h1} and g^{h2} , equivalent to preferences over different groups. That is, politicians do not weight the utility of all voters equally, where their preference over different groups may be represented by the weight they put on a group's utility $V(g_t^h)$. The incumbent politician chooses fiscal policy according to his preferences over the composition of the budget, but also to attract voters because remaining in office gives him the possibility to continue choosing fiscal policy in accordance to his own preferences.

Although politicians could also differ in the value they place on rents relative to voters, we assume in this section that all politicians assign the same value to such expenditures. Drazen and Eslava (2004) consider politicians who differ in the weight they put on voters relative to "rents", where this weight is unobserved and all voters are homogeneous. In that model, the incumbent has incentives to change the composition of the budget before an election, spending less on "rents". Section ?? of this paper extends the current model to consider a similar effect, and find how the tension between groups of voters and the tension between voters and rents interact.

A politician P 's single period utility in period s if the policy in place is π^A may be written

$$U_s^P = Z_s^P(\mathbf{g}_s) - (\pi^P - \pi^A)^2 \quad (7)$$

where \mathbf{g}_s is the vector (g_s^1, g_s^2) and $Z_s^P(\cdot)$ represents his preferences over the two groups of voters at time s . Letting $\omega_{p,s}^h$ be the weight the politician puts on the utility of group h 's voters, $Z_s^P(\cdot)$ can be written:

$$Z_s^P(\mathbf{g}_s) = \sum_{h=1}^2 \omega_{p,s}^h V(g_s^h) \quad (8)$$

For simplicity, we assume that $\omega_{P,s}^2 = 1 - \omega_{P,s}^1$, where $\omega_{P,s}^1$ is assumed to follow an MA(1) process

$$\omega_{P,s}^1 = \eta_s^1 + \eta_{s-1}^1 \quad (9)$$

where η_s^1 is an i.i.d. random variable drawn from a known distribution over $(0, \frac{1}{2})$ with mean $\frac{1}{4}$. The distribution is the same for both incumbent and challenger. Hence, $\omega_{P,s}^1 \in (0, 1)$ for both incumbent and challenger, with an expected value of $\frac{1}{2}$.

If the incumbent L is in power in the non-election year $t + 1$, his objective function for the vector of targeted expenditure \mathbf{g}_{t+1}^L is to maximize

$$\Omega_{t+1}^{IN}(\mathbf{g}_{t+1}^L, L) = Z_{t+1}^L(\mathbf{g}_{t+1}^L) + \beta E_{t+1}(\Omega_{t+2}^E(\cdot, L)) \quad (10)$$

where the superindex IN refers to L being still in power in $t + 1$, β is the discount factor, $E_{t+1}(\Omega_{t+2}^E)$ is the expectation as of period $t + 1$ of the present discounted value of utility from $t + 2$ onward. The assumptions that the government's budget is balanced each period and that $\omega_{L,s}^h$ follows an MA(1) process means that actions at $t + 1$ have no effect on Ω_{t+2}^E .⁷

The incumbent's objective in the previous election year t can then be written

$$\Omega_t^E(\mathbf{g}_t^L, L) = Z_t^L(\mathbf{g}_t^L) + \beta(\rho(N^L) E_t \Omega_{t+1}^{IN}(\mathbf{g}_{t+1}^L, L) + (1 - \rho(N^L)) E_t \Omega_{t+1}^{OUT}) \quad (11)$$

where ρ , the probability of re-election, is a function of the fraction of votes N_t^L the left-wing incumbent receives and where Ω_{t+1}^{OUT} is the present discounted utility the incumbent assigns to being out of office in $t + 1$. The difference $E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT})$ is the value of re-election at t which may be written

$$E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) = (1 + \beta)(\pi^L - \pi^R)^2 + E_t(Z_{t+1}^L(\mathbf{g}_{t+1}^L) - Z_{t+1}^L(\mathbf{g}_{t+1}^R)) + \beta^2 E_t \Pi_{t+3} \quad (12)$$

where $E_t \Pi_{t+3}$ is the expected gain from the possibility of re-election in $t + 2$ and later *due to* re-election at t . The first term in (12) is the gain to the incumbent in periods $t + 1$ and $t + 2$ of having his preferred ideological policy rather than that of the opponent. The second term is the value of having his preferred fiscal policy in period $t + 1$ rather than that of the challenger. The MA(1) nature of ω_t^h implies that there is an expected difference in preferences over voters only at $t + 1$. As of t the incumbent's expected fiscal preferences for dates $t + 2$ and later are identical to those of a

⁷Since voters are forward looking, at $t + 2$ they vote on the basis of their beliefs about ω_{t+3} , which depends on η_{t+2} but on no previous values of η .

representative candidate (i.e. equal to those of the challenger).

The last term reflects the effect of re-election at t on the probability of re-election at the end of $t + 2$ and later. If, for example, the probability of re-election at $t + 2$ is independent of the election outcome at t , then $E_t \Pi_{t+3} = 0$.⁸ If a party's re-election at t increases the probability of its re-election at $t + 2$ and later, then $E_t \Pi_{t+3} > 0$, where the value of the higher probability of re-election at $t + 2$ and later stems (in the absence of office "rents") solely from the ability to enact one's preferred ideological policies. To take a simple example, if L 's re-election at t increases its expected probability of re-election at $t + 2$ from ρ_L to $\hat{\rho}_L > \rho_L$, but has no effect on later probabilities (as in the case where a politician can only serve for up to 3 consecutive terms), we would have

$$E_t \Pi_{t+3} = (1 + \beta) (\hat{\rho}_L - \rho_L) (\pi^L - \pi^R) \quad (13)$$

The larger the positive effect of electoral victory at t on the probability of later election (where this effect could be negative), the larger $E_t \Pi_{t+3}$. Rents add an important component to the value of re-election at t and all future dates, as in section ?? below.

Equation (11) may be written

$$\Omega_t^E(\mathbf{g}_t^L, L) = Z_t^L(\mathbf{g}_t^L) + \beta \rho(N^L) E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) + \beta E_t \Omega_{t+1}^{OUT} \quad (14)$$

For tractability, we consider $\rho(N^L)$ as a continuous increasing function. The continuity of $\rho(N^L)$ is clearly inexact in a setting where elections are decided by some majority voting rule, but it simply implies that candidates try to maximize the number of votes they receive⁹. This is not a crucial force behind our results about how electoral transfers are allocated across groups of voters.

Notice that the fraction of votes N^L received by the incumbent is given by (we have assumed equal sized groups):

⁸At the other extreme, in a citizen-candidate model where the probability of the incumbent I being a candidate in the future if she loses at t is zero, this expression would be

$$E_t \Pi_{t+3} = E_t \left[(1 + \beta) \sum_{s=1}^{\infty} \beta^{2(s-1)} (\rho_{t+2s})^s (\pi^L - \pi^{P_{t+2s}})^2 \right]$$

where $\pi^{P_{t+2s}}$ is the ideology of the candidate elected at time $t + 2s$ ($s = 1, \dots$) and ρ_{t+2s} is the probability that the current incumbent stands for election and wins at time $t + 2s$.

⁹There are indeed reasons why a candidate may want to maximize his number of supporters, rather than simply attracting a majority of voters. One such possible reason is a candidate's uncertainty about turn-out: since some of his supporters may not show up to vote, it is optimal to have the maximum possible number of supporters to guarantee a victory.

$$N^L = \sum_{h=1}^2 \phi_h(g_t^h)$$

We solve the politician's problem backwards. Without loss of generality, we focus on his targeting of a generic group h . If the incumbent is re-elected for the post-election period, he chooses g_{t+1}^h to maximize (10) subject to the budget constraint (1), yielding a first-order condition:

$$\omega_{L,t+1}^1 V'(g_{t+1}^1) = \omega_{L,t+1}^2 V'(g_{t+1}^2) \quad (15)$$

A re-elected incumbent L therefore chooses spending on good h as an increasing function of the weight $\omega_{L,t+1}^1$. As a result, the post-election utility an h voter in receives if the incumbent is re-elected is also increasing in $\omega_{L,t+1}^1$.

The value of re-election ($\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}$) will be a function of his actual choices for g_{t+1}^h , which by 15 do not depend on g_t^h . Hence, the incumbent treats ($\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}$) as given in choosing g_t^h . For the election period, the incumbent's optimal choice is given by maximizing (14), leading to a first-order condition (remember $\phi_h(g_t^h)$ is the share of group h 's votes that goes to the incumbent):

$$\omega_{L,t}^1 V'(g_t^1) + \beta \rho'(\cdot) \phi_1'(g_t^1) E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) = \omega_{L,t}^2 V'(g_t^2) + \beta \rho'(\cdot) \phi_2'(g_t^2) E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) \quad (16)$$

The left-hand side of (16) represents the benefit from a marginal increase in g_t^1 . As in the post-election period, this benefit includes the utility gain this change induces for group 1 voters. However, prior to an election the politician potentially derives an additional benefit from targeting group 1, namely obtaining more votes from them. The right-hand side represents the same benefit from a marginal increase in g_t^2 .

Using the government budget constraint (1) $g_t^2 = T - g_t^1$ and $\omega_{L,t}^2 = 1 - \omega_{L,t}^1$, we can represent the solution for group 1, for example, as

$$g_t^1 = G_E^1(\omega_{L,t}^1; \phi_1(g_t^1)) \quad (17)$$

, with an analogous expression for g_t^2 .

The first important result is that targeted spending increases the share of votes that goes to the incumbent, despite the fact that voters recognize the electoral incentives faced by the incumbent.

Proposition 1 *For any group h , $\phi_h'(g_t^h) > 0$.*

Proof. Suppose $\phi'_h(g_t^h) \leq 0$. The incumbent would then get more votes by *reducing*, or at least not increasing, targeted spending to group h . Larger g_t^h in this case cannot be driven by electoral motives, but by ω_I^h being high. Increases in g_t^h then lead voters in h to perceive higher ω_I^h and expect higher post-election utility. As a result, more group h voters want to vote for the incumbent, that is, $\phi'_h(g_t^h) > 0$. This contradicts the initial assumption. ■

Corollary The group with the higher value of $\phi'_h(g_t^h)$ receives higher targeted expenditures in an election period relative to what they would receive in a non-election period if they were given the same weight, while the other group receives lower targeted expenditures in an election than what is expected in the subsequent non-election year.

To summarize, there is electoral manipulation, in that an electorally attractive group receives more transfers than a group with identical weight in the incumbent’s preferences would receive in a non-election period. The extent of electoral manipulation of policy is increasing in the share of votes the incumbent can raise by engaging in it: political business cycles are likely to be more intense in more “swing” societies. Here we focus on the fraction of voters that are swing “at the post-election levels of spending”. Only voters close to the indifferent ideological position are willing to shift their votes facing a marginal change in policy, but that indifferent position is in turn a function of policy. The relevant question is thus whether the mass of voters close to the indifferent position at a given composition of spending is large.

2.4 Voters’ Expectations and the Political Equilibrium

The discussion above characterizes how targeted government spending before elections is allocated across groups as a function of the additional share of votes an incumbent receives as a result of such spending. The marginal electoral effect of targeted spending is represented by $\phi'_h(g_t^h)$. Since $\phi'_h(g_t^h)$ depends on an incumbent’s decision rule as derived in the previous subsection (as it depends on $\frac{\partial E[V(g_{t+1}^h)]}{\partial g_t^h}$) we must now use these results to close the model and derive the political-economic equilibrium under rational expectations. The basic logic behind voters’ beliefs is that they formulate expectations about their future well-being under each candidate optimally using all information available to them.

To solve for the rational equilibrium, we start with a simple case. Suppose incumbent’s ω^h is constant over time.

Let $T = 1$, so that $g_s^2 = 1 - g_s^1$ for $s = t, t + 1$. (Note, each group knows the other's g_t since T is known. For $V(g) = \ln g$, $t + 1$ FOC (15) is simply $g_{t+1}^h = \omega^h$ for both groups.

FOC at t (16) then implies

$$\omega^1 = g_t^1 + \beta \rho'(\cdot) E_t (\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) g_t^1 (1 - g_t^1) (\phi_2'(1 - g_t^1) - \phi_1'(g_t^1)) \quad (18)$$

$$= g_t^1 + A(g_t^1) P(g_t^1) \quad (19)$$

where $A(g_t^1) \equiv \beta \rho'(\cdot) E_t (\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT}) g_t^1 (1 - g_t^1)$, a known function, and

$$P(g_t^1) \equiv \phi_1'(g_t^1) - \phi_2'(1 - g_t^1) \quad (20)$$

which is the vote gain to the incumbent from transferring a dollar of expenditures from group 2 to group 1. (19) gives group 1's conjecture of the relation between observed g_t^1 and ω^1 when there is an electoral motive as summarized by $P(g_t^1)$. Group 2's conjecture is similarly

$$\omega^2 = g_t^2 + A(g_t^1) P(g_t^1) \quad (21)$$

We then have

$$E[V(g_{t+1}^1) | g_t^1] \equiv E[\ln \omega^1 | g_t^1] \quad (22)$$

$$= E(\ln(g_t^1 - A(g_t^1) P(g_t^1))) \quad (23)$$

From (4) and (23), we may write $\tilde{\pi}_1(g_t^1) = a_0 + a E_t(\ln(g_t^1 - A(g_t^1) P(g_t^1)))$ where $a = \frac{1}{2(\pi^R - \pi^L)}$, so that $\phi_1'(g_t^1) = f_1(\tilde{\pi}_1(g_t^1)) a \frac{\partial E(\ln(g_t^1 - A(g_t^1) P(g_t^1)))}{\partial g_t^1}$ and $\phi_2'(g_t^2) = f_2(\tilde{\pi}_2(g_t^2)) a \frac{\partial E(\ln(g_t^2 + A(g_t^1) P(g_t^1)))}{\partial g_t^2}$.

We may then write (20) as

$$P(g_t^1) = f_1(\tilde{\pi}_1(g_t^1)) a \frac{dE(\ln(g_t^1 - A(g_t^1) P(g_t^1)))}{dg_t^1} + f_2(\tilde{\pi}_2(1 - g_t^1)) a \frac{d(\ln((1 - g_t^1) + A(g_t^1) P(1 - g_t^2)))}{dg_t^1} \quad (24a)$$

where we have used $\frac{dg_t^2}{dg_t^1} = -1$.

A function $P(\cdot)$ that solves (24a) for given PDF's $f_1(\cdot)$ and $f_2(\cdot)$ is a rational political equilibrium. In words, a rational equilibrium is a vote function $P(\cdot)$ that induces a pattern of targeted expenditures such that observing those expenditures, rational voters solving the electoral inference problem are lead

to vote in such a way that justifies that $P(\cdot)$. Alternatively, if voters conjecture targeted expenditure functions (19) and (21), they are led to vote in a way that makes these the actual functions.

Note also the important role of imperfect information about $f_h(\pi)$. Voters in group h know that the extent to which g_t^h reflects electoral motivations, rather than the politician's preferences, depends on how productive group h is for electoral purposes. If voters knew h is highly attractive from an electoral perspective, they would see g_t^h as a very noisy signal about ω_t^h , and this would in turn reduce the incentives to the incumbent to deliver high g_t^h . The extent of the political budget cycle is thus magnified by the fact that politicians are better informed than the public about which types of publicly provided goods generate largest electoral benefits. In the extreme, if voters know the $f_h(\pi)$, that is, know their electoral value to the incumbent and hence his electoral motive in giving targeted expenditures, there can be no electoral fiscal manipulation.

2.5 The Effect of Ideology on Targeted Expenditure

In this model there is no competition over ideology.

1. However, ideology affects the nature of targeted expenditure campaign spending. Show how the value of the vector \mathbf{g}^L depends on π^L and π^R . For example, the expenditure pattern of an incumbent with a given π^L will depend on the ideology π^R of his opponent. (Bush gives favors differently if his opponent is Dean rather than Kerry.)

2. The value of office depends on the value of ω (and of course π^P) relative to one's opponent's. Candidates whose preferences are farther away from $\frac{1}{2}$ have a greater incentive to win the election, other things equal.

3 Rents to Holding Office

We now add a value of holding office, which we call "rents" (over and above the value of enacting one's own preferred ideology). Specifically, a part of government expenditure may be spent on a good χ that is valued only by the politician. The key effect of this change is the possibility that targeted expenditures to all groups rise in an election year, at the expense of χ . This result does not depend on voters assigning no value to χ , only that there are some types of expenditure that voters value less than others, and these may be cut in an election year. The characterization of χ as total waste in the eyes of voters is simply an extreme way to capture those differences in the value assigned by voters to different goods and services provided by the government.

The government's budget constraint now becomes

$$T = \sum_{h=1}^2 g_s^h + \chi_s \quad s = t, t+1, \dots \quad (25)$$

The voter's problem is exactly as described in section 2.2. The politician's objective function is obviously different.

The incumbent L 's objective in a non-election year $t+1$ parallels (10) but with the addition of rents

$$\Omega_{t+1}^{IN}(\mathbf{g}_{t+1}^L, L) = Z_{t+1}^L(\mathbf{g}_{t+1}^L) + a(\chi_{t+1}) + \beta E_{t+1}(\Omega_{t+2}^E(\cdot, L)) \quad (26)$$

where $a(\chi_{t+1})$ is the utility he assigns to rents χ_{t+1} . Note that χ will change both over the cycle (and possibly between cycles) since the vector of targeted expenditures \mathbf{g} will change. The incumbent's objective in the election year t can then be written

$$\Omega_t^E(\mathbf{g}_t^L, L) = Z_t^L(\mathbf{g}_t^L) + a(\chi_t) + \beta(\rho(N^L) E_t \Omega_{t+1}^{IN}(\mathbf{g}_{t+1}^L, L) + (1 - \rho(N^L)) E_t \Omega_{t+1}^{OUT}) \quad (27)$$

The difference $E_t(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT})$ is

$$(1 + \beta)(\pi^L - \pi^R)^2 + E_t(Z_{t+1}^L(\mathbf{g}_{t+1}^L) - Z_{t+1}^L(\mathbf{g}_{t+1}^R)) + (1 + \beta) E_t a(\chi_{t+1}) + \beta^2 E_t \Pi_{t+3} \quad (28)$$

but where the value in $E_t \Pi_{t+3}$ to being in office after $t+2$ includes the expected present discounted value of future office rents in addition to ideology. Equation (28) represents four components in this model which make re-election valuable, three of which were present in (12): the ability to implement one's preferred ideology; the ability to target expenditures to preferred groups; the rents from office; and the possibility that re-election at t gives to win future re-election and hence gain future advantage of being in office.

With rents from holding office, the first-order condition in a non-election year for each group h (found by maximizing (26) subject to (25)) equates the value of targeted expenditures to the value of rents

$$\omega_{L,t+1}^h V'(g_{t+1}^h) = a'(\chi_{t+1}) \quad h = 1, 2 \quad (29)$$

These first-order conditions for the two groups yields (15). Similarly, for an election year, one derives

a first-order condition equating the value of targeted expenditures to the value of office rents:

$$\omega_{L,t}^h V' \left(g_t^h \right) + \beta \rho' (\cdot) \phi'_h \left(g_t^h \right) E_t \left(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT} \right) = a' (\chi_t) \quad (30)$$

for $h = h_1, h_2$. Combining the first-order conditions for the two groups yields (16).

The existence of rents χ_t allows both g^1 and g^2 to increase in an election year. Rents unambiguously fall in an election year, that is, $\chi_t < \chi_{t+1}$. To see that this is the case, combine $\phi'_h (g_t^h) > 0$ with the fact that χ_{t+1} satisfies the post-election first-order condition (29). If the incumbent chose $\chi_t = \chi_{t+1}$ the pre-election marginal benefit of targeted spending would exceed that of rents. Since $\phi_h(\cdot)$, $V(\cdot)$, and $a(\cdot)$ are all concave (with $a(\cdot)$ possibly weakly concave), satisfying the pre-election first-order condition (30) therefore requires lower non-targeted expenditure before the election. The pre-electoral shift of resources toward targeted spending holds for any values of $\omega_{L,t}^1$ and $\omega_{L,t}^2$, so that all types of politicians have incentives to change the composition of expenditures prior to an election.

How do electoral motives change the allocation of resources across groups in the pre-election period, compared to non-election periods? That is, how do g_t^1 and g_t^2 compare to the expected values of g_{t+1}^1 and g_{t+1}^2 ? We will provide here an intuitive discussion of how these resources are allocated.

In $t + 1$ there is no electoral motive for targeted transfers, so g_{t+1}^1 and g_{t+1}^2 serve as the reference point in measuring electoral effects. Without loss of generality, suppose that group 1 is more electorally valuable, that is, $\phi'_1 (g_{t+1}^1) > \phi'_2 (g_{t+1}^2)$. Since χ_{t+1} , g_{t+1}^1 and g_{t+1}^2 satisfy the first-order condition (29), and $\phi'_h (g) > 0$, the following relations hold:

$$\omega_{L,t+1}^h V' \left(g_{t+1}^h \right) + \beta \rho' (\cdot) \phi'_h \left(g_{t+1}^h \right) E_t \left(\Omega_{t+1}^{IN} - \Omega_{t+1}^{OUT} \right) > a' (\chi_{t+1}) \quad \text{for } h = 1, 2$$

and

$$\omega^1 V' (g_{t+1}^1) + \beta \rho' (\cdot) \phi'_1 (g_{t+1}^1) \bar{\Omega} > \omega^2 V' (g_{t+1}^2) + \beta \rho' (\cdot) \phi'_2 (g_{t+1}^2) \bar{\Omega}$$

That is, if the $t + 1$ composition of spending was imposed in t , the marginal benefit of expenditures targeted to any group would exceed that of χ , and the benefit of directing one more dollar to group h_1 exceeds that of directing it to group h_2 . The incumbent then has incentives to take one dollar from non-targeted expenditures χ , and put it into g^1 , the most valuable form of targeted spending, while keeping g^2 unchanged. This will increase the marginal benefit of desks (non-targeted spending), given the concavity of $a(\chi)$. What happens to g_t^2 and the final effect on K_t depend on the relative

distance between $\phi'_1(g_{t+1}^1)$ and $\phi'_2(g_{t+1}^2)$.

4 An Example

Because of the involved nature of a solution for $E(v(\omega^h))$, further characterizing equilibrium outcomes for this general case is difficult. At the same time, observing the form of a specific solution for those outcomes would help our intuition. We therefore resort to a specific example where we illustrate the equilibrium.

4.1 Calculating an Equilibrium

Take the following specific assumptions about functional forms: $a(K) = \theta K$, where θ is a constant, $V(g^h) = \ln g^h$. Suppose also that, for any politician P ($P = I, C$), ω_P^h follows a uniform distribution with values between $\omega^l = 0.2$ and $\omega^u = 1$. Without loss of generality, we assume that $\pi^C (= -\pi^I) = 0.25$. Let $\rho(N^I)$ be a linear function of the form $\bar{\rho}N^I$. We assume

$$f^h(\pi) = \alpha^h \exp(-|\pi|)$$

where $\alpha^h = \frac{1}{2(1-\exp(-\bar{\pi}^h))}$. This distribution has the nice feature of being concentrated and symmetric around zero (the midpoint between π^I and π^C), and will prove tractable. Here, $\bar{\pi}^h$ and $-\bar{\pi}^h$ are, respectively, the upper and lower bound for π in group h . Figure 1 depicts $f^h(\pi)$ for different values of $\bar{\pi}^h$: the crosses correspond to $\bar{\pi}^h = 0.3$ ($\alpha^h = 1.93$), the solid line to $\bar{\pi}^h = 0.75$ ($\alpha^h = 0.95$) and the diamonds to $\bar{\pi}^h = 1$ ($\alpha^h = 0.79$).

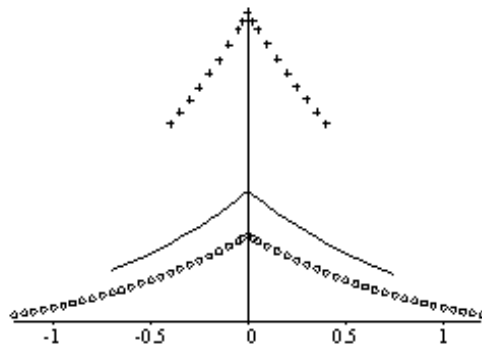


Figure 1: $f_h(\pi)$ for $\bar{\pi}^h = 0.3(\times)$, $0.75(-)$, $1(\diamond)$

We assume that both voters and incumbent know one of the two groups is characterized by $\alpha^h = \bar{\alpha}$ and the other by $\alpha^h = \underline{\alpha}$. However, only politicians know *which* group corresponds to each value of α , while voters simply assign some probability $p_h^{\bar{\alpha}}$ that group h is the one with $\bar{\alpha}$: $\Pr(\alpha^h = \bar{\alpha}) = p_h^{\bar{\alpha}}$.

From the first-order condition's (29) and (30) the incumbent's optimal choices for g_{t+1}^h and g_t^h are given by:

$$g_{t+1}^h = \frac{\omega_I^h}{\theta} \quad (31)$$

and

$$\frac{\omega_I^h}{g_t^h} + \beta \bar{\rho} \bar{\Omega} \phi_h'(g_t^h) = \theta \quad (32)$$

The key issue is how to solve for $\phi_h'(g_t^h)$, where this solution is consistent with voters rationally forming expectations. The first step is to re-write the incumbent's first-order condition (32) to explicitly note that it depends on individuals's expectations. Using $V(g_{t+1}^h) = \ln\left(\frac{\omega_I^h}{\theta}\right)$, our assumptions about f^h , and equation (6a), note that $\phi_h'(g_t^h)$ can be written as:

$$\phi_h'(g_t^h) = a^h \exp\left[-\left|E\left(\ln \omega_I^h \mid g_t^h\right) - E\left(\ln \omega_C^h\right)\right|\right] \frac{\partial E\left(\ln \omega_I^h \mid g_t^h\right)}{\partial g_t^h}$$

or, letting $Y(g_t^h) \equiv \exp\left[-\left|E\left(\ln \omega_I^h \mid g_t^h\right) - E\left(\ln \omega_C^h\right)\right|\right]$,

$$\phi_h'(g_t^h) = \begin{cases} a^h Y'(g_t^h) & \text{if } E\left(\ln \omega_I^h \mid g_t^h\right) \leq E\left(\ln \omega_C^h\right) \\ -a^h Y'(g_t^h) & \text{if } E\left(\ln \omega_I^h \mid g_t^h\right) > E\left(\ln \omega_C^h\right) \end{cases} \quad (33)$$

Note that $Y(g_t^h)$ is the component of $\phi_h'(g_t^h)$ affected by voters's expectations, so our analysis of their beliefs will focus on $Y(g_t^h)$. Also, ex-ante incumbent and challenger are identical, so ω_C^h follows the same unconditional distribution that characterizes ω_I^h . $E\left(\ln \omega_C^h\right)$ is formed according to that unconditional distribution.

Voters unveil the relationship between ω_I^h and g_t^h from the first-order condition (32), and use it to form expectations about the future. That relationship is given by

$$\omega_I^h = \begin{cases} g_t^h (\theta - \alpha^h \Lambda Y'(g_t^h)) & \text{if } E\left(\ln \omega_I^h \mid g_t^h\right) \leq E\left(\ln \omega_C^h\right) \\ g_t^h (\theta + \alpha^h \Lambda Y'(g_t^h)) & \text{if } E\left(\ln \omega_I^h \mid g_t^h\right) > E\left(\ln \omega_C^h\right) \end{cases} \quad (34)$$

where $\Lambda = \beta\bar{\rho}\bar{\Omega}$ is the value of one additional vote to the incumbent. It is clear from this expression that one key reason why voters respond to pre-electoral manipulation is their lack of information about α^h , which determines how attractive from the electoral point of view is a given group. If α^h were *known* to voters, they could perfectly infer ω_I^h from their observation of g_t^h , and increases in g_t^h would generate no electoral benefits to the incumbent.

Voters form $E(\ln \omega_I^h | g_t^h)$ by taking logs on both sides of (34), and using $\Pr(\alpha^h = \bar{\alpha}) = p_h^{\bar{\alpha}}$. Writing these expectations in terms of $Y(g_t^h)$, we obtain:

$$Y(g_t^h) = \begin{cases} e^{-E(\ln \omega_C^h)} g_t^h \theta [1 - \bar{\alpha} \frac{\Lambda}{\theta} Y'(g_t^h)]^{p_h^{\bar{\alpha}}} [1 - \underline{\alpha} \frac{\Lambda}{\theta} Y'(g_t^h)]^{(1-p_h^{\bar{\alpha}})} & \text{if } g_t^h \leq \bar{g} \\ e^{E(\ln \omega_C^h)} \left(g_t^h \theta [1 + \bar{\alpha} \frac{\Lambda}{\theta} Y'(g_t^h)]^{p_h^{\bar{\alpha}}} [1 + \underline{\alpha} \frac{\Lambda}{\theta} Y'(g_t^h)]^{(1-p_h^{\bar{\alpha}})} \right)^{-1} & \text{if } g_t^h > \bar{g} \end{cases} \quad (35)$$

where \bar{g} is such that $E(\ln \omega_I^h | g_t^h) \leq E(\ln \omega_C^h)$ if and only if $g_t \leq \bar{g}$ ¹⁰. This is the first order differential equation that characterizes rational voters' beliefs. Note that expression (34) represents the incumbent's optimal choice of g_t^h given voters' expectations, while expression (35) represents voters' rational expectations, given the incumbent's actions. Equilibrium outcomes are therefore represented by a function $Y(g_t^h)$ that solves expression (35), and the choice of g_t^h that satisfies (34) for that $Y(g_t^h)$. Those equilibrium outcomes, which we illustrate below, are summarized in proposition 2.

Proposition 2 *In this example, voters' equilibrium expectations about the future are characterized by*

$$E(\ln \omega_I^h | g_t^h) = \begin{cases} \ln(g_t^h \theta c_0) & \text{if } g_t^h < \bar{g} \\ \approx \left(-\theta (g_t^h)^2 c_3 \right) \ln \left[c_1 + c_2 \int \exp \left(\theta (g_t^h)^2 c_3 \right) dg \right] & \text{if } g_t^h > \bar{g} \end{cases} \quad (36)$$

where c_0, c_1, c_2 and c_3 are constants which depend on $\bar{\alpha}, \underline{\alpha}$ and $p_h^{\bar{\alpha}}$, and

$$\bar{g} = \frac{e^{E(\ln \omega_C^h)}}{\theta c_0}$$

Meanwhile, the incumbent's optimal choice for g_t^h is given by

$$\frac{\omega^h}{g_t^h} = \begin{cases} \theta - \alpha^h \Lambda \theta e^{-E(\ln \omega_C^h)} c_0 & \text{if } E(\ln \omega_I^h | g_t^h) \leq E(\ln \omega_C^h) \\ \theta + \alpha^h \Lambda (c_1 - 2\theta g_t^h Y(g_t^h) c_3) & \text{if } E(\ln \omega_I^h | g_t^h) > E(\ln \omega_C^h) \end{cases} \quad (37)$$

¹⁰The fact that $E(\ln \omega_I^h | g_t^h)$ is increasing in g_t^h was proved for the general case in previous sections. This example is, in any case, self-contained: we can consider the positive slope of $E(\ln \omega_I^h | g_t^h)$ as a conjecture, which will then prove consistent with the politicians' choices.

Proof: We first need to prove that (36) solves the differential equation (35). Note that

$$Y(g_t^h) = e^{-E(\ln \omega_C^h)} g_t^h \theta c_0$$

satisfies equation (35) for the $E(\ln \omega_I^h | g_t^h) < E(\ln \omega_C^h)$ case, if $c_0 = (1 - \bar{\alpha} \Lambda e^{-E(\ln \omega_C^h)} c_0)^{p^\alpha} (1 - \underline{\alpha} \Lambda e^{-E(\ln \omega_C^h)} c_0)^{(1-p^\alpha)}$. Also, \bar{g} is the value of g_t^h that solves $Y(g_t^h) = 1$.

The nonlinear differential equation in the $E(\ln \omega_I^h | g_t^h) > E(\ln \omega_C^h)$ branch of (35) is obviously hard to solve, but we assume that voters solve an approximate, linear, form of it. We take a first order Taylor approximation around $Y' = x = -\theta c_0 e^{-E(\ln \omega_C^h)}$. This ensures that $\lim_{g \rightarrow \bar{g}} \frac{\partial E(\ln \omega_I^h | g_t^h)}{\partial g_t^h}$ is equal whether we approach from the left or the right. This yields (letting $\hat{\alpha} = E(\alpha)$)

$$Y(g_t^h) = \frac{e^{E(\ln \omega_C^h)}}{g_t^h \theta} [K_1 - K_2 (Y' - x)]$$

$$\text{where } K_1 = \frac{\left(1 + \bar{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right) \left(1 + \underline{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right) - \Lambda C e^{-E(\ln \omega_C^h)} \left(\hat{\alpha} - \Lambda C \bar{\alpha} \underline{\alpha} e^{-E(\ln \omega_C^h)}\right)}{C \left(1 + \bar{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right) \left(1 + \underline{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right)} \text{ and}$$

$K_2 = \frac{\Lambda \left(\hat{\alpha} - \Lambda C \bar{\alpha} \underline{\alpha} e^{-E(\ln \omega_C^h)}\right)}{\theta C \left(1 + \bar{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right) \left(1 + \underline{\alpha} \Lambda C e^{-E(\ln \omega_C^h)}\right)}$. The solution to this differential equation takes the form:

$$Y(g_t^h) = \exp\left(\frac{-\theta (g_t^h)^2}{2K_2 e^{E(\ln \omega_C^h)}}\right) \left[c_1 + \frac{K_1}{K_2} \int \exp\left(\frac{\theta (g_t^h)^2}{2K_2 e^{E(\ln \omega_C^h)}}\right) dg_t^h \right] \quad (38)$$

where c_1 is a constant such that $Y(\bar{g}) = 1$. Letting $\frac{K_1}{K_2} = c_2$ and $\frac{1}{2K_2 e^{E(\ln \omega_C^h)}} = c_3$, this is identical to (36) for $E(\ln \omega_I^h | g_t^h) > E(\ln \omega_C^h)$.

Substituting (36) into (34) we obtain (37). ■

4.2 Illustration

We can now illustrate this solution¹¹. Take the following set of parameters: $\omega \sim U[0.2, 1]$, $T = 1$, $\theta = 1.3$, $\alpha^{h_1} = 1.93$ (or $\bar{\pi}^{h_1} = 0.3$), $\alpha^{h_2} = 0.79$ (or $\bar{\pi}^{h_2} = 1$), $p^{\alpha^{h_1} = \bar{\alpha}} = 0.5$, and $\Lambda = 0.1$. The choice of Λ is consistent, for instance, with¹² $\beta = 0.99$, $\rho = 1$ and $\bar{\Omega} = 0.11$, where the latter would be satisfied by combinations of $\omega_I^{h_1}$ and $\omega_I^{h_2}$ such as 0.3 and 0.9 or 0.5 and 0.45. These parameters imply $\bar{g} = 0.53$.

¹¹Note that the solution for the upper branch of $E(\ln \omega_I^h | g_t^h)$ is an approximation, since it involves linearizing the differential equation around the $E(\ln \omega_I^h | g_t^h) = E(\ln \omega_C^h)$ point (see appendix).

¹² $\beta = 0.99$ corresponds to a discount rate of 0.01, which is consistent with historical records of quarterly interest rates.

The solution to the problem can be summarized by $\phi'(g_t^h)$, the first order condition (32), and the resulting choice of g_t^h as a function of ω_I^h and α^h . We depict them in the following three figures.

Figure 2 shows $\phi'(g_t^h)$ for the two groups. Keep in mind that $\phi'(g_t^h)$ represents the additional h votes the incumbent can obtain from raising g_t^h one dollar. The top line in that figure corresponds to the group with more swing voters, which in this case is h_1 since it has the larger α^h . The larger effect on votes for the more swing group is consistent with our previous result that electoral incentives to target swing groups are large, compared to more core groups. Note also that $\phi'(g_t^h)$ is positive and (weakly) decreasing everywhere, reflecting the fact that the incumbent can always obtain more h votes by increasing g_t^h , but the electoral gain tends to decrease as g_t^h grows. In other words, the share of group h votes the incumbent obtains, given by $\phi(g_t^h)$, is increasing and (weakly) concave. The increasing slope shows the incentive for electoral increases in targeted spending. The concavity is a consequence of decreasing marginal utility, and less concentration of voters in the tails of the π^h distribution. In fact, note that the decreasing pattern of $\phi'(g_t^h)$ is less pronounced for group h_2 (bottom line), which exhibits a π^h distribution with fatter tails.

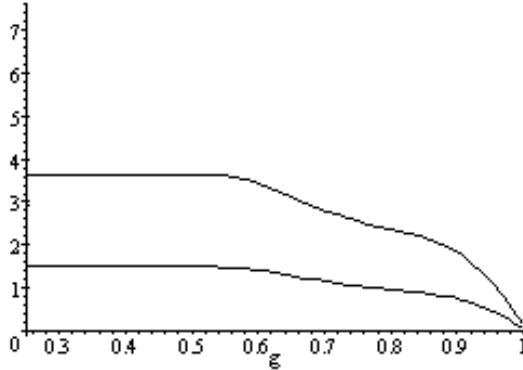


Figure 2: $\phi'(g_t^1)$ and $\phi'(g_t^2)$

The incumbent's choice of g_t^h is characterized by the first-order condition (32), which can be written as

$$\frac{\omega_I^h}{g_t^h} = \theta - \Lambda \phi'_h(g_t^h) \quad (39)$$

This representation is useful because this first-order condition then looks very similar the first-order condition for the post-election period. The only difference is the last term of the right hand

side. We depict both the pre-election and the post-election first-order conditions in Figure 3. The left hand side, $\frac{\omega_I^h}{g^h}$, is given by the decreasing dotted curves for different values of ω_I^h . From bottom to top, these curves correspond to $\omega_I^h = 0.2$, $\omega_I^h = 0.4$, $\omega_I^h = 0.6$ and $\omega_I^h = 0.8$. Meanwhile, the dashed horizontal line corresponds to the right hand side of the $t + 1$ first-order condition (which is given simply by θ). The two solid curves represent the right hand side of the period t first-order condition for the two groups: the bottom one is the case of the more swing group (h_1) which we already noted exhibits the larger $\phi^{h'}$ for any g_t^h .

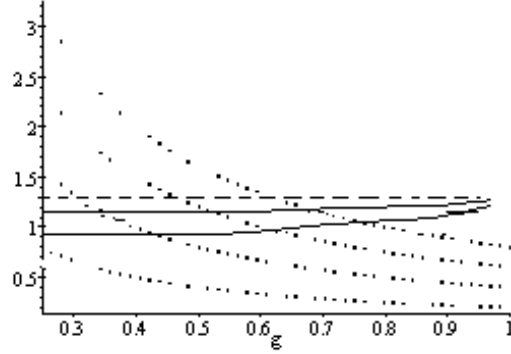


Figure 3: Incumbent's first order conditions

Take, for instance, group h_1 . The incumbent's optimal choice of $g_t^{h_1}$ is given by the intersection between the $\theta - \Lambda\phi^{h_1'}(g)$ line (bottom solid line) and the $\frac{\omega_I^{h_1}}{g^{h_1}}$ curve. Meanwhile, his optimal choice of $g_{t+1}^{h_1}$ is at the intersection of the dashed horizontal line and the same (since $\omega_I^{h_1}$ does not change between t and $t+1$) $\frac{\omega_I^{h_1}}{g^{h_1}}$ curve. Note that, for any given ω_I^h , both groups receive observe larger targeted expenditures before the election than after it ($g_t^h > g_{t+1}^h$ for both h). In this case, as discussed above, the constant marginal utility of *desks* precludes the possibility that one of the groups receives less targeted spending before the election that it would in $t + 1$.

The size of pre-electoral transfers (the difference between g_t^h and g_{t+1}^h) is larger for group h_1 , characterized by a larger mass of swing voters. The differences between the two groups, however, become smaller for larger values of g_t^h , since at these levels voters already perceive high benefits of choosing the incumbent (note that the two curves grow closer as g increases). The reason is that, given decreasing marginal utility, providing voters with additional expenditures in this region has only small effects in the well-being they expect to enjoy if the incumbent is re-elected. These findings

are reflected in Figure 4, which shows the optimal choice of g_t^h as a function of ω_I^h .

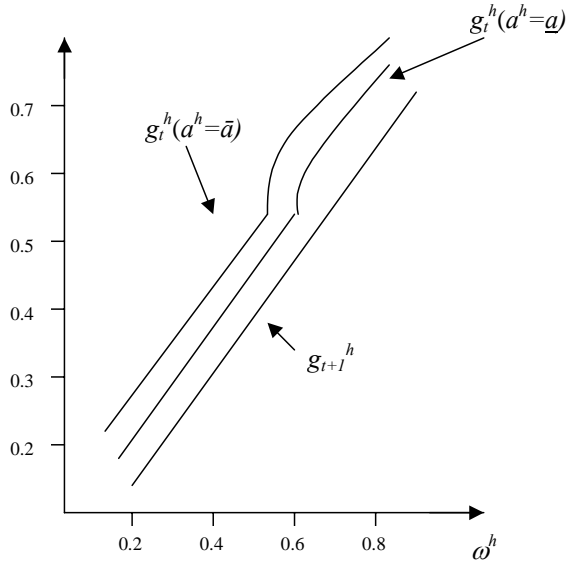


Figure 4: $g_t^h(\omega_I^h)$ and $g_{t+1}^h(\omega_I^h)$

The extent to which pre- and post-electoral policy differ (i.e. the size of the political budget cycle) obviously depends on the specific parameters chosen. For instance, larger values of Λ imply a larger value of re-election, and therefore lead the incumbent to choose larger g_t^h . Small values of θ imply that the post-election level of targeted expenditure is already high (for any candidate) and, given decreasing marginal utility, reduce the potential differences between one and another candidate in terms of provision of targeted goods. This reduces the incentives for electoral increases of g_t^h . Larger ideological gaps between the different candidates reduce the importance voters give to fiscal policy in choosing the candidate, and therefore reduce the incentives for electoral increases of g_t^h . Different choices of α^{h1} and α^{h2} will change the electoral benefit the incumbent can obtain from increasing g_t^h , as can be deduced from the figures above. The general patterns of electoral changes for g_t^h , however, are quite robust to the parameters chosen.

5 Conclusions

This paper presents a view of the Political Budget Cycle in which politicians attract voters using expenditures targeted to voters at the expense of other categories of expenditure or at more politically “useful” voters at the expense of other voters. As a result, pre-electoral manipulation is present, but

may not show up in aggregate expenditures or deficits in the government budget. We present a model with perfectly rational, forward-looking voters who use their perception of public goods provision to make inferences about the incumbents' preferences. Election-year economics "works" even though rational voters correctly solve the inference problem of trying to discern the motivation for election-year spending under imperfect information. That is, election-year economics succeeds in gaining the votes of rational voters, even though they know there is some probability that they are being targeted solely to get their votes.

Our view differs from other models of political budget cycles in that voters care about the preferences of the incumbent over different interest groups, rather than his competence. The difference is not merely semantic; in the competence approach a key element is an inability of voters to observe not only the characteristics of the incumbent but also some component of the budget. In our approach, meanwhile, a political budget cycle may emerge even if voters observe all fiscal choices; we shift the attention from the fiscal information voters receive to their fiscal preferences and those of the incumbent.

Our focus on the favoritism of politicians for certain groups is motivated by traditional election-year economics, which gives a key role to special interests in electoral budget manipulation. Although the idea of pork barrel politics is common in political economy, it has not been incorporated in intertemporal models of fiscal policy-making. Furthermore, previous literature does not address the question of why providing such spending would affect the votes of rational, forward-looking, individuals.

Our view of electoral manipulation of fiscal policy, both in this paper and in Drazen and Eslava (2004), also resolves the apparent contradiction between the view that fiscal manipulation can and is used to get votes and the evidence that voters are fiscal conservatives, in that they punish through their votes the increase of overall expenditure and the deterioration of fiscal balances. The ideas we put forward are also consistent with previous tests of political budget cycle, which largely fail to show systematic and robust pre-electoral increases in total government expenditure in established democracies, but do find that some types of public spending increase prior to elections, while others contract.

References

- Alesina, A., R. Perotti and Tavares (1998), "The Political Economy of Fiscal Adjustments," *Brookings Papers on Economic Activity* 1:1998.
- Brender, A. (2003), "The Effect of Fiscal Performance on Local Government Election Results in Israel: 1989-1998," *Journal of Public Economics* 87, 2187-2205.
- Brender, A. and A. Drazen (2004), "Political Budget Cycles in New versus Established Democracies," working paper. (available at <http://www.tau.ac.il/~drazen>)
- Dixit, A. and J. Londregan (1996), "The Determinants of Success of Special Interests in Redistributive Politics," *Journal of Politics* 58, 1132-55.
- Drazen, A. and M. Eslava (2004), "Political Budget Cycles Without Deficits: Expenditure Composition Effects," working paper.
- Drazen, A. and N. Limão (2003), "Government Gains from Self-Restraint: A Bargaining Theory of Inefficient Redistribution," working paper. (available at <http://www.tau.ac.il/~drazen>)
- Gonzalez, M.(1999), "Political Budget Cycles and Democracy: A Multi-Country Analysis," working paper, Department of Economics, Princeton University.
- Gonzalez, M.(2001), "Do Changes in Democracy affect the Political Budget Cycle? Evidence from Mexico". Forthcoming, *Review of Development Economics*
- Kneebone, R. and McKenzie, K. (2001) "Electoral and Partisan Cycles in Fiscal Policy: an Examination of Canadian Provinces," *International Tax and Public Finance* 8, 753-774.
- Lindbeck, A. and J. Weibull (1987), " " *Public Choice*
- Peltzman, S. (1992), "Voters as Fiscal Conservatives," *Quarterly Journal of Economics* 107, 327-261
- Persson, T. and G. Tabellini (1990), *Macroeconomic Policy, Credibility, and Politics*, London: Harwood.
- _____ (2003), *Constitutions* Cambridge, MA: MIT Press
- Rogoff, K. (1990), "Equilibrium Political Budget Cycles," *American Economic Review* 80, 21-36.
- Rogoff, K. and A. Sibert (1988), "Elections and Macroeconomic Policy Cycles," *Review of Economic Studies* 55, 1-16.
- Shi, M. and J. Svensson (2002a), "Conditional Political Budget Cycles," CEPR Discussion Paper #3352.
- _____ (2002b) "Political Business Cycles in Developed and Developing Countries," working paper.
- Stein, E. and J. Streb (1999), "Elections and the Timing of Devaluations," working paper