Pandering and Pork-Barrel Politics[*]

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Abstract

We develop a model of pork-barrel politics in which a government official tries to improve her re-election chances by spending on targeted interest groups. The spending signals that she shares their concerns. We investigate the effect of such pandering on the public deficit. Pandering makes the deficit worse if either the official's overall spending propensity is known, or if it is unknown but the effect of spending on the deficit is sufficiently opaque to voters. By contrast, an unknown spending propensity may induce the official to exhibit fiscal discipline if there is enough deficit transparency.

Keywords: Accountability, pandering, deficit bias, redistributive politics, budget caps.

JEL numbers: H1, H7, K4.

1 Introduction

In a representative democracy, a government is usually elected by a coalition of minorities who expect it to press for their interests. This provides the government with the incentive to demonstrate its congruence with those interests. Indeed, observation suggests that public officials and their staffs spend substantial time, energy, and resources figuring out how to appear sympathetic to the concerns of interest groups, a behavior not accounted for by existing theories.

This paper develops a framework for studying pork-barrel spending that signals a government's concern for its constituents. We suppose that the electorate is uncertain about a public official's preferences over interest groups. A voter – at least one whose vote is motivated by his private interests – would like to re-elect the official if she appears to put sufficient weight on his concerns. This provides her with incentive to direct benefits to him (i.e., to conduct pork-barrel spending). In essence, she would like to tell the voter: "I care about you."

We show that this incentive tends to generate too much public spending, but that there are three qualifications to this result. First, the very inefficiency of pork – the fact that the electorate overall typically loses more from it than the targeted interest groups gain – places some restraint on the official. Second, if the official's overall spending propensity is unknown and at least a portion of public spending must appear on the public balance sheet, a high spending level will be perceived as a bad signal by the electorate. Thus, the official will be torn between her desire to please interest groups and her awareness that too much spending can backfire. We characterize the conditions under which the disclosure of fiscal deficits can actually lead to *low* public spending. Third, limits on fiscal deficits are sometimes legally imposed, as with the Stability and Growth Pact in Europe or balanced budget requirements in U.S. states. Even so, we show that they can have unfortunate side effects because of "crowding out" and "time shifting". Specifically, deficit caps induce the official to cut down not only on pork but on useful public spending. Such caps also introduce a bias toward high-cost projects that frontload benefits and backload expenditure.

The paper is organized as follows. Section 2 lays out the basic model. Section 3 assumes that the public official's spending propensity is known: there is uncertainty about the structure of her preferences (which interest groups she prefers), but not about the total spending she would like to do. This section shows how, in the absence of a budget cap, pork-barrel politics leads to overspending. Section 4 then considers the impact of a

constitutional limit on budget deficits. Section 5 introduces uncertainty about the official's desired spending level, and examines how the degree of budget transparency affects overall spending. Section 6 offers a brief summary and a few ideas for further work.

Relationship to the literature

Although we believe our model offers a new perspective on pork-barrel politics, it is, of course, related to various strands of the existing literature. Our excessive-spending results are connected to the broader literature on deficit bias.[1] Much of that literature assumes that interest groups impose an externality on other parties; that is, their spending is partially financed by these other entities. Sometimes these other parties are future voters or governments (Persson and Svensson 1989; Alesina and Tabellini 1990; Aghion and Bolton 1990);[2] sometimes they are other subgovernments under fiscal federalism (as in Argentina or Brazil), and sometimes they are current interest groups (Velasco 2000; Battaglini and Coate 2007a,b). In the Battaglini-Coate models, the legislature chooses spending on public goods as well as on district-targeted pork. The models show that forcing the legislature to balance its budget (or, more generally, constraining its ability to smooth shocks by issuing debt) increases welfare when the country's tax base is large (relative to public spending needs), but not when it is small[3].

The central feature that our model adds to this literature is signaling to interest groups. Specifically, in contrast with the earlier work, we emphasize the pandering component of pork-barrel spending, as well the effects of deficit transparency and opaqueness.

In the literature on "Ramsey electoral promises," campaigning politicians make binding promises to various interest groups subject to an overall budget constraint (Dixit and Londregan 1996, 1998; Lindbeck and Weibull 1987; Myerson 1993) or, more generally, subject to the requirement that debt be issued to finance a budget deficit (Lizzeri 1999). These theories too involve an externality, except that it is mediated by a government

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[1] A recent review of this literature and an assessment of its relevance can be found in Calmfors (2005).

[2] Martimort (2001) revisits the Persson-Svensson-Alesina-Tabellini model (Persson and Svensson 1989; Alesina and Tabellini 1990) of the commitment value of budget deficits from the standpoint of redistribution (Mirrlees 1971). He supposes that governments are inequality averse (left-wing governments more so than right-wing ones). He shows how a left-wing government is both hurt by a budget deficit (the future marginal utility of income increases) and helped by it (a right-wing government tomorrow will be constrained to adopt a more redistributive policy). One historical cause of deficit bias, dynamically inconsistent monetary policy, has become less important in recent years with the growth of independent central banks, which by and large have refrained from using inflation surprises to finance fiscal deficits.

[3] Drazen and Ilzetzkiz (2013) emphasize a different cost of attempts to constrain the distribution of pork. In their model, the agenda setter has private information about the value of a public good; pork acts as a signalling device and greases the legislative wheels.

courting interest groups, rather than by interest groups themselves. In Lizzeri and Persico (2005), "bad" (pork-barrel) public spending is assumed to be more targetable than "good" (public good) public spending. The paper shows that the set of parameters for which pork-barrel spending occurs in equilibrium grows with the number of candidates.

In an important and closely related contribution, Gavazza and Lizzeri (2009) study an election model in which two candidates credibly promise transfers to n distinct ex-ante identical interest groups, which then vote stochastically as a function of the utility differential promised by the candidates. These transfers are financed through distortionary taxation on labor. Deficits can be financed by borrowing abroad. Under transparency, no transfers are promised. But if the groups observe their own transfer perfectly and the transfers to other groups only in a noisy way, budget deficits emerge. Furthermore, the impact of transparency of transfers differs from that of transparency of revenue.

Gavazza and Lizzeri's focus on electoral promises and ours on policy while in office are complementary; electoral promises probably are most relevant for year 1 in office and on a stand-alone basis would predict decreasing expenditures over the political tenure while our model predicts higher expenditures prior to an election.[4] Besides this complementarity, our main contribution is two-fold: First, our model is one of pandering (to each group and to the electorate as a whole). Second, we study the impact of tenure/ accountability, while the Gavazza-Lizzeri model takes the politician's stake and therefore career concerns as fixed.

In this Ramsey literature, the beneficiaries of pork are those whose vote was pivotal to getting an official elected. Our work is instead aimed at the complementary phenomenon of pandering by politicians who are already in office and are targeting groups that may have contributed little to their electoral campaign.

The literature on common agency (Grossman and Helpman 1994; Dixit 1996) emphasizes the role of bribes/campaign contributions in determining policy.[5] In this line of work, groups commit to making policy-contingent payments to a politician. The success of an interest group in attracting pork then corresponds not to its role in elections, but to its ability to bribe politicians.

The strand of literature most closely related to our paper assumes that an official acts

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[4]Brender and Drazen (2013) find that new democracies increase their expenditures during election years, while established democracies are more prone to punish profligates (but nonetheless witness large expenditure composition change during election year).

[5]In Bennedsen and Feldmann (2002a,b)), interest groups can influence policy both by offering contributions and by providing information favorable to the group. The focus is on determinants of the form of influence, and on whether competition generates more decision-making-relevant information.

so as to signal her congruence with the electorate (Maskin and Tirole 2004) or her ability to implement public projects (Alesina and Tabellini 2007, 2008; Canes-Wrone, Herron and Shotts 2001; Dewatripont et al 1999; Dewatripont and Seabright 2006; Rogoff 1990; Rogoff and Sibert 1988). The key difference between our work and this previous literature is that now public spending is strategically targeted to heterogeneous constituencies (as in the Ramsey literature).[6]

2   The Model

There are two dates $t = 1, 2$. A public official chooses a policy at date 1, and then if re-elected at the end of date 1, chooses another policy at date 2. The electorate consists of a set of "minorities" or "interest groups". For simplicity, we will assume a continuum of interest groups uniformly distributed on $[0, 1]$. At date 1, the official selects, for each interest group $i \in [0, 1]$ a project level $y_i \in \{0, 1\}$. The overall policy is then $y. = \{y_i\}_{i \in [0,1]}$. Project level $y_i = 1$ yields benefit B to interest group i and costs $L > B$ to the electorate as a whole. Thus, in this simplest version of the model, public spending is pure pork – i.e., socially wasteful. (We will later generalize the analysis to accommodate useful spending as well.) Project level $y_i = 0$ yields no benefit and costs nothing. The welfare of interest group i at date 1 is therefore

$$y_i B - yL \ , \quad \text{where} \quad y = \int_0^1 y_j dj.$$

Key to our modeling is the idea that the official is more interested in some interest groups than others, either because of her intrinsic preferences or because she has different stakes in the welfare of different groups. We formalize this by assuming that the official puts weight $\alpha_i \geq 0$ on interest group i, with α_i increasing in i. Without loss of generality, we assume $\int_0^1 \alpha_j dj = 1$. The values $\{\alpha_i\}_{i \in [0,1]}$ are *private information* for the official. Her welfare from policy $y.$ at date 1 is

$$U(y.) = \int_0^1 \alpha_i [y_i B - yL] di = \left[\int_0^1 \alpha_i y_i di \right] B - yL$$

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[6]See Panova (2009) for a model in which politicians signal their preferences among constituents twice: during the campaign, and while in office.

Because an optimal policy $y.$ will take the form

$$y_i = \begin{cases} 1, & \text{for } i \geq i^o \\ 0, & \text{for } i < i^o \end{cases}$$

for some cut-off i^o, we can identify $y.$ with the corresponding mean spending level $y = \int_{\alpha(y)}^1 dj$, where $\alpha(y) = \alpha_{i^o}$. We shall, therefore, sometimes use y and $y.$ interchangeably. Let $F(\alpha)$ be the proportion of interest groups for which $\alpha_i \leq \alpha$. Then, we can write

$$\begin{aligned} U(y) \ &= + \left[\int_{\alpha(y)}^\infty \alpha dF(\alpha) \right] B - yL \\ &= y[M^+ \left(F^{-1}(1-y) \right) B - L]; \end{aligned}$$

where $y = 1 - F\left(\alpha(y)\right)$ and $M^+(\cdot)$ is the truncated mean:

$$M^+ \left(\alpha^0 \right) = \int_{\alpha^o}^\infty \alpha dF(\alpha)/(1 - F(\alpha^0)).$$

Define α^* so that

$$\alpha^* B = L.$$

A non-accountable official – an official without re-election concerns – will distribute pork to all interest groups i with $\alpha_i \geq \alpha^*$. That is, the level of spending is

$$x \equiv 1 - F(\alpha^*).$$

Sections 3 and 4 will assume that the spending propensity is known to the electorate, and Section 5 will relax this assumption.

If $x > \frac{1}{2}$, then, through her spending, even a non-accountable official will assemble a majority of the electorate in her favor. Thus, in this case, accountability makes no difference. We shall assume, therefore, that

$$x < \frac{1}{2}. \tag{1}$$

If the incumbent official fails to win re-election, we assume she is replaced at date 2 by another official the (challenger) who favors the same proportion of interest groups. However, the *identities* of the challenger's favored groups are uncorrelated with those of

the incumbent. The incumbent official's overall objective function is

$$V \equiv U(y) + p(y)R,$$

where $p(y)$ is the (endogenous) probability that she is re-elected with spending policy y and R is her rent from holding office. This rent reflects the perks and ego gratification from office-holding; it also embodies the official's payoff from distributing pork to her own favored groups at date 2.[7] Henceforth we will assume that the politician is willing to pander if this enables her reelection, specifically that the rent from holding office satisfies

$$R > U(x) - U\left(\frac{1}{2}\right) \tag{2}$$

where the significance of condition (2) will become clear in section 3.

3 Basics of excessive spending

3.1 Pure pocketbook politics

In this section and the next we assume that the electorate knows the official's spending propensity x. Now, to get reelected, the official will choose a spending policy y that differs from x. Whether the spending policy is transparent (y is observed) or opaque (y is not observed) is then irrelevant, since the electorate learns nothing about the official's aggregate preferences from y. We assume for now that in the election after date 1, an interest group votes for the candidate expected to deliver it the highest expected payoff (i.e., it votes its *pocketbook*).

The prior probability that the official favors a particular interest group (i.e., it would target that group at date 2 if re-elected) is x. The interest group will update this probability according to whether it has benefitted or not from the incumbent's date-1 policy. Let $\hat{x}$ be the updated probability. If $\hat{x} \geq x$ (recall that x is also the probability that the challenger favors the interest group), the group will vote for the incumbent; otherwise, it will vote for the challenger. Let us assume for the moment that $y > x$ (we will establish

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[7]Given (assuming independence) that only a fraction x of the incumbent's preferred groups will be favored by the new official, the incumbent would clearly prefer to distribute the pork herself. Of course, the assumption that the new official spends only on the proportion x is artificial because it presumes that she doesn't need to worry about reelection. But a more elaborate model that incorporated accountability would generate the same conclusions.

this inequality in the next two paragraphs). Then, a date-1 beneficiary will set $\hat{x} = x/y$ $(> x)$; a non-beneficiary will take $\hat{x} = 0$. Note that these values of $\hat{x}$ hold even when spending cannot be directly observed, because interest groups can *infer* what y will be in equilibrium.

Indeed, we claim that the official will choose $y = \frac{1}{2}$ (plus ε). To see this, note that the official would choose $y = x$ were she not constrained by re-election. From (2), however, she is willing to choose $y = \frac{1}{2}$ in order to be re-elected. And because (just over) $\frac{1}{2}$ is the smallest value of that will ensure victory (see below), this is what she will end up choosing.

If $y = \frac{1}{2}$, a beneficiary of pork at date 1 will have a probability $\hat{x} = x/\frac{1}{2} = 2x$ of being favored at date 2 by the incumbent official, in which case its payoff at date 2 is $2xB - xL$. If instead the challenger wins, its date 2 payoff is $xB - xL$. Thus, it will vote for the incumbent. By contrast, if an interest group does not receive pork, $\hat{x} = 0$, and so it will vote for the challenger. We conclude that $y = \frac{1}{2}$ is indeed the smallest value of that will ensure victory for the incumbent.

As in Maskin and Tirole (2004), we can compare the allocation resulting from representative democracy to that which would prevail under a *non-accountable* government. Such a government would set $y = x$ because it need not worry about re-election. We conclude, therefore, that representative democracy leads to excessive spending.[8]

Proposition 1 *When the electorate knows the official's overall spending propensity, but not her preferences across interest groups, accountable governments undertake more public spending than non-accountable governments.*

3.2 Extension: Ideological voting

We now extend Lindbeck and Weibull (1987)'s key insight on how targeted campaign promises are reflected in policy. We suppose that in group i a fraction v_i , now possibly smaller than 1, votes its pocketbook, i.e., maximizes its expected second-period benefit

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[8]For completeness we can also consider *direct democracy*, in which the fiscal policy is chosen by citizens and is not delegated to an official. Because policy is multi-dimensional, we need to make a further assumption in order to predict the outcome. Let us suppose, in fact, that a collection of (slightly more than) half of the population forms and allocates the benefits to itself in a package referendum (this coalition is stable in the absence of monetary transfers). Direct democracy then yields

$$y^{DD} = \frac{1}{2}.$$

net of taxes.[9] The remaining fraction $1 - v_i$ votes "ideologically" (or, more generally, for reasons unrelated to the date-1 policy, e.g., the candidate's character or appearance). Of these, a random fraction ϕ with cumulative distribution function H and density h on $[0,1]$ will vote for the incumbent, regardless of the date-1 policy (we assume that ϕ is the same for all interest groups for notational simplicity). We assume that the density is non-decreasing ($h' \geq 0$). This assumption guarantees the concavity of the relevant programs.

The incumbent is re-elected if and only if[10]

$$\int v_i y_i di + (1 - v)\phi \geq \int v_i (1 - y_i) di + (1 - v)(1 - \phi),$$

where $v \equiv \int v_i di$. And so

$$p(y) \equiv 1 - H\left(\frac{1}{2} + \frac{\int v_i(1 - 2y_i)di}{2(1-v)}\right).$$

The official's optimal policy solves

$$\max_{y.}\{U(y.) + p(y.)R\}$$

where

$$U(y.) \equiv \int \alpha_i(y_i B - yL)di$$

Thus, interest group i receives pork if and only if

$$\alpha_i B + \frac{h}{1-v}v_i R \geq L. \tag{3}$$

From (3), an interest group's ability to attract pork depends not only on how favored it is (i.e., on α_i), but on how pocketbook-oriented it is (i.e., on v_i). Its prospects for pork also improve with an increase in h, which implies that the probability of victory is more responsive to a small swing in voting. That is, the interest group is more likely to receive pork if the election is hotly contested. Finally, pork will also increase with R; the official will be willing to spend more, the higher the value she attaches to office.

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[9]One could also take B and L to be interest-group specific.

[10]We assume that the ideological vote can push the election one way or the other (that is, we rule out corner solutions). This condition is valid only if the pocketbook vote is not too large.

Proposition 2 *If some of the electorate votes ideologically rather than pocketbook, public spending increases with the level of rents from office and the intensity of electoral competition. An interest group is more likely to receive pork, the more pocketbook-oriented it is.*

4 Legal Limits on spending

The model in section 3 incorporates the basic mechanics of pork-barrel spending. It presumes, however that all public spending is wasteful, and so implies that a simple legal provision would be optimal: a prohibition on all public expenditure. We now turn to a richer model in which some spending is worthwhile and nontrivial spending caps are called for.

Now, of course, a spending cap is problematic if government liabilities can be kept off the balance sheet (meaning that y is unobservable or unmeasurable), as in practice they often are. Nevertheless, spending caps are a common policy instrument. For example, most U.S. states have a balanced budget requirement; the Stability Pact in the European Union limits gross government debt to sixty percent of the country's GDP,[11] although the constraint has had only limited effectiveness;[12] and in the United Kingdom, the deficit is not to exceed net capital formation (over the business cycle).

Accordingly, we will assure that y is at least partially observable at date 1 (see below) and that a legal (constitutional or statutory) deficit cap can be enforced.[13]

We will argue that using caps to constrain pork-barrel spending runs into two difficulties. First, a tight budget constraint also induces a substitution away from *desirable* public spending. And, second, it induces the politician to use spending technologies that are inefficient but whose costs are not immediately observable; i.e., it encourages the use of off-balance-sheet liabilities. Formally, suppose that the official faces a spending limit G. Assume that she chooses a pork-barrel policy y. and also decides how much of its cost is observable (how much is "on the balance sheet"). Specifically, she chooses $\widehat{L}(\leq L)$ so that only $y\widehat{L}$ counts toward the spending limit (as before $y = \int y_i di$) but the actual cost

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[11] Or if it exceeds this level, to converge to it at "a satisfactory pace".

[12] First, nations accumulate large off-balance-sheet liabilities, so that public debt vastly underestimates the actual government liabilities. Second, the enforcement mechanism has little bite; although it has been strengthened in the wake of the euro crisis, the governance of budget discipline remains a weak point of the euro construction.

[13] A substantial literature in public finance discusses the credibility of such enforcement and the nature of the institutions that are likely to make it effective (see, in particular, Calmfors 2005).

is

$$y \left[\widehat{L} + D_1(L - \widehat{L}) \right],$$

where D_1 – the deadweight loss from distorting spending to keep it unobservable – satisfies $D_1(0) = 0$, $D_1'(0) = 1$, and $D_1'' > 0$. The distinction between actual and observed spending and the concomitant deadweight loss reflect the many opportunities that governments can avail themselves of to shift liabilities off-balance sheet (e.g. changes in pension benefits or the provision of costly contingent guarantees on individual assets, firms or central banks), or conversely to bring cash forward in time at the expense of future revenue (a discount on the sale of state assets).

Assume that, in addition to pork-barrel spending, the public official can undertake public good spending g generating surplus

$$W - D_2(g_0 - g),$$

where g_0 is the first best optimal public good level and $D_2(0) = 0$ $D_2'(0) = 1$ and $D_2'' > 0$. Note that we assume for simplicity that public spending is observed by voters. As in the case of pork spending, we could introduce a distinction between actual and observed spending. For example, there are many ways (including PPPs) to frontload or backload expenditures. That would not affect the theory. Another important remark is that we assume that all citizens enjoy the public good equally, and so the provision of the public good does not convey any signal as to the politician's preferences among interest groups. In practice, public good provision does have redistributive consequences, and thus there is a "continuum" between purely targeted spending (pork in our model) and untargeted spending (public good in our model).

The model is otherwise the same as that of section 3.2, with $v_i = v$ for all i.

The politician is re-elected if and only if

$$vy + (1 - v)\phi \geq v(1 - y) + (1 - v)(1 - \phi).$$

And so, if the official faces spending cap G, the optimal policy is given by:

$$\max_{y., \widehat{L}, g} \left\{ \int \alpha_i y_i B di - \left[y[\widehat{L} + D_1(L - \widehat{L})] + g \right] + W - D_2(g_0 - g) \right. \tag{4}$$
$$\left. + \left[1 - H \left(\frac{1 - 2vy}{2(1 - v)} \right) R \right] \right\}$$

such that

$$g + y\widehat{L} \leq G. \tag{5}$$

The first-order conditions for $\widehat{L}$ and g are:

$$D_1'(L - \widehat{L}) = D_2'(g_0 - g) = 1 + \mu, \tag{6}$$

where μ is the Lagrange multiplier for (5). The first-order condition with respect to y_i is:

$$y_i = 1 \quad \Longleftrightarrow \quad \alpha_i B + \frac{hv}{1-v}R \geq \widehat{L} + D_1(L - \widehat{L}) + \mu\widehat{L} \tag{7}$$

If the spending cap G is increases, then μ decreases. Thus from (6), $\widehat{L}$ and g increase. That is,

$$\frac{d\widehat{L}}{dG} > 0 \text{ and } \frac{dg}{dG} > 0. \tag{8}$$

Now, the derivative of the right-hand side of the inequality in (7) is

$$\frac{d\widehat{L}}{dG}(1 + \mu - D_1') + \widehat{L}\frac{d\mu}{dG} \ ,$$

which from (6) equals $\widehat{L}\frac{d\mu}{dG}$, and is therefore negative. That is, increasing G (holding y fixed) relaxes the inequality in (7), and we conclude that

$$\frac{dy}{dG} > 0. \tag{9}$$

Summarizing, we have

Proposition 3 *A looser deficit cap increases pork-barrel spending. However, it also encourages desirable public-good spending and induces the government to use more efficient forms of pork with lower off-balance-sheet liabilities.*[14]

Next we explore the implications of variation in the rent R. Suppose that

$$h' = 0 \tag{10}$$

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[14]Inefficient project choice here results from a desire to hide government liabilities, not from an intrinsic preference for inefficient projects. By contrast, the government in Robinson and Torvik (2005) deliberately and openly chooses inefficient projects ("white elephants") so as to enhance the chances of being re-elected. Efficient projects would be continued even if the challenger came to power while only the incumbent would pursue inefficient ones. Inefficiency then "forces" the interest group to vote for the incumbent.

From (5) we can replace g in (4) with $G - y\widehat{L}$ resulting in objective function

$$\max_{y.,\widehat{L}} \left\{ \int \alpha_i y_i B \, di - y \left[\widehat{L} + D_1(L - \widehat{L}) \right] - \left[G - y\widehat{L} \right] + W - D_2(g_0 - G + y\widehat{L}) \right.$$
$$\left. + \left[1 - H \left(\frac{1 - 2vy}{2(1 - v)} \right) \right] R \right\}$$

We thus obtain first-order conditions for $\widehat{L}$ and y_i :

$$D_1'(L - \widehat{L}) = D_2'(g_0 - G + y\widehat{L}) \tag{11}$$

and

$$y_i = 1 \quad \Longleftrightarrow \quad \alpha_i B - D_1(L - \widehat{L}) - D_2'(g_0 - G + y\widehat{L})\widehat{L} + \frac{hv}{1 - v} R \geq 0. \tag{12}$$

Consider how the optimal values of $\widehat{L}$ and y depend on the rent R. Differentiating (11) with respect to R, we obtain

$$-D_1'' \frac{d\widehat{L}}{dR} - D_2'' \left(y \frac{d\widehat{L}}{dR} + \widehat{L} \frac{dy}{dR} \right) = 0 \tag{13}$$

Suppose first that

$$\frac{d\widehat{L}}{dR} < 0. \tag{14}$$

Then, (13) and (14) imply that

$$\frac{dy}{dR} > 0. \tag{15}$$

Next suppose that

$$\frac{d\widehat{L}}{dR} > 0. \tag{16}$$

Differentiating the left-hand side of the inequality in (12) with respect to R and using (11), we obtain

$$-\widehat{L} D_2'' \left(y \frac{d\widehat{L}}{dR} + \widehat{L} \frac{dy}{dR} \right) + \frac{hv}{1 - v} ,$$

which from (13) can be rewritten as

$$\widehat{L} D_1'' \frac{d\widehat{L}}{dR} + \frac{hv}{1 - v} ,$$

and which, from (16), is positive. So, once again, we infer that (15) holds. From (13) and (15), we obtain (14). Summarizing, we have

Proposition 4 *If $h' = 0$, then, holding G constant, an increase in the rent from holding office, R, induces the official to increase pork-barrel spending and to decrease the efficiency of that spending.*

Proposition 4 implies that if, for the same cap G, we consider two spending situations – one in which the election is imminent, the other in which it is still far off – we can expect the public official to undertake more pork-barrel spending (but not more public-good spending) and more off-balance-sheet spending in the former case. This is because the relative magnitude of R (compared with the rest of the official's payoff) is especially high just before an election. This result complements but differs from the standard literature on the political business cycle, in which spending increases just before the election because voters' memories are short.

We finally turn to the optimal date-1 budget constraint. Behind the veil of ignorance, pork distributed at date 2 and officials' rents in the two periods are constant. Date-1 welfare[15] is

$$W = y \left[B - [\widehat{L} + D_1(L - \widehat{L})] - g + v - D_2(g_0 - g) \right]$$

where

$$y = 1 - F \left[\frac{\widehat{L} + D_1 \left(L - \widehat{L} \right) + \mu \widehat{L} - \frac{hv}{1-v} R}{B} \right].$$

As earlier, W can be written as

$$W = [v - y(L - B) - g_0] - \phi(y, \mu),$$

where the deadweight loss from manipulations can be written

$$\phi(y, \mu) = yK(\mu) + M(\mu)$$

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[15] Because (6) and (7) define y and g as functions of μ, we can optimize W with respect to μ:

$$\mu \left[\frac{y}{D_1''} + \frac{1}{D_2''} \right] = \frac{\left[(\widehat{L} + D_1) - B \right]}{\left[1 + h' \left(\frac{v}{1-v} \right)^2 \frac{fR}{B} \right]} f \frac{\widehat{L}}{B},$$

where f is the density of F.

where K and M are increasing functions of μ .

Let us assume that the distributions F and H are uniform. Then

$$y = y(\mu, R) = \alpha - \beta\mu\widehat{L}(\mu) + \gamma R$$

for some positive coefficients $\{\alpha, \beta, \gamma\}$.

And so:

$$W(\mu, R) = \left[V - (\alpha - \beta\mu\widehat{L}(\mu) + \gamma R)(L - B) - g_0\right] - \left(\alpha - \beta\mu\widehat{L}(\mu) + \gamma R\right)K(\mu) - M(\mu)$$

Note that $\partial^2 W/\partial\mu\partial R < 0$, and so the optimal μ decreases with R: accounting manipulations are costlier when pork barrel is high, i.e., when re-election concerns are important; g therefore increases with R. As for y

$$\frac{dy}{dR} = \gamma - \beta\frac{d}{dR}\left[\mu\widehat{L}(\mu)\right] = \gamma + \beta\widehat{L}\left|\frac{d\mu}{dR}\right|\left[1 - \frac{D_1' - 1}{D_1''}\right].$$

The last term is positive whenever the following condition is satisfied:[16]

$$2D_1'' \geq D_1''',$$

which we will assume. Then
$$\frac{dy}{dR} > 0.$$

Finally,

$$\frac{dG}{dR} \equiv \frac{dg}{dR} + y\frac{d\widehat{L}}{dR} + \frac{dy}{dR}\widehat{L} > 0.$$

The cap increases with career concerns for essentially two reasons. First, it needs to accommodate the increase in pork ($dy/dR > 0$). Second, because this increase makes manipulations more costly, the budget constraint must be relaxed and so g and $\widehat{L}$ increase.

Proposition 5 *Suppose that F and H are uniform distributions and that $2D_1'' \geq D_1'''$. Then an increase in career concerns leads to an increase in the budget cap: Ceteris paribus, elected officials are granted larger budgets.*

The implication that ceteris paribus, accountable officials have large budgets seems

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[16]At $\widehat{L} = L$ this term is equal to 1. Thus it suffices that its derivative be negative whenever the term is equal to 0, which yields the following condition.

reasonable: Non-accountable officials have either relatively low budgets (antitrust, regulation) or budgets over which little discretion can be exercised (justice).

Proposition 5 has another interesting implication: authorized spending should increase the year prior to an election, as increased career concerns otherwise lead to an increase in costly off-balance-sheet liabilities and a reduction in the provision of public goods.

5 Unknown spending propensity

We have so far assumed that the official's overall spending propensity is common knowledge. Voters however may face uncertainty as to the desired spending level and not only its structure. When the electorate is uncertain about the level as well as the distribution of the official's spending priorities, an accountable official faces conflicting incentives: On the one hand, she wishes to seem congruent with as many individual interest groups as possible. On the other hand, she does not want the electorate to form the impression that she is a big spender.

We return to the simplified model of Section 3.1 and suppose that there are two types of officials: "Low spenders," in proportion ρ favor a fraction x_L of interest groups. "High spenders," in proportion $1 - \rho$, favor a fraction $x = x_H \in (x_L, 1/2)$ of interest groups. Thus the expected pork-barrel intensity of a non-accountable official is

$$y^{NA} = \bar{x} = (1 - p)x_H + px_L.$$

As in Section 3, the spending propensities are derived from underlying distributions over weights. Namely, let $F_H(\alpha)$ and $F_L(\alpha)$ denote the cumulative distribution functions over weights $\alpha \in [0, +\infty)$, and $E_H(.)$ and $E_L(.)$ the corresponding expectation operators. As earlier we normalize expected weights to be equal to 1:

$$E_H[\alpha] = E_L[\alpha] = 1.$$

We further assume that H types are high spenders:

$$F_H(\alpha) < F_L(\alpha) \text{ for all } \alpha \text{ such that } \frac{1}{2} \leq F_L(\alpha) < 1.$$

Letting $\alpha^* \equiv L/B$ (as before), we have

$$x_L = 1 - F_L(\alpha^*) < x_H = 1 - F_H(\alpha^*) < \frac{1}{2}.$$

Next, for $\theta \in \{L, H\}$ let

$$U_\theta(y) \equiv \left[\int_{\alpha_\theta(y)}^{+\infty} \alpha dF_\theta(\alpha) \right] B - yL$$

where

$$1 - F_\theta(\alpha_\theta(y)) \equiv y.$$

Note that utilities are concave in spending:

$$\frac{\partial^2}{\partial y^2} (U_\theta(y)) = \frac{\partial}{\partial y} (\alpha_\theta(y)B - L) < 0$$

and that the high spender has a higher marginal demand for spending "in the relevant range":

$$\frac{\partial U_H(y)}{\partial y} - \frac{\partial U_L(y)}{\partial y} = [\alpha_H(y) - \alpha_L(y)] B > 0 \quad \text{for all } \alpha \text{ such that } 1/2 \leq F_L(\alpha) < 1.$$

Finally, we assume that the rent from keeping office R is the same for both types (this assumption is much stronger than needed), and that this rent from office satisfies:

$$U_\theta(1/2) + R \geq U_\theta(x_\theta) \text{ for } \theta \in \{L, H\}; \tag{17}$$

that is, under symmetric information both types seek re-election by distributing more pork than they would wish to.

We consider two polar information structures: The date-1 policy $\{y.\}$ is transparent if the entire electorate learns it before the date-2 election. The date-1 policy is $\{y.\}$ is *non-transparent* or *opaque* if each minority i learns only the value of y_i before the date-2 election. Non-transparency of course requires that the pork-barrel policy's cost be delayed.[17]

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[17]Transparency and opaqueness are two polar cases of the accounting manipulation technology introduced in Section 4. The policy is necessarily opaque if putting expenses off-balance sheet is costless $\left(D_1(L - \widehat{L}) = L - \widehat{L} \right)$ and transparent if it is infinitely costly ($D_1' = +\infty$).

5.1 Opaque policy

To study *representative democracy*, let us first assume that the policy is *opaque*; that is, each interest group learns only whether it received a benefit ($y_i = 1$) or not ($y_i = 0$). Let y_H and y_L denote the equilibrium strategies (measure of interest groups receiving a benefit) of the high- and low-spenders. Let $\hat{x}_1$ and $\hat{x}_0$ and denote a voter's expectations of conditional, respectively, on being and not being a spending beneficiary. Similarly, let $\hat{z}_1$ and $\hat{z}_0$ denote the probabilities of receiving date-2 benefits if the official stays in office, conditional respectively on receiving and not receiving first-period benefits.

We look for a pure-strategy perfect bayesian equilibrium, and show that either the equilibrium is unique or there exists a second equilibrium as described in figure 1. Let

$$x^+ \equiv \frac{E(x^2)}{E(x)} > E(x) = \bar{x}$$

(where expectations are taken with respect to the prior belief ρ). x^+ is the posterior mean of x conditional on being a beneficiary when the official distributes benefits only to her favored groups ($y_H = x_H$, $y_L = x_L$) at date 1.

Similarly,

$$x^- \equiv \frac{E[(1-x)x]}{1-\bar{x}} \ (< \bar{x})$$

is the posterior mean of x conditional on being a non-beneficiary. It is not hard to show that

$$\frac{x^+ - \bar{x}}{1 - \bar{x}} = \frac{\bar{x} - x^-}{\bar{x}}.$$

Proposition 6 *When the officials spending propensity is unknown and the policy is opaque, being a beneficiary carries both good news (one will be favored by the incumbent tomorrow) and bad news (the probability that the incumbent is a high spender has increased). The high-spending equilibrium, in which the politician builds a majority of minorities by indicating her congruence with the latter ($y_H = y_L = 1/2$) always exists. It is unique unless pork-barrel is very costly to the electorate ($B/L \leq (x^+ - \bar{x})/(1 - \bar{x})$), in which case a second, "Groucho Marx" equilibrium also exists. In the latter equilibrium, spending is as under a non-accountable official, and the politician is re-elected by non-beneficiaries.*

Proof: There are two sets of interest groups, spending beneficiaries and non-beneficiaries.

There are therefore four possible voting patterns at the re-election stage:

18
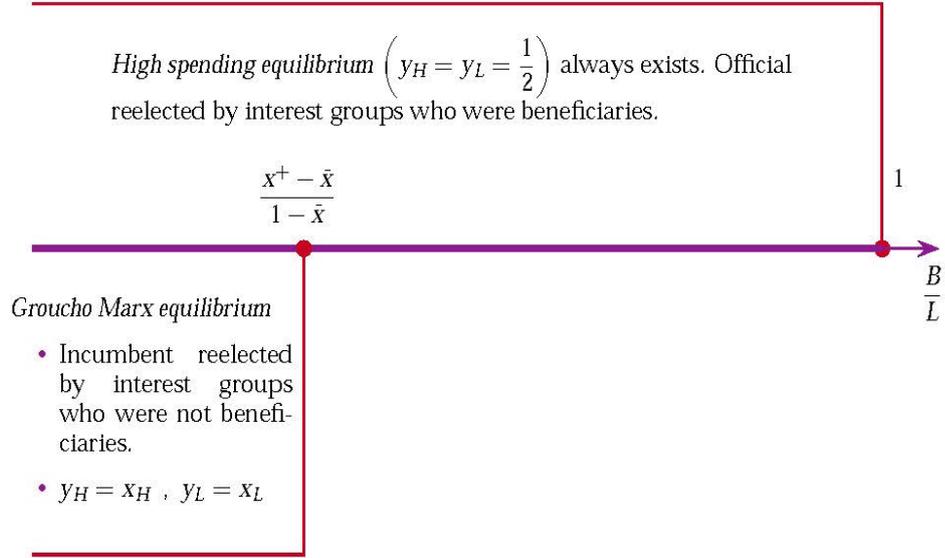
Figure 1: Pork-barrel in opaque representative democracy

a) *Everyone votes for the official.* This requires[18]

$$\hat{z}_1 B - \hat{x}_1 L \geq \bar{x}(B - L)$$

and

$$\hat{z}_0 B - \hat{x}_0 L \geq \bar{x}(B - L).$$

Because the official is re-elected regardless of her behavior, she selects her preferred action:

$$y_H = x_H \quad \text{and } y_L = x_L.$$

This implies
$$\hat{z}_1 = 1 \ , \ \hat{z}_0 = 0 \ , \ \hat{x}_1 = x^+ \ , \ \hat{x}_0 = x^-. \tag{18}$$

And so, the two inequalities imply that

$$B - x^+ L \geq \bar{x}(B - L)$$

and

$$-x^- L \geq \bar{x}(B - L).$$

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[18]Recall that we assume that when indifferent, the voter votes for the incumbent. We could alternatively assume that he votes for the challenger; this makes no difference.

Rearranging, we obtain

$$\frac{x^+ - \bar{x}}{1 - \bar{x}} \leq \frac{B}{L} \leq \frac{\bar{x} - x^-}{\bar{x}}. \tag{19}$$

But because the left- and right-hand sides of (19) are equal, this voting pattern can be an equilibrium configuration only in a knife-edge case.

b)   *Nobody votes for the official.* In this configuration, beneficiaries are dissatisfied with the official because they infer that she is likely to be a high spender; non-beneficiaries are dissatisfied because they are not favored. Clearly, the official selects

$$y_H = x_H \text{ and } y_L = x_L.$$

And so (18) holds. Thus for equilibrium we need:

$$B - x^+ L < \bar{x}(B - L) - x^- L < \bar{x}(B - L).$$

Rearranging, we obtain

$$\frac{\bar{x} - x^-}{\bar{x}} < \frac{B}{L} < \frac{x^+ - \bar{x}}{1 - \bar{x}},$$

which, since the left- and right-hand sides are equal, is impossible.

c)   *Only beneficiaries vote for the official.* This voting pattern corresponds to

$$\hat{z}B - \hat{x}_1 L \geq \bar{x}(B - L)$$

and

$$\hat{z}B - \hat{x}_0 L < \bar{x}(B - L).$$

And thus

$$y_H = y_L = 1/2 \ , \ \hat{z}_1 = 2\bar{x} \ , \ \hat{z}_0 = 0 \ , \ \hat{x}_1 = \hat{x}_0 = \bar{x}.$$

The voter learns nothing about the official's aggregate spending preferences, and the two inequalities hold for all values of the parameters.

d)   *Only non-beneficiaries vote for official (Groucho Marx equilibrium).* In this voting pattern, beneficiaries do not vote for an official who favored them as this is a bad signal about her aggregate spending propensity,[19] but non-beneficiaries do. The official then

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[19]This is a reminiscent of Groucho Marx's famous remark: "I would never belong to a club that would admit me as a member."

gets re-elected by choosing her preferred action, and equilibrium obtains if and only if

$$B - x^+ L < \bar{x}(B - L)$$

and

$$-x^- L \geq \bar{x}(B - L);$$

that is, if and only if

$$\frac{B}{L} < \frac{x^+ - \bar{x}}{1 - \bar{x}} \equiv \frac{\bar{x} - x^-}{\bar{x}}.$$

5.2 Transparency

Consider now the polar case in which interest groups observe not only what they receive but also the total spending y by the politician. The same countervailing incentives under an opaque system are still in play. The official would like to convince individual interest groups that she is willing to spend for them, while at the same time appearing to be a low spender. But we would expect the latter incentive to be stronger under transparency and so transparency to induce more restraint.

The signaling game under transparency has many equilibria, and we will content ourselves with a study of equilibria satisfying the "intuitive criterion" (Cho and Kreps 1987). In case of multiplicity of such equilibria, we will use Pareto dominance to single out a unique one. Let $p(y)$ denote the probability of reelection when aggregate spending is y.

Assume that

$$U_H(x_L) + R \geq U_H(x_H) \tag{20}$$

(electoral concern is strong enough to induce a high spender to choose the low spender's preferred spending level if that will get her re-elected) and

$$U_\theta(0) + R < U_\theta(x_\theta) \tag{21}$$

(electoral concern is not strong enough to induce an official to forego current pork-barrel spending altogether).

Finally, let $\quad b_1 \equiv \rho \left[\dfrac{x_H - x_L}{(1 + \rho)x_H - \rho x_L} \right]$ and $b_2 \equiv (1 - \rho) \left[\dfrac{x_H - x_L}{\rho x_L + (1 - \rho)x_H} \right].$

Proposition 7 *When the official's spending propensity is unknown and the policy is transparent, the politician faces a dilemma between indicating congruence with individual*

interest groups and signaling a low overall spending propensity. The equilibrium satisfying the intuitive criterion and Pareto dominance is unique and exhibits even more restraint than under a non-accountable official when pork is socially very costly: $y_H = x_H$ and $y_L = y_L^* < x_L$ if $B/L \leq \min\{b_1, b_2\}$. If $b_1 < b_2$ and $b_1 \leq B/L \leq b_2$, the equilibrium is separating with $y_H = 1/2$ and $y_L = x_L$ or $y_L^{**} < x_L$. Finally, if pork is not very costly $(B/L \geq \max\{b_1, b_2\})$, the equilibrium is the same, higher-spending equilibrium as under known spending propensity.

We look in turn for separating equilibria in which the high type (a) is not re-elected and (b) is re-elected. We then look for a pooling equilibrium.

(a) *Separating equilibrium in which high type is not re-elected.* In this case, the high type may as well choose her static bliss point:

$$y_H = x_H.$$

Furthermore, from (17), it must be the case that an official known to be a high spender not be able to assemble a majority of beneficiaries to re-elect her:

$$(2x_H)B - x_H L \leq \bar{x}(B - L) \iff b_1 \equiv \rho \left[\frac{x_H - x_L}{(1+\rho)x_H - \rho x_L} \right] \geq \frac{B}{L} \tag{22}$$

Suppose that an official known to be a low spender is re-elected by non-beneficiaries:

$$-x_L L \geq \bar{x}(B - L) \iff b_2 \equiv (1 - \rho) \left[\frac{x_H - x_L}{\rho x_L + (1 - \rho)x_H} \right] \geq \frac{B}{L} \tag{23}$$

In equilibrium, we cannot have $y_L = x_L$, otherwise, from (20) the high spender would want to mimic the low spender. The separating equilibrium satisfying the intuitive criterion thus involves

$$y_L = y_L^* < xL,$$

with

$$U_H(x_H) = U_H(y_L^*) + R. \tag{24}$$

To see this, note that, from (20) and (21), there exists y_L^* satisfying (24). Furthermore, the sorting condition implies that

$$U_L(x_L) < U_L(y_L^*) + R.$$

Hence, the configuration $(y_L, y_H) = (y_L^*, x_H)$ constitutes a separating equilibrium if $B/L \leq \min\{b_1, b_2\}$, and because y_L^* is the smallest deviation from x_L that satisfies the high type's incentive constraint, the equilibrium satisfies the intuitive criterion. In this case, transparency induces restraint.[20]

If condition (23) is violated, a low-spender is not re-elected and gets at most $U_L(x_L)$ unless $y_L \geq 1/2$. As we will see, though, a Pareto-dominating pooling equilibrium then exists.

(b)   *Separating equilibrium in which the high type is re-elected.* In this configuration $y_H = 1/2$, and (22) must be violated while (23) is satisfied. In this case,

either $y_L = x_L$ and $U_H(1/2) \geq U_H(x_L)$,

or $y_L = y_L^{**}$ and $U_H(1/2) = U_H(y_L^{**})$.

(c)   Finally, a pooling equilibrium with re-election requires building up a majority, so

$$y_L = y_H = 1/2$$

and yields the high-spending outcome of Section 5.1. For this to be an equilibrium, it must be the case that setting $y_L = x_L$ (which under the Cho-Kreps refinement is interpreted as coming from the low type) does not get the low-type re-elected, i.e., (23) is violated.

Remark: If we rule out the Groucho Marx equilibrium in the opaque case, transparency is always (at least weakly) conducive to restraint and therefore increases social welfare. However, the analysis of Section 4 would still apply if we added socially desirable public spending and/ or time shifting ability. Transparency would then induce the official to cut down on desirable public spending and to increase the cost of public spending through off-balance-sheet liabilities.

6   Summary and discussion

This paper offers a complementary approach to the well-established and useful "grabbing" theories of budget deficit. Our "pandering" approach captures the idea that politicians like to signal that they stand for individual interest groups' interest, while being fiscal conservatives overall. Besides adding realism, pandering also allows us to study issues,

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[20]More generally, in any separating equilibrium there is less pork-barrel than under a non-accountable official.

such as transparency and off-balance sheet activities, that are intrinsically linked to informational asymmetries between rulers and voters.

In the model, voters who receive benefits from political incumbents are more likely to re-elect these incumbents because they truly learn something about the incumbents' stance toward them. This gives the politicians in office an incentive to distribute pork to constituencies, and generates excessive public spending.

A budget or indebtedness cap, such as those prevailing in the European Union or many American states, curbs pork, but also reduces the provision of public goods, and furthermore, encourages politicians to shift expenditures off-balance-sheet, at the cost of increased total spending. The optimal cap should be looser for an accountable official, especially in years just prior to elections.

The desire to appear fiscally conservative provides a countervailing incentive for politicians to limit pork. Even if expenses can be shifted off-the-balance-sheet and so total expenses are unobserved, receiving pork suggests that the politician is a high spender, which in extreme low-benefit-from-pork cases may prompt beneficiaries to vote against the incumbent ("Groucho Marx" equilibrium). Probably more to the point, a greater transparency of public expenditure reduces pork.

In our view, an important open research area in public finance, macroeconomics and industrial organization is that of public accounting. Like in the private sector, and perhaps more so because of the absence of stock market values, accounting is key to accountability. While a substantial policy literature has studied the European Stability Pact and various other fiscal rules, little research has been directed toward a theory of public accounting.[21]

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[21]Maskin-Tirole (2007) touches on the public accounting treatment in a very specific context, that of public procurement, and argues that cost-plus contracts are vulnerable to a new form of adverse selection, as politicians may strategically award such contracts for "white elephant" projects. It further shows how private financing of high-powered incentives schemes may help "securitize" (make more transparent) public debt.

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