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Precommitted Government Spending and Partisan Politics

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Abstract

This paper analyzes government commitments to ongoing spending programs that require future outlays. Spending commitments are important for understanding partisan politics because they constrain future governments. In a model with one government good, a “stubborn liberal” policy maker can use precommitted spending to prevent a later conservative government from imposing decisive spending cuts. In a model where parties differ about spending priorities, reelection uncertainty creates a permanent bias towards higher government spending and higher taxes.

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1. Introduction

A substantial literature in political economy has examined how partisan governments can influence the fiscal choices of their successors by issuing government debt. Persson and Svennson (1989) show that a "stubborn conservative" policy maker might run deficits to reduce the ability of a future "liberal" government to spend.[1] In a model with two categories of government spending, Alesina and Tabellini (1990) show that polarization also produces a bias towards government debt, as each government tries to reduce the resources available to future governments that may have different spending priorities.

This paper considers government commitments to ongoing spending programs that require future outlays. Such commitments are pervasive in practice. A current example is the debate about health insurance in the United States, which is centrally about setting up an administrative structure that will influence future spending. Both the proponents and the opposition agree that such a program will be difficult to downsize or abolish once it is established.

We contend that spending constraints are important for understanding partisan politics because they may provide a counter-weight to the stubborn conservative's ability to constrain spending through debt. In a model similar to Persson and Svennson (1989), we show that a "stubborn liberal" policy maker can use precommitted spending to prevent a later conservative government from imposing decisive spending cuts. Such commitments may help explain why a welfare state is difficult to scale down. In a model where parties differ about spending priorities (similar to Alesina and Tabellini, 1990), we show that re-election uncertainty may create a permanent bias towards higher government spending and higher taxes.

Because some level of forward commitment can be rationalized by efficiency arguments, the challenge here is to show that partisan politics will under some conditions lead to excessive commitments. That is, once the institution of forward commitment has been established, it is prone to be used in ways that may actually reduce the cost-effectiveness of the production of public goods and services.

Our primary model is an endowment economy with a private good and a publicly provided good. There are two types of governments with different preferences over the two goods, as in Persson and Svensson (1989). We will use the label public good for the publicly provided good, even though it may not be a public good in the strict public finance sense. The public good is produced with private sector inputs that are contracted to be employed contemporaneously or one period ahead. Production costs are minimized if both types of contracts are used. We show that there is a basic tension between cost-minimization and partisan politics. On one hand, efficiency considerations provide incentives toward moderation, to ensure that a future government of the other type does not use a grossly inefficient mix of inputs.[2] On the other hand, higher or lower levels of inputs can be used to nudge the next government toward providing more or less of the public good, because

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[1] We follow the US usage of the label "liberal" to refer to governments with a preference for high public spending.

[2] When reelection is uncertain, a government that, say, puts a high value on public goods has an incentive to order fewer precommitted inputs than when reelection is certain, because the inputs would be inefficiently used in the event a low-spending government comes to power. A low-spending government has a corresponding incentive to undertake a higher level of forward spending than under certain reelection, because a future high-spending government would otherwise buy too much on the spot market. An intermediate level of forward commitment is most efficient.

precommitted purchases change the marginal productivity of the contemporaneously purchased input. Outcomes then depend on the strength of preferences and the degree of substitutability between the inputs.

Most interesting, and perhaps practically most relevant, is the case of highly substitutable inputs, so that the efficiency loss of mismatched inputs is small—it does not matter much when goods are ordered. Then a high-spending government may find it optimal to precommit to spending so much that a subsequent government with low preferences for government spending is driven to (or almost to) a corner solution. In practical terms, a high spending government puts in place a big bureaucracy and/or long-term procurement contracts that force future governments to maintain a "big government", like it or not. This effect is asymmetric. Low precommitted orders do not bind a later high-spending government, because the high-spending government can always buy on the spot market. Hence, precommitment generates a bias towards high-spending.

All public goods inputs are financed by lump-sum taxes. Hence, Ricardian equivalence applies so that government debt is neutral and can be ignored. This is important, because precommitted government spending can be interpreted as a government liability. With lump-sum taxes, the payment date and the liability characteristic of precommitted spending is irrelevant (Bohn, 1992), showing that our "real" precommitment mechanism works in a very different way than government debt.

Our first set of results is based on the assumption of an endowment economy. When we incorporate capital investment into the model, the analysis is complicated significantly because of interdependence between savings and government spending. We use a two-period model with capital to show that savings are likely to strengthen the liberal government's incentives to precommit spending. Precommitted spending increases capital investment and that investment in turn increases future actual spending by reducing the marginal utility of consumption.

We also examine the situation where the precommitment is of transfer payments rather than a government good. In this case, we find that the results from the main model apply analogously. There is an asymmetry and, when precommitment is available, the government with the higher preference for transfer payments can compel the following party to spend more than it otherwise would.

Finally, we consider an Alesina and Tabellini (1990) type model with two categories of public goods and governments that disagree about spending priorities, as in Alesina and Tabellini (1990). This model also produces a bias towards high spending when current and precommitted purchases are close substitutes, because each government will buy its preferred good on the spot market and must honor forward commitments for the other good incurred by previous governments.

Forward spending commitments come in a variety of forms. Most obviously, most government budgeting systems distinguish between current-year appropriations (the actual spending) and authorizations that empower the executive branch to incur spending commitments for future years (in the US: "Budget Authority"). Such authorizations are rationalized easily because it is often more cost-efficient to procure goods and services with advance notice than to use spot markets. A well-known example is military procurement contracts for major weapons programs, which would be virtually impossible without long-term planning. Less explicitly, most government programs require a physical and human infrastructure (office buildings and permanent staff) that cannot be reduced without incurring significant cost.

In the US and many other countries, “mandatory” transfer programs such as social security and unemployment insurance are another large category of government outlays that is removed from the standard annual appropriations process. We will show that entitlements can also be interpreted as precommitted government spending, distinct from debt, in the context of our model.

This paper is organized as follows: Section 2 examines the basic model with a single public good and two types of government with different preferences for the public good. Section 3 explores the implications of capital investment. Section 4 shows how to interpret transfer programs as precommitted spending items. Section 5 examines a model with two categories of public goods and governments that disagree about spending priorities. Section 6 concludes.

2. Partisan disagreement about the size of government

This section considers a model with a single public good and a private good. Two types of government differ in their relative preferences over public versus private goods.

2.1 The basic model

We set up the basic model with a one-period precommitment and no government debt. Government of type i ($i = R, L$) maximizes

$$U^i = \sum_{t=1}^{\infty} \beta^t E\left[u(c_t) + \alpha^i v(g_t)\right] \quad (1)$$

where c_t is the private good and g_t is a publicly provided good (public, for short) good. The public good is produced with two inputs, one of which must be chosen one period in advance. For concreteness, we will label the predetermined input B_t, for bureaucracy, and the variable input O_t , for operating cost. We assume

$$g_t = G(O_t, B_t) \quad (2)$$

is increasing in both arguments, concave, and has constant returns to scale. (Additional regularity conditions are imposed below.) The input $O_t \geq 0$ is chosen in period *t*, and $B_t \geq 0$ in period *t*-1.[3] The model may be interpreted literally as a model of government administration. Then *B* represents the expenses for personnel, office space, and other items that are fixed in the short run, while *O* captures variable cost, such as phones, photocopying, and perhaps temporary staff. The model may also be interpreted more broadly as applying whenever precommitted inputs are involved in the provision of government goods or services. For example, the government may have a choice between alternative procurement contracts, or between permanent staff and temporary workers. It may place "rush" orders for quick delivery (type *O* expenses) or place contracts that allow sufficient lead time for low cost production (type *B* expenses). The model also applies to transfer programs with O as transfer and B representing administrative setup cost (see section 4 for details).

A key assumption is that the two possible types of government differ about the valuation of the resulting public good. Specifically, the type *L* government is assumed to have a

[3] In practice, commitments may cover multiple periods and there could be several overlapping commitments, which would add persistence to government spending.

relatively strong preference for public goods, $\alpha^L > \alpha^R > 0$. Also, elections occur every period, so a period should be interpreted as the time between successive elections.

We assume that all spending is financed by contemporaneous lump-sum taxes levied on a constant endowment stream, Y.[4] The resource constraint is:

$$c_t = Y - B_t - O_t \tag{3}$$

Each period, t, the government in power chooses B_{t+1} and O_t, taking as given the level of precommitted purchases, B_t. The optimal decision about B_{t+1} clearly depends on how future government choices vary with B_{t+1}. We assume perfect foresight (rational expectations) about the policy function $O^i_{t+1}(B_{t+1})$ of the next government. Election outcomes follow a Markov process, where π^i is the probability of re-election of type i, and expectations are taken with respect to election results as there is no other uncertainty. Denote $V^{ij}(B_t)$ as the value function of a government of type i if a government of type j is in power. Then, optimal government decisions must satisfy the following Bellman equation:

$$V^{ii}(B_t) = \max_{O_t, B_{t+1}} \left\{ u(Y - O_t - B_t) + \alpha^i v\Big(G(O_t, B_t)\Big) \right\} + \beta \left\{ \pi^i V^{ii}(B_{t+1}) + (1 - \pi^i) V^{ij}(B_{t+1}) \right\},$$

for $i = L, R$ and $j \neq i$, where:

$$V^{ij}(B_{t+1}) = \left\{ u(Y - O^j_{t+1} - B_{t+1}) + \alpha^i v\Big(G(O^j_{t+1}, B_{t+1})\Big) \right\} + \beta \left\{ \pi^j V^{ij}(B^j_{t+2}) + (1 - \pi^j) V^{ii}(B^j_{t+2}) \right\}.$$

This problem simplifies considerably because there are no intertemporal linkages except for the precommitted purchase. For this reason, the solution for O_t only depends on the current period utility:

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[4] Financing decisions are irrelevant in this context. If the government partially debt-financed its purchases, consumption opportunities would remain unchanged, assuming lump-sum taxes and no capital investment. A significant assumption is that B_t has a real resource cost in period t and does not represent a use of period t - 1 endowments. This timing issue is examined in the next section.

$$O_t = O^i(B_t) \equiv \arg\max_{O_t} \{u(Y - B_t - O_t) + \alpha^i v(G(O_t, B_t))\}.$$

It is characterized by the first order condition

$$\alpha^i v'(G(O_t, B_t))G_O(O_t, B_t) - u(Y - B_t - O_t) + \lambda_t = 0,$$

where λ_t is the shadow value of the non-negativity condition $O_t \geq 0$; that is, $\lambda_t \geq 0$, $\lambda_t O_t = 0$. The second-order condition $\alpha^i v' G_{OO} + \alpha^i v'' G_O{}^2 + u'' < 0$ is satisfied, provided $v' > 0$, $G_O \geq 0$, $G_{OO} \leq 0$, $v'' \leq 0$, $u'' \leq 0$, with at least one of the weak inequalities being strict.[5] This ensures a unique solution for optimal O_t. To simplify, define $f(O,B) = v(G(O,B))$ as the measure of utility over productive inputs. Then the first order condition can be written more compactly as

$$\alpha^i f_O^i - u' + \lambda_t = 0 \tag{4}$$

where the superscript in f_O^i highlights that O_t is chosen by government *i*; the second order condition is $\alpha^i f_{OO}^i - u'' < 0$.[6]

The possibility of a corner solution is important in this context, because pushing the next government into a corner is a possible way for a government to constrain its successor. A corner solution with $O_t^i(B_t) = 0$ obtains if:

$$h^i(B_t) = \alpha^i v'(G(0, B_t))G_O(0, B_t) - u(Y - B_t) \leq 0. \tag{5a}$$

Because $h^i(B_t)$ is increasing in α^i and $\alpha^L > \alpha^R > 0$, the *B*-values for which the type-*L* government is constrained is a subset of the values for which *R* is constrained.

[5] For the discussion, we treat all these inequalities as strict, though the examples will include limiting cases with some equalities. Function arguments are dropped when no ambiguity results.

More generally, the marginal benefit of additional current spending varies with precommitted spending according to:

$$\frac{d(\alpha^i f_O^i - u')}{dB} = \alpha^i f_{OB}^i - u'' \tag{5b}$$

where $f_{OB}^i(O,B) = v'(G(O,B))G_{OB}(O,B) + v''(G(O,B))G_O(O,B)G_B(O,B)$.

In some application, both inputs may be essential for producing public services so that *B* and *O* are strongly complementary ($G_{BO} >> 0$) as in the case of personnel and phones, so f_{BO} is positive even though $v''<0$. Then $O_t^i(B_t)$ may increase in B_t. In other cases, *B* and *O* may be close substitutes, so G_{BO} is close to zero. Then f_{BO} is strictly negative, and interior solutions for $O_t^i(B_t)$ necessarily depend negatively on B_t. However, production with *O* and *B* may have different costs. In military procurement, for example, pre-planned spending may be more efficient for some expenses (say, as it's difficult to produce an aircraft carrier on the spot), while spot contracts are more efficient in other cases, say, when flexibility is valued. Because of declining marginal utilities ($v'' < 0$ and $u'' < 0$), a negative dependence of *O* on *B* should be considered the intuitively plausible "normal" case even when the two inputs are (moderate) complements. For the general discussion, assume therefore that $\alpha^i f_{OB} + u'' < 0$, for both $i = L$ and $i = R$, unless otherwise noted. If $f_{BO}<0$, a corner solution $O_t^i(B_t) = 0$ applies if and only if $B_t \geq \overline{B}^i$ exceeds a critical value, $\overline{B}^i$, where $\overline{B}^R < \overline{B}^L$.

For interior solutions, we can explicitly compute

[6] Note that $f_{OO}^i(O,B) = v'(G(O,B))G_{OO}(O,B) + v''(G(O,B))G_O(O,B)^2 < 0$ is strictly negative under the assumptions above.

$$O_B^i = \frac{dO^i(B_t)}{dB_t} = -\frac{\alpha^i f_{OB}^i(O_t, B_t) + u''(c_t)}{\alpha^i f_{OO}^i(O_t, B_t) + u''(c_t)}. \tag{6}$$

Because $f_{OB}^i > f_{OO}^i$, we have $O_B^i > -1$, so $\frac{d(O_t + B_t)}{dB_t} = 1 + O_B^i > 0$. This means that even if a government reduces spot-market spending in response to a high B_t, so $O_B^i < 0$, higher precommitted spending always implies higher total spending and hence less private consumption.

The critical question is then how B_{t+1} is determined. The first order condition for B_{t+1},

$$\beta \left\{ \pi \frac{d\,V^{ii}(B_{t+1})}{d\,B_{t+1}} + (1-\pi)\frac{d\,V^{ij}(B_{t+1})}{d\,B_{t+1}} \right\} = 0,$$

does not involve B_t. Hence, B_{t+1} does not depend on B_t. Hence the overall solution to the problem of determining B is a pair of real numbers (B^L, B^R) denoting the optimal choices of the L and R governments, respectively. Using the optimal policy functions $O^j(B)$ to evaluate $V^{ii}(B_{t+1})$ and $V^{ij}(B_{t+1})$, we find that B_{t+1} is characterized by the first order condition

$$\pi\left(\alpha^i f_B^i - u_i'\right) + (1-\pi)\left(\alpha^i\left(f_B^j + f_O^j O_B^j\right) - u_i'(1 + O_B^j)\right) = 0, \tag{7}$$

where $i = R, L$, $j \neq i$, provided $O_{t+1}^j(B_{t+1})$ is differentiable at B_{t+1}. Here, the envelope theorem has been invoked to delete terms involving O_B^i; but the envelope theorem does not apply to the other government's choice, O_B^i. Since government $j \neq i$ sets O_{t+1} differently than government *i* would have wanted, government *i* may have an incentive to manipulate B_{t+1} to affect the choices of a successor government of the other type.

To obtain benchmark values for type *R* and *L*'s choices of *B*, note that strategic issues are absent if the probability of re-election is $\pi^i = 1$. Invoking (4), the first order condition for *B* reduces to $G_O = G_B$, which also implies $f_O = f_B$. So, the optimal solution for $\pi^i = 1$ is entirely driven by technical efficiency considerations. Efficiency requires that the marginal products of current and precommitted spending are equalized. Given constant returns to scale, this condition further implies that the efficient ratio of inputs $B/O = \phi$ is a constant that does not depend on government type. For reference below, let B^{*R} and B^{*L} be the optimal choices of B without re-election uncertainty;[7] note that $B^{*R} < B^{*L}$.

If re-election is uncertain, $\pi^i < 1$, additional considerations apply. Most interesting is the optimization problem of a type $i = L$ government in period t facing the possibility of type $j = R$ government taking power in period $t + 1$. Then two cases arise. First the government chooses a B value above $\bar{B}^R$ (but below $\bar{B}^L$)[8] in which case $O^R(B_{t+1}) = 0$ and $O^R_B = 0$; then B_{t+1} must satisfy the first order condition for a corner solution,

$$\alpha^L \pi^L \left(f^L_B - f^L_O \right) + (1 - \pi^L)\Big(\alpha^L v'(G(0,B)) G_B(0,B) - u'(Y - B) \Big) = 0 . \tag{8a}$$

Second, the type-L government may choose a B value below the critical value $\bar{B}^R$ at which R is not at the corner solution. In this case B_{t+1} must satisfy the first order condition for interior solutions,

$$\alpha^L \pi^L \left(f^L_B - f^L_O \right) + \alpha^L (1 - \pi^L) \left(f^R_B - f^R_O \right) + (1 - \pi^L)(\alpha^L - \alpha^R) f^R_O (1 + O^R_B) = 0 , \tag{8b}$$

where (4) has been used to eliminate u' from (7).

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[7] Notation for optimal choices is indicated by a *, corner solution values are indicated by a bar over the symbol

[8] A value $B_{t+1} > \bar{B}^L$ will never be chosen because then $O_{t+1} = 0$ with probability one, which would be blatantly inefficient and suboptimal. To be more precise, for $B_{t+1} > \dot{B}^L$, the first order condition for B is $a^L v'(G(0,B) G_B(0,B) - u'(Y - B) = 0$, since $O = 0$ would then apply with probability one. But, since corner solutions for O satisfy $a^L v'(G(0,B) G_\gamma(0,B) - u'(Y - B) < 0$ and since $G_O(0,B) > G_B(0,B)$, we have $a^L v'(G(0,B) G_B(0,B) - u'(Y - B) < 0$, showing that the first order condition for B cannot be satisfied with $B_{t+1} > \dot{B}^L$.

In case of a corner solution, it is plausible that B^L_{t+1} exceeds the otherwise optimal B^{*L}. That is, the government may pick an inefficiently high level of pre-determined government spending for strategic reasons. A sufficient condition for $B_{t+1} > B^{*L}$ is $\alpha^L f_{OB} + u'' < 0$ at B^{*L}.[9] Since $u'' < 0$ and $f^L_{OB} = v'G_{OB} + v''G_O G_B$ is negative unless $G_{OB} >> 0$, the sufficient condition is satisfied unless *O* and *B* are strongly complementary in production.

In case of an interior solution, the conclusions are more conditional. The ability to raise total spending in period *t* + 1 by raising B_{t+1} provides a clear strategic incentive to raise B^L above B^{*L}; this is captured by the positive term $(1 - \pi^L)(\alpha^L - \alpha^R) f^R_O (1 + O^R_B)$ in (8b).[10] On the other hand, the fact that type *R* will pick a low *O* value implies that the $f^R_B - f^R_O$ term in (8b) is likely negative. Intuitively, choosing a high *B* value induces *R* to produce the public good in an inefficient way. Knowing this, type *L* has an incentive to set a lower value. Following Persson and Svensson's language, the issue is one of relative stubbornness versus accommodation. If *L* is a "stubborn liberal" that has preferences $\alpha^L >> \alpha^R$, and *O* and *B* are close substitutes so that the cost of inefficient input choices is relatively small ($f^R_B - f^R_O$ is small) and an increase in *B* does not trigger a sharp reduction in O^R (O^R_B is small, so that *R* is accommodating, $1 + O^R_B >> 0$), then the strategic argument will likely dominate so that $B_{t+1} > B^{*L}$. But if *R* is a "stubborn conservative" that sets O^R_B close to -1 and *O* and *B* are not close substitutes, the strategic factor is likely to be small relative to the efficiency

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[9] This is because at $B = B^{*L}$, $f^L_B = f^L_O$ and $\alpha^i f^i_B - u' = 0$. The condition $\alpha^L f^L_{OB} - u''_L < 0$ ensures that $\alpha^L f^L_B - u'_L$ is decreasing in *O*, which implies that $a^L v'(G(0, B)G_B(0, B) - u'(Y - B) > 0$, so the left hand side of (8b) is strictly positive at $B = B^{*L}$. Combined with the second order condition for *B*, this implies that a solution of (8b) must satisfy $B > B^{*L}$.

[10] The second order condition implies that the derivative of (8a) with respect to *B* is negative. Also, (8a) is negative at $B = \hat{B}^L$ since $f^i_B < f^i_O$ at $O = 0$. Hence, if (8a) is positive at some *B* value (here $\hat{B}^L$), continuity implies that there is a solution above.

considerations, resulting in "accommodating" behavior of L, which means $B_{t+1} < B^{*L}$. The examples in the following sections show that both cases can occur.

To generalize and clarify, there are two principal issues. First, reelection uncertainty creates strategic possibilities. Since (8b) applies analogously to *R*, one finds

$$E_t[f_{B,t+1} - f_{Ot+1}] = -(1-\pi^i) f_O^j 1 + \frac{dO^j}{dB})(1 - \frac{\alpha^j}{\alpha^i})$$

where *E* is the expectation with respect over election outcomes. Whenever π^i<1 and $\frac{dO^j}{dB} > -1$, $E_t[f_{B,t+1} - f_{O,t+1}]$ is non-zero and has the same sign as $\alpha^i - \alpha^j$. Thus there is a bias away from production efficiency ($f_O = f_B$ for $\pi^i = 1$) towards more (or less) precommitted inputs by the government with higher (or lower) preference for public spending.

Second, there is question (examined below) under what conditions precommitted spending is *strategic*, *accommodating*, or unaffected by election uncertainty. Recall that $B^{*R} < B^{*L}$ are the preferred values without election uncertainty. Choices $B^i \in (B^{*R}, B^{*L})$ with election uncertainty are interpreted as accommodating because they are closer to the other party's preferred value. Choices $B^R < B^{*R}$ and $B^L > B^{*L}$ are strategic, because the only motive for moving away from the other party's preferred choice is to influence the successor. Intuitively, the cost of inefficient production (in case of election loss) creates incentives for accommodation, whereas the desire to control the level of spending creates incentives for extreme behavior. In special cases, these incentives may offset, so $B^i = B^{*i}$ which means election uncertainty would have no effect on *B*.

2.2. A Graphical Illustration

Assume that π can take only two values, zero and one. Figure 1 displays each party's strategy. Bureaucracy is on the horizontal axis, while operating expenses are on the vertical axis. Given a production function and relative prices, the ray from the origin represents the efficient expansion path. Each party has a bliss point on this ray. The bliss point is the amount of bureaucracy, B^{*i}, and operating expenses, O^{*i}, that the party would chose if it was certain of reelection. Since party *L* has greater preferences for government, its bliss point is up and to the right of party *R*'s. Indifference curves are concentric and elliptical around the bliss points, with decreasing utility as they move farther away from the bliss points.

Each party has a reaction function, the amount operating expenses it would provide as a function of bureaucracy in place when it took office, $O^i(B)$. This function must go through the party's bliss point. The reaction functions are shown increasing with constant slope in figure 1, but this is not necessary. We have previously shown that they have a slope greater than negative one, and there is no reason for them to even be monotonic.

For ease of discussion, consider Party *R*'s decision process. The analysis for Party *L* is analogous. If *R* is in power at time *t* with certain reelection prospects, it provides B^{*R} of bureaucracy for the following period. It will achieve its bliss point at period t+1. If Party *R* has no reelection prospects, then it optimizes by a familiar tangency condition, the tangency between *L's* reaction function and *R*'s indifference curve, B^R in figure 1.

We have shown accommodating behavior by *R*, extreme behavior by *L*, and unique solutions in figure 1. In fact, either party may be accommodating or extreme, depending on the production and utility functions. Furthermore, even with "well behaved" functional forms, multiple solutions may exist. In this case, changes in the slope, or even the sign of the slope, of the reaction function results in multiple tangencies.

2.3. Simple Examples

This section provides illustrative examples. Examples 1-3 are scenarios with linear or piecewise linear production. Examples 4-5 are special cases where *B* does not depend on election uncertainty.

<u>Example 1: Linear Production</u>

A simple example in which *L* pushes *R* into a corner is the case of perfect substitutes, $G(O, B) = O + B$. When the government with the higher preferences, type *L*, is in power, it can always set the amount of government in the following period to its optimal value, g^{*L}, by setting $B_{t+1} = g^{*L}$, without regard to the particulars of the utility function. Type *L*, if it follows a type *R* will just increase current spending to g^{*L}. Therefore Type *R* cannot constrain type *L*. A type *R* can only reduce *g* below g^{*L} by holding office for at least two consecutive periods.

This example illustrates the role of corner solutions. Since there is no "real" technological interaction between *O* and *B* (as *O* and *B* enter additively in both preferences and the budget constraint), *B* does not affect the next government's choices unless the later government is at a corner solution.

Example 2: Leontief Production

Consider the case of perfect complements, $G = \min\{\frac{1}{a}O, \frac{1}{1-a}B\}$ where $0 < a < 1$. In this example R can ensure the preferred level of spending $g_{t+1} = g^{*R}$ without regard to L's preferences. Namely, if R sets $B_{t+1} = B^{*R} = (1-a)g^{*R}$, a subsequent L government cannot set a higher level of g and must set $O^L(B^{*R}) = ag^{*R}$. Conversely, suppose the Type L government is in power with electoral uncertainty and were to set $B_{t+1} > (1-a)g^{*R}$. Because high B reduces the resources $Y - B_{t+1}$ available to a subsequent Type R government, a stubborn type R government may pick $O_{t+1} < O^{*R}$ and $g < g^{*R}$, which would reduced L's expected utility. Hence, party L cannot gain by picking a B-value above B^{*L} and will choose $B^L \leq B^{*L}$. Overall, one finds that R never accommodates L while L accommodates R. This result relies heavily on the Leontief technology, as the following slight modification demonstrates.

Example 3: Capacity choice

Consider the same Leontief production function as in Example 2, but suppose there is an alternative, higher-cost technology that can produce g and only uses O as input. Specifically, suppose overall production is

$$G = \begin{cases} \min\{O/a, B/(1-a)\} & \text{, if } O/a \leq B/(1-a)) \\ B + ba[O/a - B/(1-a)] & \text{otherwise} \end{cases}$$, where $0<a<1$ and $b>1$.

One may interpret B as a capacity choice (the size of the bureaucracy). Current spending, O, complements the predetermined B until the capacity is fully used. Up to $O \leq aB/(1-a))$, the variable cost of producing g is only $a<1$, as compared to a total unit cost of 1. For

$O > aB/(1-a))$, capacity must be put in place in short notice, which is assume to have a higher cost $b > 1$. If *L* follows *R*, the *L* government can always produce as much *G* as it desires at unit cost *b*. As *b* approaches 1, *L* provides spending close to g^{*L} regardless of B^R. Hence, the *R* government cannot stop a stubborn *L* government from spending.

In practice almost any good or service can be produced without much advance notice (if one is willing to pay the price), suggesting that this example is more plausible than Example 2.

In each of these first three examples, the marginal product of *O* is constant for all interior choices of *B*. This is limiting because it means that neither party can gain by setting *B* outside the interval $[B^{*R}, B^{*L}]$. Strategic behavior is implicitly ruled out. Thus the main purpose of Examples 1-3 is to build intuition that will prove useful in more complicated settings below.

Example 4: Affine preferences with separability over inputs

Suppose the technology is Cobb-Douglas, $g_t = G(O_t, B_t) = O_t^{\ a} B_t^{1-a}$, where $0<a<1$, and $v(g_t) = \ln(g_t)$ is logarithmic. Then the indirect utility over (*c*, *O*, *B*) is separable,

$$u(c_t) + \alpha^i v(g_t) = u(c_t) + \alpha^i a \ln(O_t) + \alpha^i (1-a)\ln(B_t),$$

which precludes interdependence between *O* and *B* except through the budget constraint. Moreover, assume $u(c_t) = c_t$ is linear. Then the budgetary interdependence vanishes: For each type *i*, the optimal choices are $O_t^{\ i} = \alpha^i a$ and $B_{t+1}^{\ \ i} = \alpha^i (1-a)$. Hence the optimal solution for *O* does not depend on *B*; formally, $f_{BO} = 0$ and $u'' = 0$, so $O_B^i = 0$. Because $O_B^i = 0$, neither government has an incentive to manipulate its choice of *B*, and *B* does not depend on reelection.

Example 5: Logarithmic preferences with separability over inputs

Consider the same setting as in Example 4, but with logarithmic utility over private consumption, $u(c_t) = \ln(c_t)$. Because optimal spending shares are constant with log-utility, the first order conditions for O can be solved explicitly to obtain $O^i(B_t) = \frac{\alpha^i a}{1+\alpha^i a}(Y - B_t)$, which illustrates the dependence on *B* and on the government type. Using $\frac{dO^i(B_t)}{dB_t} = -\frac{\alpha^i a}{1+\alpha^i a}$, which is constant, first order conditions for *B* can also be solved explicitly to obtain $B_{t+1}{}^i = \frac{\alpha^i(1-a)}{1+\alpha^i}Y$. As in Example 4, the optimal choice of *B* does not depend on re-election probabilities.

The irrelevance of re-election probabilities in this Example has more of a knife-edge character than in Example 4: Though a high precommitted *B* does reduce *O*, the strategic incentive for *L* to raise *B* is offset by a concern that this would reduce private consumption.

Examples 4-5 illustrate that preferences and technology can interact in ways that efficiency concerns and strategic incentives cancel out in setting *B*. This suggests an examination of a broader class of preferences and technologies.

2.4 Power utility and CES Production

This section provides a more systematic analysis of how preferences and production technology influence the strategic interaction between *L* and *R* governments. We assume power utility over *c* and *g*, and CES production. The curvature of power utility (η) provides natural metric for stubbornness. Formally, assume

$$u(c) = \frac{1}{1-\eta}c^{1-\eta} \text{ and } v(g) = \frac{1}{1-\eta}g^{1-\eta}$$

where $\eta > 0$. The case $\eta = 1$ is interpreted as log-utility. For production, assume

$$G(O_t, B_t) = A\left[aO_t^{1-1/e} + (1-a)B_t^{1-1/e}\right]^{1/(1-1/e)}$$

with elasticity of factor substitution *e>0*, weight 0 < *a* < 1, and scale parameter *A>0*. The special case *e=1* represents Cobb-Douglas. CES technology precludes corner solutions for *O* because $G_O \to \infty$ as $O \to 0$. However, the optimal choice of *B* is not necessarily a concave problem, which makes analytical solutions difficult to obtain.[11] Hence we present numerical results.

Numerical results for a range of parameter pairs (η, e) are shown in Tables 1-3. For all calculations, we assume *a=0.5* so *O* and *B* have the same weight in production; we normalize *A=2* so *g* has unit cost with efficient production (i.e., $G(\frac{1}{2}, \frac{1}{2}) = 1$); and we set *Y=1*. Weights (α^L, α^R) vary across simulations so that *L* and *R* have stable preferences over the size of government. Specifically, α^L is set so $c^{*L} = 0.6$ and $B^{*L} = O^{*L} = 0.2$ whereas α^R is set so $c^{*R} = 0.8$ and $B^{*R} = O^{*R} = 0.1$. Efficient production requires *O=B* and yields *g=O=B*, so $g^{*L} = 0.2$ and $g^{*R} = 0.1$. For elections, assume $\pi^L = \pi^R = 0.5$.

For production, Table 1 starts with *ε=2*, which means that *g* can be produced with any one input at twice the cost (i.e., $G(0,1) = G(1,0) = \frac{1}{2}$). Panel (a) shows allocations implied by certain reelection (for reference), and Panel (b) shows results for uncertain reelection and log-utility (*η=1.0*). Panels (c-d) shows allocations for preferences with lower or higher curvature, *η=0.5* and *η=2.0*. In all cases (with reelection uncertainty), *R* sets

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[11] Notably, though corner solutions do not exist, *L* may have incentives to set *B* so high that *R* will set *O* very close to zero; then O_B^R is also near zero, implying that *L* essentially controls the next period's spending. This

$B^{R} > B^{*R} = 0.1$ closer to *L*'s preferred value, and *L* sets $B^{L} > B^{*L} = 0.2$ further away from *R*'s preferred value. Thus *R* is accommodating whereas *L* displays strategic behavior. By setting B^L high, *L* ensures higher government spending if *R* is elected. Comparing across cases, Table 1 shows that more stubbornness (higher η) implies higher B^L and higher B^R, i.e., more accommodation by *R* and more aggressively strategic behavior by *L*; outcomes are closer to *L*'s than *R*'s preferences.

Table 1 also shows outcomes for operating spending, consumption, and public goods provision, each for *L* and *R* in power conditional on inherited values $B{=}B^L$ or $B{=}B^R$. Note that $O^R(B^L)$ tends to be small and $O^L(B^R)$ tends to be high, reflecting attempts to offset the impact of inherited "wrong" levels of precommitted inputs. Values of *O* and *g* conditional on B^L are higher than the corresponding values given B^R: precommitment matters.

Taking averages across cells, one finds that average values of *B+O* are 30.6% for $\eta=0.5$, 31.3% for $\eta=1$, and 32.1% for $\eta=2.0$. They all exceed 30%, which is the average of desired spending by *L* and *R*. The average provision of public goods *(g)* is somewhat less than spending because election uncertainty implies inefficient production ($G_B \neq G_O$); nonetheless, average values of *g* exceed 30% except for the lowest η-value. Thus the *L* government succeeds in raising average government spending. The more stubborn the parties the higher is government spending.

Table 2 provides three examples to show that qualitatively different outcomes are possible for more extreme parameter values. Panel 2(a) shows results for $\eta=1.0$, and $\varepsilon=0.5$. In this

explains why the first order conditions for B^L tend to have two solutions for high *e*-values: one solution pushes *R* to set *O* near zero; the other sets *B* much lower, in a range were O_B^R is close to minus one.

case, $B^R < B^{*R} = 0.1$ and $B^L < B^{*L} = 0.2$, *L* is accommodating whereas *R* acts strategically. The economic intuition builds on Example 2. For CES production with $\varepsilon \leq 1$, both inputs are essential, which means that *R* can limit *g* by setting *B* low, and *L* must worry a successor type-*R* government will set *O* low. This encourages strategic behavior by *R* and accommodation by *L*.

Panel 2(b) shows results for $\eta=10$ and $\varepsilon=0.5$. In this case, both parties are accommodating even though the stubbornness index is extremely high. The intuition here is that both parties are so stubborn that if either party were to set $B^i \approx B^{*i}$, the other party would set operating expenses in a way that production would be extremely inefficient. Interestingly, this suggests that mutual stubbornness can force both parties to compromise. Even with accommodating behavior, production is sufficiently inefficient that spending on $B+O$ exceeds 30% whereas *g* is less than 30%.

Panel (c) shows results for $\eta=1.0$ and $\varepsilon=10$. In this case, *L* has an incentive to set B^L so high that a value of *g* close to g^{*L} is obtained even when *R* is elected and sets O^R near zero. This is an extreme form of strategic behavior. The intuition follows Example 1, because CES production with $\varepsilon=10$ is nearly linear.

Table 3 provides a qualitative characterization of outcomes over a wide range of parameters. For each parameter pair (η, e), table entries indicate if *L* and *R* (first and second entry, respectively) are accommodating (labeled A), strategic (labeled S), or setting B^i=B^{*i} (N for neutral), respectively. The table shows that *L* sets precommitted spending strategically (B^L>B^{*L}) when the elasticity of substitution *e* is high, whereas *R* acts strategically (B^R<B^{*R}) when the elasticity of substitution *e* is low—as is consistent with the intuition from Examples

1 and 2. Both parties are accommodating if η is very high—as in the Example of Table 3(b). Table 3 also shows that there is a thin slice of the parameter space where both governments act strategically (e.g., $\eta=0.5$ and $e=1.6$).

Overall, Table 3 indicates that for $e>1$ (where no single input is essential), L act strategically for a wide range of η values. For $e<1$, L also act strategically if η is low but not near zero.

3. A Two Period Model with Capital

The extension to add savings decisions complicates the analysis significantly, because savings and government spending are interdependent. Individually optimal savings depend on future taxes, i. e. on expected future government spending. Intuitively, this interdependence is likely to strengthen a partisan government's incentives to act strategically. By setting B high, a type-L government can signal to individuals that next period's government spending will be high, inducing them to save more. The increased savings reduce next period's marginal utility of consumption and thereby encourage higher on-the-spot spending, O. Conversely, by setting B low, R governments can induce individuals to save less, which raises next period's marginal utility of consumption and deters a subsequent L government from spending too much. Optimal (for the current government) spending depends on the marginal utility of consumption, which depends on past savings decisions. Since a two-period setting is sufficient to illustrate the conceptual points, we examine the government problem with savings in a simple two-period version of our model. We also provide an example that highlights the differences between this extension and the basic model.

As before, we assume lump-sum taxes. Thus, Ricardian equivalence applies and debt per se does not matter. Any effects of precommitted government spending must therefore be "real" effects that do not depend on financing decisions.

Assuming period-1 savings, k, yield return $F(k)$, where $F' > 0$ and $F'' \leq 0$. Individual consumption in the two periods is:

$$c_1 = Y - k - B_1 - O_1,$$

$$c_2 = Y + F(k) - B_2 - O_2.$$

We assume that each agent is small enough that she does not take into consideration the effect of her choice of k on the government's choice of O and B. She maximizes:

$$V(k) = u(1 - k - O_1 - B_1) + \beta\left(\pi\, u(1 + F(k) - O_2^i - B_2) + (1 - \pi)\, u(1 + F(k) - O_2^j - B_2)\right).$$

The following first order condition must hold: $u'(c_1) = \beta F'(k) \mathrm{E}[u'(c_2)]$.

Therefore, $k = k(B_2, O_2^L, O_2^R, O_1 + B_1, \pi)$. At t_2, the government in power maximizes, with respect to O: $V_2(O_2) = u(Y + F(k) - O_2 - B_2) + v\left(G(O_2, B_2)\right)$. The first order condition $u'(c_2) = \alpha^i v'(g_2) g_O(O_2, B_2)$ must hold. Therefore, $O_2^i = O(B_2, k, \alpha^i)$. The new item here is the dependence of O on the capital stock. A higher k reduces the marginal utility of private consumption and therefore encourages more government spending.

The party in power maximizes, over O_1 and B_2:

$$V^{ii} = u(Y - k - O_1 - B_1) + \alpha^i v\left(G(O_1, B_1)\right) + \beta \mathrm{E}\left[u(Y + F(k) - O_2 - B_2) + \alpha^i v\left(G(O_2, B_{2i})\right)\right],$$

where: $k = k(B_2, O_2^L, O_2^R, \pi)$ and $O_2^i = O(B_2, k, \alpha^i)$.

The first order conditions are:

$$\frac{\mathrm{d}V^{ii}}{\mathrm{d}O_1} = \alpha^i f_{O1} - u_1' + \beta \mathrm{E}\left[\left(\alpha^i f_{O2} - u_2'\right)\left(\frac{\partial O_2}{\partial O_1} + \frac{\partial O_2}{\partial k}\frac{\partial k}{\partial O_1}\right)\right], \text{ and}$$

$$\frac{\mathrm{d}V^{ii}}{\mathrm{d}B_2} = \mathrm{E}\left[\alpha^i f_{B2} - u_2'\right] + \beta \mathrm{E}\left[\left(\alpha^i f_{O2} - u_2'\right)\left(\frac{\partial O_2}{\partial B_2} + \frac{\partial O_2}{\partial k}\frac{\partial k}{\partial B_2}\right)\right].$$

The first two terms reflect the same efficiency and strategic issues as in Section 2. The last term is new and reflects the indirect effect of B_2 on O_2 through capital investment. To the extent that B_2 raises expected period - 2 lump-sum taxes, individuals will save: $\frac{dk}{dB_2} > 0$. Capital investment in turn increases spending on O_2 by reducing the marginal utility of period - 2 consumption, $\frac{dO_2}{dk} > 0$. Therefore, savings are likely to strengthen the L government's ability to raise total period-2 spending by setting precommitted spending, B_2, to a high value.

This section also resolves the question of whether or not it matters if B_t has a real resource cost in period t or t - 1: If resources can be shifted over time through a reasonable elastic capital investment technology, the difference does not matter (In the limiting case of a linear $F(k) = k$ technology, not at all).

Example 6: The Role of Saving

Consider log utility over all goods $u(c) = \ln(c)$, $v(g) = \ln(g)$, $g = O^a B^{1-a}$, and $F(k) = k$. Recall that these are the same functional forms as Example 5, which was a special case where B was independent of π. Here, we show that with savings this independence disappears.

As in Example 5, we can solve the first order conditions explicitly for *O* and *B*:

$$O_2 = O^i(B_2) = \frac{\alpha^i a}{1+\alpha^i a}(Y + k - B_2), \text{ and}$$

$$B_2^i = \frac{(2 - B_1)\alpha^i\beta(1 - a)}{\alpha^i\beta(1 - a) + \varphi + \beta a(1 - \pi)(\alpha^i - \alpha^j)},$$

where $\varphi = \dfrac{1 + \beta\left(\pi(1 + \alpha^i a) + (1 - \pi)(1 + \alpha^j a)\right)}{1 - \dfrac{\alpha^i a}{1 + \alpha^i a}\left(\dfrac{1}{1 + \beta}\right)}$.

Assume the parameters $Y = 1$, $\alpha^L = 4$, $\alpha^R = 1$, $B_1 = 0.125$, $\beta = 1$, and $a = 0.5$. When re-election is certain, *R* will precommit $B_2 = 0.267857$ and *L* will precommit $B_2 = 0.46875$. With re-election uncertainty, $\pi = 0.5$, both types act more strategically, $B_2 = 0.256849$ for *R* and $B_2 = 0.491803$ for *L*. Thus, $B_2^R < B_2^{*R} < B_2^{*L} < B_2^L$.

This example demonstrates that savings increases the strategic opportunities of the governments. In an example where there are no strategic opportunities in the absence of saving, and the presence of saving gives both parties incentives to set precommitted spending strategically.

4. Transfer Payments

Transfer programs account for a large fraction of government budgets in most advanced countries. This section will explain why the strategic issues discussed above apply analogously to the transfer programs, and not just to real expenditures. Most transfer programs require an extensive administrative infrastructure to identify potential recipients and to monitor their eligibility (say, for welfare). The benefits of a transfer program, *TR*, depend on the transferred funds and on how efficiently the program is administered, which is a function of the available infrastructure. As before, let *O* be the current cost - for transfers plus current administrative spending - and B be the precommitted infrastructure, and assume $TR = TR(O_t, B_t)$ where $TR_O > 0$, $TR_B > 0$, $TR_{OO} < 0$, and $TR_{BB} < 0$.

To motivate transfers, it is natural to consider a heterogeneous agent setting. Hence, we assume that there are two types of agents with incomes Y_1 and Y_2 respectively. The partisan disagreement is now about the merit of transfers from one group to the other. To be specific, assume $Y_1 > Y_2$ and let the disagreement be about the size of transfers from the rich (type-1) to the poor (type-2). The agents' consumption depend on income and transfers: $c_{1t} = Y_1 - O_t - B_t$, and $c_{2t} = Y_2 + TR_t$. The parties differ over how much negative utility they derive from income inequality. The government of type i($i = L, R$) maximizes:

$$W^i = \sum_{t=1}^{\infty} \beta^t E\left[u(c_{1t}) + u(c_{2t}) - \rho^i \left|u(c_{1t}) - u(c_{2t})\right|\right] \text{, where } 0 < \rho^R < \rho^L < 1.$$

Assume (O_t, B_t) are small enough that $TR(O_t, B_t) + O_t + B_t < Y_1 - Y_2$, so $c_{1t} > c_{2t}$. Then the model is equivalent to the main model if one reinterprets $c_t = c_{1t}$ as type-1 consumption, $g_t = c_{2t} = Y_2 + TR(O_t, B_t)$ as type-2 consumption, $W^i = (1-\rho^i)U^i$ and $\alpha^i = \frac{1+\rho^i}{1-\rho^i}$. That is, one can reinterpret L and R as governments that care relatively more or less about the type-2 "low income" agents. In this sense, the analysis of Section 2 applies analogously to transfer programs.

5. Partisan disagreements about spending priorities

This section considers an Alesina-Tabellini (1989) type model with two government goods, disagreement about composition, but no disagreement about ideal level of total spending. We show that this model is also prone to a spending bias in addition to the deficit bias discussed by Alesina and Tabellini. To simplify, we again consider a model without capital.

The model is as follows. There are two public goods, g_1 and g_2. Good g_1 is produced with inputs O_1 and B_1, while good g_2 is produced with inputs O_2 and B_2: $g_{1t} = G(O_{1t}, B_{1t})$ and $g_{2t} = H(O_{2t}, B_{2t})$. The inputs B_{1t} and B_{2t} are precommitted in the prior period. Inputs O_{1t} and O_{2t} are committed in period *t*. A government of type *i* (*i* = *R*, *L*) maximizes:

$$U^i = \sum_{t=1}^{\infty} \beta^t E\left[u(c_t) + \alpha^i v(g_{1t}) + (1-\alpha^i)v(g_{2t})\right].$$

The type *L* government is assumed to have a relatively strong preference for good g_1 while the type *R* government prefers good $g_2 : 0 < \alpha^R < \alpha^L < 1$. In contrast to the previous section, we assume symmetric preferences over total private versus public spending, with utility weights on g_1 and g_2 that sum to one for both governments.

We still assume that all spending is financed by contemporaneous lump-sum taxes levied on a constant endowment stream, $Y = 1$. The technical analysis is similar to the basic model of Section 2 except that the dimensionality doubles with two goods.[12] As in section 2, interior and corner solutions are possible. An example of a corner solution is the case of perfect substitution between O_1 and B_1, and between O_2 and B_2. As in Example 1, when the inputs are perfect substitutes the party with higher preferences for a good can always put the other party in a corner solution for that good, simply by precommitting the preferred amount. To demonstrate that both parties have strategic incentives, consider the following example.

Example 7: Two public goods with CES Production

Assume log utility over all goods and CES production for both government goods. Table 4 shows results for preferences $\alpha^L = \frac{3}{4}$, $\alpha^R = \frac{1}{4}$, and production $a = \frac{1}{2}$, $\varepsilon = -\frac{1}{2}$, A=1 (for both goods). With certain reelection (π=1), both parties set g_i=B_i=O_i=3/16 for their (respective) preferred public good, and g_i=B_i=O_i=1/16 for the other good. For π=0.5, both set B_i=0.354 for the preferred good and B_i=0.017 for the other. Both parties become more strategic when there is re-election uncertainty, in the sense of setting high precommitment values for the preferred good and lower precommitment values for the other good. Moreover, the presence of electoral uncertainty raises total government spending and taxes at the expense of private consumption:. in the example, one finds $c=0.43$ for π=0.5 as compared to $c=0.5$ for π=0.5.

6. Conclusions

The paper examines a simple model of forward commitment of government spending. We argue that forward commitment arises out of efficiency considerations, but its existence provides strategic opportunities for political parties that differ in preferences. The basic setting is an endowment model with one private and one government-produced good, where two parties differ in preferences for the size of government. For a wide set of preference and specifications, the party with stronger preferences for public spending will commit more than its optimal amount to force the other party to provide more government when they are in power. The party with lower preferences for the government good tends to be driven by efficiency reasons to accommodate the other party and to provide more forward commitment than it would otherwise choose. Thus spending commitments and electoral uncertainty tends to increase public spending. These results are illustrated in simple examples and documented numerically in a setting with power utility and CES production.

[12] Because of the analytical similarities and cumbersome notation, details are omitted.

When savings choices are added to the model, strategic behavior is reinforced for both parties. With re-election uncertainty, the party with lower preferences for spending may precommit even less than without savings in order to constrain the following government's spending. The party with high preferences for the government good may precommit more than it would in the absence of re-election uncertainty or savings to force the following government to spend more than it otherwise would.

In a model with two government goods where parties differ in preferences for the goods, forward commitment is biased upwards. Both parties commit greater amounts of their preferred good in order to encourage the other party to supply more of that good. Taxes are higher and consumption is lower relative to allocations with certain re-election.

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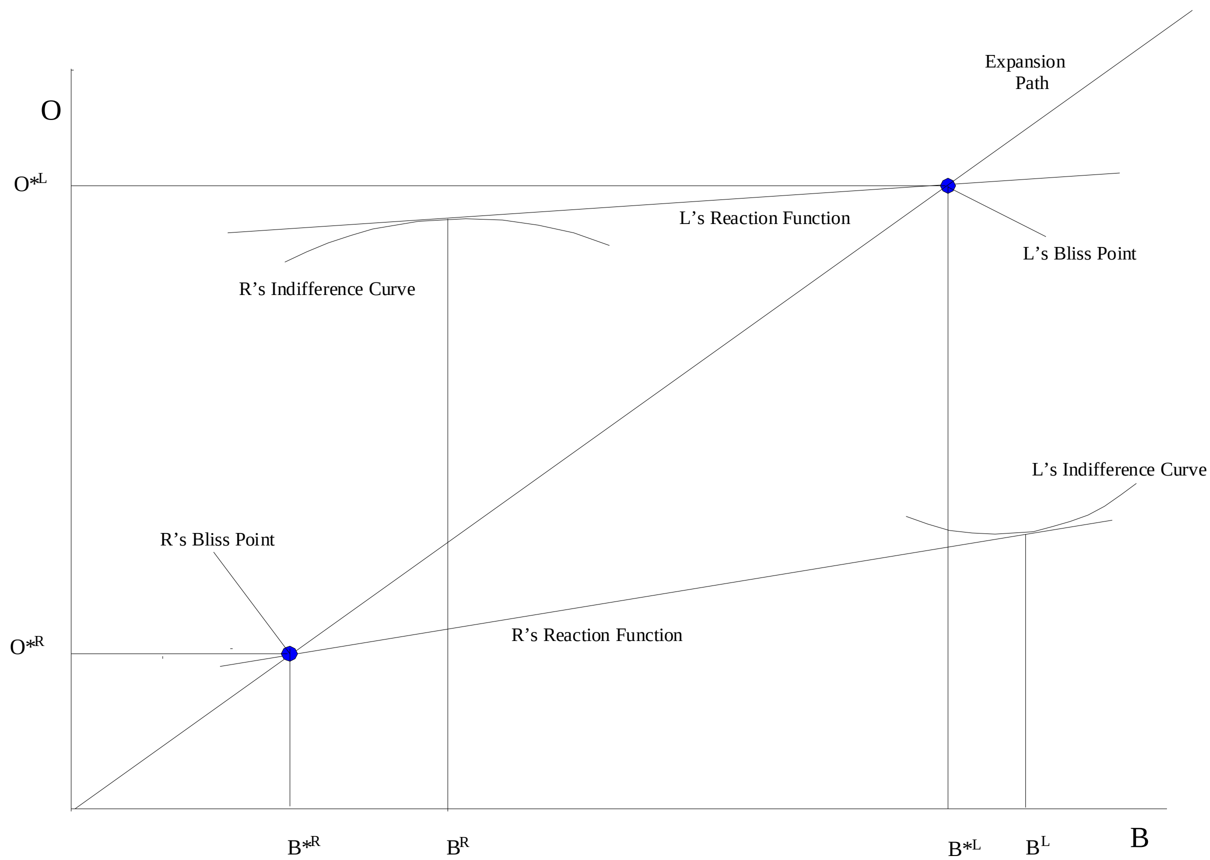
Figure 1: Precommitted Spending as Strategic Variable



Note: The government produces *g=G(O,B)* with two inputs, a fixed bureaucracy" (B), which is installed in the previous period, and operating cost (O), which are variable. Party L prefers more government spending than party R.

Table 1: Main Examples with Power Utility and CES production

	(a) Benchmark: $\pi = 1$		(b) η=1.0 and e=2.0	
Variables	**L**	**R**	**L**	**R**
B^i	20.0%	10.0%	**21.3%**	**10.7%**
$O^i(B^L)$	20.0%		19.3%	6.4%
$O^i(B^R)$		10.0%	25.8%	9.7%
$g^i(B^L)$	40.0%		40.6%	25.5%
$g^i(B^R)$		20.0%	34.8%	20.4%
$c^i(B^L)$	60.0%		59.4%	72.3%
$c^i(B^R)$		80.0%	63.5%	79.6%
Average B+O	30.0%		31.3%	
Average g	30.0%		30.3%	

	(c) η=0.5 and e=2.0		(d) η=2.0 and e=2.0	
Variables	**L**	**R**	**L**	**R**
B^i	**20.3%**	**10.2%**	**23.8%**	**11.6%**
$O^i(B^L)$	19.9%	8.9%	17.3%	4.0%
$O^i(B^R)$	22.5%	10.0%	27.2%	9.0%
$g^i(B^L)$	40.2%	28.0%	40.9%	23.7%
$g^i(B^R)$	31.5%	20.2%	37.1%	20.5%
$c^i(B^L)$	59.8%	70.8%	58.9%	72.2%
$c^i(B^R)$	67.4%	79.8%	61.2%	79.4%
Average B+O	30.6%		32.1%	
Average g	30.0%		30.5%	

Note: See Section 2.4 for interpretation. Panels (b)-(d) assume $\pi = 0.5$.

Table 2: Examples with more extreme parameters

	(a) $\eta=1.0$ and $e=0.5$		(b) $\eta=4.0$ and $e=0.5$		(c) $\eta=1.0$ and $e=10.0$	
Variables	**L**	**R**	**L**	**R**	**L**	**R**
B^i	**19.3%**	**9.5%**	**18.4%**	**12.0%**	**36.1%**	**11.2%**
$O^i(B^L)$	19.9%	11.1%	20.9%	7.8%	7.1%	0.1%
$O^i(B^R)$	17.3%	9.9%	26.0%	9.3%	28.2%	9.0%
$g^i(B^L)$	39.2%	28.1%	39.1%	21.9%	42.2%	33.6%
$g^i(B^R)$	24.5%	19.4%	32.8%	20.9%	39.0%	20.2%
$c^i(B^L)$	60.8%	69.6%	60.7%	73.8%	56.8%	63.8%
$c^i(B^R)$	73.2%	80.6%	62.0%	78.7%	60.6%	79.8%
Average B+O	28.9%		31.2%		34.7%	
Average g	27.8%		28.7%		33.7%	

Note: See Section 2.4 for interpretation. All cases assume $\pi = 0.5$. Allocations for $\pi = 1$ would be the same as in Table 1(a).

Table 3: Power Utility and CES production: Accommodation versus Strategic Behavior

Entries for (L, R) are labeled as A = Accommodating, S = Strategic, or N = Neutral.						
	Utility curvature η					
Elasticity e	0.50	0.75	1.00	1.50	2.00	4.00
0.25	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*
0.50	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	(A, A)
0.60	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	(A, A)	(A, A)
0.70	*(A, S)*	*(A, S)*	*(A, S)*	*(A, S)*	(A, A)	(A, A)
0.80	*(A, S)*	*(A, S)*	*(A, S)*	(A, A)	(S, A)	(A, A)
0.90	*(A, S)*	*(A, S)*	*(A, S)*	(S, A)	(S, A)	(S, A)
1.00	*(A, S)*	*(A, S)*	(N, N)	(S, A)	(S, A)	(S, A)
1.10	*(A, S)*	*(A, S)*	(S, A)	(S, A)	(S, A)	(S, A)
1.20	*(A, S)*	(S, S)	(S, A)	(S, A)	(S, A)	(S, A)
1.30	*(A, S)*	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.40	*(A, S)*	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.50	*(A, S)*	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.60	(S, S)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.70	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.80	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
1.90	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
2.00	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
4.00	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
6.00	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
8.00	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)
10.00	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)	(S, A)

Note: Entries characterize the behavior of type *L* and *R* governments for different combinations of utility curvature η and CES elasticity *e*. For example, (S, A) mean *L* acts strategically and *R* accommodates. Italics and shading are use to highlight the different behaviors. Note that (S, A) tends to apply when preferences are sufficiently curved and *e* is not too low.

Table 4: Example with two public goods (Example 7)

Variables	Benchmark: π = 1		Uncertain Reelection: π = 0.5	
	L	R	L	R
B_1	18.75%	6.25%	35.42%	1.72%
B_2	6.25%	18.75%	1.72%	35.42%
$O_1(B_1^L)$	18.75%		12.01%	7.33%
$O_1(B_1^R)$		18.75%	7.33%	12.01%
$O_2(B_2^L)$	6.25%		7.33%	12.01%
$O_2(B_2^R)$		6.25%	12.01%	7.33%
$c(B_1^L)$	50.0%		43.52%	43.52%
$c(B_1^R)$		50.0%	43.52%	43.52%
$g_1(B_1^L)$	18.75%		22.09%	5.70%
$g_1(B_1^R)$		6.25%	18.66%	4.04%
$g_2(B_2^L)$	6.25%		4.04%	18.66%
$g_2(B_2^R)$		18.75%	5.70%	22.09%
Average B_i	12.5%		18.57%	
Average O_i	12.5%		9.67%	
Average B_i+O_i	25.0%		28.24%	
Average g_i	12.5%		12.62%	

Note: See Section 5 for interpretation.