Legislative Electoral Budget Cycles
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Abstract

Recent literature suggests that opportunistic political budget cycles are a phenomenon of new rather than established democracies. The literature also suggests that this cannot be explained as the result of naïve voters because voters in new democracies are just as likely to punish executives for deficits as are voters in established democracies (Brender and Drazen 2008). This leaves two puzzles: why do these cycles exist at all? And what part of the democratization process explains this amelioration? We suggest that the answers to both puzzles lie in the system of accountability. The budget process is a legislative phenomenon and the manner in which voters hold their representatives accountable is a function of the informal institutions that govern political competition. We develop a class of models to show that political budget cycles are possible in the legislative context. We further show that the development of a strong party system can dampen these legislative budget cycles. In sum, political budget cycles are a legislative phenomenon and institutionalization of the legislature limits the scope of this form of electioneering.

1. Introduction

The political budget cycle refers to a regular decline in government primary surplus during election years. While the concept was originally formulated and applied to advanced democracies (Kramer 1971, Tufte 1975, 1978, Nordhaus 1975), empirical studies have consistently failed to find evidence of such cycles in advanced democracies (Paldam 1979, 1997, Alesina 1987, Alesina et al 1992), and several recent papers show that it is primarily new democracies which are prone to political budget cycles, established democracies exhibiting no significant relationship between election years and fiscal surplus (Brender and Drazen 2005, Person and Tabellini 2003, Shi and Svensson 2006). One reason this may occur is because inexperienced voters are less capable of spotting budget shenanigans or have a lesser understanding of their role in disciplining politicians and, as a result, reward incumbents for good pre-electoral economic performance to a greater extent than they punish for fiscal profligacy. However, Brender and Drazen (2008) find that in both new and established democracies election-year fiscal deficits *decrease* the probability with which executives—Presidents and Prime Ministers—are re-elected.[1] This finding that voters in new democracies punish leaders just as severely as do voters in established democracies casts doubt on the hypothesis that it is naïve voters who enable the cycle in new democracies, and learning by voters which drives the decline in budget cycles as democracies mature. Given the robust existence of these cycles in new democracies, this leaves us with two puzzles. First, if it isn't due to voter learning, then how do democracies outgrow political budget cycles? And second, if voters in these new democracies punish executives for deficits, then why do political budget cycles occur at all?

We develop a family of models to address these two puzzles and test the implications in a dataset comprising 645 elections from 85 democracies. We suggest that fiscal electioneering is the result of a common pool problem in the *legislature*, that specific policies and informal institutions can and do mitigate this problem, and that institutional development—specifically the maturation of a strong party system—can explain the mitigation of political budget cycles as democracies mature.

In their investigation of re-election probabilities, Brender and Drazen explicitly focus on heads of government: presidents and prime ministers. Given the data collection involved, this is an eminently defensible simplification. But executives are not unilaterally responsible for fiscal policy; spending is generally the province of a multi-member legislature. As a result, fiscal policy is the result of a complex aggregation of the preferences of many representatives. Not only might the preferences of an individual legislator be different from those of a unitary decision-maker, but the aggregation process may further affect the resulting fiscal policy. In particular, individual legislators have strong incentives to wield the power of the public purse to provide for their rather smaller set of constituents. Brender and Drazen have reminded us that voters tend to punish executives who preside over deficits to a greater extent than they reward executives for the prosperity those deficits create. In effect, it would seem that voters are Ricardian.

[1] Alesina and Ardagna 1998 found similarly for OECD countries: fiscal adjustments are often rewarded at the polls.

While this clearly suggests executives have little incentive to engage in electoral budget cycles, what are the comparable incentives for legislators?

There exists a well-developed literature on the effects of economic performance on support for the governing party or parties. There is strong evidence that voters in industrialized democracies hold leaders accountable for economic circumstances (Lewis-Beck 1991). Nonetheless, the strength and character of this connection varies a great deal both across countries and over time (Paldam 1991). This heterogeneity springs from a variety of sources including (i) the relative emphasis placed by the electorate on economic performance vs. other political issues, (ii) the degree to which voters care about their personal circumstances or evaluate a broader set of macroeconomic indicators, (iii) the extent and quality of voters' knowledge of macro-economic circumstances, (iv) the extent to which they hold the government accountable for such circumstances, and (v) *which* leaders they hold accountable, (Lewis-Beck and Paldam 2000). The character of economic voting also depends on the party in power—the right is held responsible for inflation, the left for unemployment—and there exist asymmetries between punishment and reward—bad performance is punished more strongly than good performance is rewarded (Powell-Whitten 1993). However, the connection between retrospective voting and political business cycles has withered in recent years because studies of retrospective voting focus almost exclusively on industrialized countries, precisely those countries for which the existence of electoral budget cycles has been consistently refuted.

Most of the new democracies in which political budget cycles have been found are members of what Huntington (1991) labeled "third wave democracies". The third wave refers to an increase in the number of democracies commonly dated to the overthrow of Portugal's dictatorship in 1974 (Diamond 1996) and including the surge following the collapse of the Soviet Union. Many studies of the third wave have emphasized that, by comparison with their older, more established peers, third wave democracies remain incomplete. These studies emphasize the difference between minimalist *electoral democracy* and the fuller, more developed *liberal democracy*. What defines the deepening of a nascent electoral democracy into a fuller liberal democracy? Diamond summarizes:

> *Democratic consolidation is fostered by a number of institutional, policy, and behavioral changes. Many of these changes improve governance directly by strengthening state capacity, liberalizing and rationalizing economic structures, securing social and political order while maintaining basic freedoms, improving horizontal accountability and the rule of law, and controlling corruption. Others improve the representative functions of democratic governance by strengthening political parties and their linkages to social groups, reducing fragmentation in the party system, strengthening the autonomous capacity and public accountability of legislatures and local governments, and invigorating civil society. Most new democracies need these types of institutional reform and strengthening.*

The term institutions has taken on a wide range of meanings among both political scientists and economists and therefore requires further definition. We prefer a fairly standard definition: institutions are shared sets of rules that structure social interaction by shaping and constraining actors' behavior through their expectations concerning the

actions of others. In other words, institutions are rules that coordinate behavior and select outcomes by fostering a particular set of common expectations. We then follow Helmke and Levistky (2003) in distinguishing between formal and informal institutions. Formal institutions are created from the top-down, openly codified, and disseminated through official channels. Informal institutions are "socially shared rules, usually unwritten that are created communicated and enforced outside officially sanctioned channels". Finally, we add policy rules as a third category. Policy rules (such as inflation targeting or revenue sharing) are designed from the top down and disseminated through official channels but remain subject to change by the government with little or no consent of the governed. Nonetheless, they do coordinate expectations and constrain policy-making.

The founding of a new democracy typically involves the establishment of many formal institutions of democracy, usually including separation of powers and provisions for alternation of power (such as elections). But these core institutions may be weak—not widely followed—and/or incomplete—lacking the supporting informal institutions necessary for efficiency. The institutional development that occurs during democratization therefore includes a strengthening of the common conjecture supporting the formal institutions and/or the development of the cast of supporting informal institutions.[2] As Helmke and Levistky put it *"…recent studies suggest that an exclusive focus on formal rules is often insufficient, and that informal institutions, ranging from bureaucratic and legislative norms to clientelism and patrimonialism, often have a profound—and systematic—effect on political outcomes. Neglecting these informal institutions thus risks missing many of the "real" incentives and constraints that underlie political behavior."*[3] A developed liberal democracy consists of a wide set of informal institutions lacking in new democracies. Which of these can explain the ability of established democracies to suppress the political budget cycles that new democracies endure?

Starting with policy rules, a commitment to neutralization by monetary policy is an obvious way of sapping the benefits of profligate fiscal expansion and thereby limiting incentives for budget cycles. Our empirical work confirms that such commitments do inhibit budget cycles. Nonetheless, new democracies do not have markedly different propensities to adopt fixed exchange rates and other methods of commitment so this cannot explain the puzzle.

At the other extreme, constitutional rules might also affect the ability of democracies to control their budgetary process. But given that most democratization concerns the

[2] Lauth has argued that formal and informal institutions can, in fact, interact in a variety of ways. Substitutive informal institutions subvert the formal institution but promote the desired outcome whereas competing informal institutions subvert the desired outcome. Stable institutional settings (established democracies) generally give rise to complementary and accommodating informal institutions whereas formal institutional weakness, more common in new democracies and developing countries, gives rise to competing and substitutive informal institutions. So we may additionally think of democratization as the transformation of substituting and competing informal institutions as well as the development of complementary and accommodating informal institutions.

[3] See O'Donnell (1996) for an early influential appeal for the importance of informal institutions in explaining policy outcomes.

enforcement of these rules or the development of supporting or supplanting informal institutions rather than new formal rules, formal institutions are not likely to explain the difference between new and established democracies unless significant differences in constitutional design exist between new and established democracies. Indeed, Brender and Drazen (2005) conclude that the new democracy effect is robust to the choices of a presidential vs. a parliamentary system of government and a majoritarian vs. a proportional electoral system.

The most promising candidates are those informal institutions that buttress the hard core of the constitution and which develop over time. Media freedom and transparency are one example. Akhmedov and Zhuravskaya (2004) found that regional media and transparency of regional governments were predictors of the magnitude of the cycle during Russia's transition. Shi and Svensson (2006) similarly stress the importance of transparency. These explanations remain relevant in the legislative influence model presented in this paper. One could imagine transparency and media freedom increase the frequency with which the voters learn the incumbent's characteristics thereby relieving legislators of the need to signal quality via excess spending.

Unfortunately, identifying informal institutions remains difficult and direct measures are rare. The most commonly used measures—the World Bank Business environment survey, measures of country risk such as expropriation, origins of the legal system, corruption indices— seek mainly to extend the formal measures of property rights and do not closely relate to the issue of legislative conduct. The measures of political institutions most commonly used by economists—district magnitude, electoral system, and parliamentarianism—are all measures of formal electoral rules which have been shown to have no effect on political budget cycles.

What then do studies of democratization suggest? Perhaps the most remarked on difference in informal political institutions between third-wave democracies and established democracies is the lack of a stable party system in the former. Mainwaring and Scully (1995) put it succinctly: *"In modern mass societies, building a party system appears to be a necessary though insufficient condition for consolidating democracy and governing effectively."* Consistent with our conceptualization of institutions as rules that coordinate expectations, they define an institutionalized party system as one in which the elements of party-based competition are sufficiently stable that actors expect these patterns to continue for the foreseeable future. Among the areas of stability they emphasize, two are particularly relevant to our purposes. In an institutionalized party system, (a) parties have stable policy identities and thus serve as reliable labels for voters and (b) party organizations are independent of the interests of party leaders. Mainwaring and Scully note "*[w]hen they campaign, politicians choose some combination of cultivating a personal vote, i.e. running on their own image, positions, and clientele networks, and promoting a collective (party) label.*" Mature parties transform campaigns from personalized appeals based on the ability to deliver localized benefits into a debate over solutions to policy issues of broad national importance.

In weak party systems, parties have few resources, are weakly professionalized, and are often personal vehicles with little control of nominations. Parties come and go regularly and politicians often switch parties. Politicians essentially run as individuals. Parties have few if any methods of disciplining party members thus party discipline in the legislature is weak or non-existent. Parties have weak ties to particular policies and are thus weak labels. As a result, voters have weak loyalty to parties and parties lack stable constituencies. As a result, politicians prefer to run on their own image, position, and ability to deliver patronage. Individual politicians building a personal brand cannot credibly commit to delivering policy solutions to broad, national issues. Instead, they can more credibly commit to and take credit for delivering patronage to local supporters. Thus personal politics inevitably leads to clientelism as voters judge candidates on their ability to deliver to targeted constituencies rather than advance broad policy issues. Mainwaring and Scully again: *"…where personalistic disputes reign supreme and party labels are insignificant, those who win elections feel less restrained in how they govern. Unfettered by party platforms, they make policy choices that tend to be short-term and erratic. They are more prone to demagoguery and populism…"*

By contrast, a long-lived party with national presence cares about wooing potential voters from *all* districts; not just the districts currently under representation, thus restraining their willingness to narrowly exploit those out of power to transfer to those in power. Under a strong party system, parties have clear, broad policy goals and thus serve as effective information shortcuts for voters who develop strong party identification and loyalty. Parties thus have an efficiency advantage in vote-getting. Strong parties also have greater financial resources and a bureaucratic apparatus for "keeping score" over individual legislators' contributions to the party agenda. As a result, strong parties are able to effectively discipline individual legislators by withholding perks of office (committee assignments and ministerial appointments) or withholding support for reelection. Financial resources and brand recognition also provide parties with an effective cartel over political entry. As a result, candidates find it in their best interest to promote the party label and may even have no choice if the major parties have an effective monopoly on political access.

The literature on economic-voting confirms the importance of the party system in determining the manner in which the electorate disciplines politicians for economic performance. Several contributions stress that variation in the political system contributes to variation in the ability of the electorate to assign responsibility for perceived economic performance. Responsibility is generally easier to assign in two-party systems with majority government, becoming more difficult with shifting multi-party coalitions and minority governments (Lewis-Beck 1988; Alesina, Cohen, and Roubini 1992, Powell and Whitten 1993; Anderson 1995, 2000). As a result, voters are less likely to punish incumbent parties for poor economic performance when the government is comprised of multiple parties, when there is a second legislative house controlled by the opposition, when the government is a minority, or when there is a lack of voting cohesion among the government parties. In each of these cases, it is easier for any of the parties in government to blame poor performance on the intransigence of others sharing power.

Anderson concludes that "when the institutional context clarifies who is in charge of policymaking… economic effects [on vote choice] are much stronger."

By way of answering the second puzzle—why political budget cycles are confined to new democracies—we have incorporated into our models this conception of the role of the party in institutionalizing electoral competition. To each of our two basic models of legislative electoral budget cycles, we add a formal description of weak and strong party systems. First, we conceive of the party system as changing the process by which legislators gain the ability to influence legislation. Rather than a volatile scramble in which the vagaries of the issues at hand determine fleeting influence, parties impose a seniority system which privileges incumbents. As a result, there are few incentives for a legislator to signal influence via excess spending. Second, following a long and influential line of argument, we conceive of the party system as a brand reducing the cost to voters who wish to learn of a legislator's policy positions. After adding a policy dimension to the competence model, we show that strong party brands result in a shift from client politics to partisan competition.

Our models of legislative budget cycles describe how the development of strong parties can dampen the political business cycle as democracies mature. We believe the findings on accountability in the economic-voting literature support this viewpoint. In the absence of strong national parties, voters will no longer reward or punish their representatives for the broader national situation, for which the representative, who lacks strong ties to a party with national impact, cannot be held accountable. However, this does not necessarily prevent political business cycles, it may exacerbate actually them. Without strong party identity, voters may punish executives for deficits, but individual representatives are held accountable only for the economic performance within their district and not for the broader deficit. The prevailing attitude is: "Congress and the Prime Minister are incompetent: but our representative provides for us." This exacerbates the common pool problem, strengthening the incentives to engage in pre-election fiscal stimulus.

Our empirical work is designed to test the effect of a broad array of institutions—policy rules, legislative organization, and the strength of the party system—on the strength of political business cycles. Brender and Drazen (2005) have shown that the formal political institutions of the electoral system (majoritarian vs. proportional) and type of government (presidential vs. parliamentary) are uncorrelated with political budget cycles. We confirm that other measures of formal institutions, including strong bicameralism and federalism, are similarly unrelated to the existence of political budget cycles. At the other end of the spectrum, we can examine the extent to which political budget cycles are affected by policy rules. Given the likely origins of political budget cycles in active fiscal policy enabled by a complicit, passive monetary policy (see Drazen 2001), two constraints are particularly relevant. First, explicit, observable, quantitative targets for monetary policy ought, by committing monetary policy to neutralizing the interest rate and/or output effects of fiscal stimulus, to reduce the incentives for fiscal policymakers to engage in election-year stimulus. Second, checks and balances on the fiscal side may also prevent fiscal electioneering by the government. One strand of the literature emphasizes the

importance of fragmentation (Perotti and Kontopolous 2002, Wolkerink and De Haan 2001). These papers suggest that the common pool problem is exacerbated as the number of effective decision-makers increases. In a sample of 22 OECD countries, Volkerink and De Haan find support for the idea that increasing the number of budgetary decision-makers in government (measured as the number of ministers with control of spending levels) leads to higher average deficits. They also find support for the idea that increasing the fragmentation of the opposition increases the ability of government to pass its budget and thus increases the average deficit. However, this line of research stops short of looking at the effect on the electoral cycle and is confined to OECD countries.

Using an extended version of the Brender and Drazen (2005) dataset, we look at the extent to which implementation of institutions constraining fiscal and monetary policy are correlated with reduced severity of political budget cycles. We find that hard currency pegs and unified opposition are associated with reduced severity of political budget cycles in new democracies. Nonetheless, mature democracies are no more likely to adopt these policy rules than new democracies, so these cannot explain the second puzzle. Empirical work on the effects of party institutionalization is not yet completed.

The remainder of the paper is organized as follows. Sections 2.1 – 2.4 develop the models of legislative budget cycles. Section 3 describes the data, explains the empirical specification, and presents the results. And section 5 gives a brief discussion of the results.

2. The Models

The model borrows heavily from Milesi-Ferretti, Perotti, and Rostagno (2002) as well as the Rogoff and Siebert (1988) model of political budget cycles. A country is comprised of N electoral districts each of which sends one representative to the legislature. Each district consists of a representative voter with preferences:

$$U_{kt} = \sum_{l=0}^{\infty} \delta^{l-t} u_{kl}$$

$$u_{kt} = (1-\tau_t)^{\alpha_k} g_{kt}^{(1-\alpha_k)}$$

Where k indexes the district, δ is the discount factor, τ is the tax rate, and g_k are the public goods for district k. Individuals are endowed with the same productivity, normalized to 1. Public goods are assumed to be targetable to a single district. The legislature may vary the level of public goods across districts but may not deliver negative values of public goods to any district and is constrained to levy taxes equally on all districts. Representatives are both office and policy-motivated. Their utility is that of the representative citizen from their district, plus a bonus for holding office next period.

$$v_{kt} = (1-\tau_t)^{\alpha_k} g_{kt}^{(1-\alpha_k)} I_k$$
$$I_k = \begin{cases} K > 1 & \textit{if in office next period} \\ 1 & \textit{else} \end{cases}$$

Once a legislature is elected, one of the representatives is chosen randomly to be Prime Minister. He then makes an offer to any number of colleagues to join the government. If the offers are accepted, the government is formed. If any members refuse, the Prime Minister may make an offer to a new coalition. If offers have been made to all coalitions and a majority government is not formed, then no taxes and no public goods are authorized and all representatives receive a status quo utility of -F. It should be clear that it is in the interests of the Prime Minister to form a minimal winning coalition of (N+1)/2 and that any representative will accept an offer to be part of the government.

We assume the Nash bargaining solution for intra-government bargaining. Thus a government maximizes the weighted joint utility of its members. In the competence model, the weights are equal for all members of government. In the influence model, the weights depend on the members' influence. Governing coalitions may not be changed between elections.

We assume government must satisfy a balanced-budget condition every period. This may seem an odd restriction when the phenomenon of interest concerns deficit spending. The assumption is meant to capture the empirical findings of Brender and Drazen and others that voters punish governments for running deficits as they do for current taxes. Our period-by-period budget constraint is a simpler equivalent to a world in which the government may borrow but infinitely-lived Ricardian voters facing complete markets take this into account by increasing savings to compensate for higher expected future taxes.

2.1 The Competence Model without Parties

The standard models of political budget cycles (Rogoff and Siebert 1988, Persson and Tabellini 2003) suggest that more competent politicians are capable of delivering a greater value of public goods with the same tax dollars. In a legislative context, think of this as the ability of a representative to pick, push, and pass programs that are broadly helpful to his constituents rather than wasteful spending. Competence ε, is a two-period geometric moving average of underlying ability, μ, which may be either high or low. New representatives are assumed to enter the legislature with a moderate value $\mu_{t-1} = \mu_0 = 1$. We assume ability is relative so the μ_k are not i.i.d. across the districts. Rather, a fixed fraction, *h*, of the governing coalition is of high ability in any given period.

$$\varepsilon_t = \mu_{t-1} * \mu_t$$
$$E_{t-1}(\mu_t) = p\overline{\mu} + (1-p)\underline{\mu} = 1$$
$$\overline{\mu} > 1,\ \underline{\mu} < 1,\ \mu_0 = 1$$

Why does competence decay? The legislative environment and policy challenges are constantly changing and voters are not always sure their particular representative has the skills, friends, or agenda to succeed in the current environment.[4]

Delivered public goods in a district *k* are the product of spending on that district times the competence of the representative from that district. Acknowledging that a government G will always set spending on districts of representatives outside the government to zero, we have the following budget constraint.

$$\widetilde{s}_k = s_k \varepsilon_k$$
$$N\tau = \sum_{k \in G} s_k$$

We assume that a representative's competence is not verifiable during intra-governmental bargaining therefore the government maximizes joint utility of the representatives under the assumption that each representative's competence equals its expected value, 1.

Elections take place every other period.[5] A representative's competence is private, unverifiable information that cannot credibly be communicated to voters; hence voters operate under imperfect information. Voters observe spending in their own districts contemporaneously, but observe spending in other districts only with a one period lag. As a result, a voter who sees a high level of effective spending in her district cannot contemporaneously determine whether it is due to high competence of her representative or high actual spending. After one period, the voter learns about taxes, total spending, and its distribution across districts and can thus infer her representative's competence from the previous period. Since a voter knows the initial μ_0 of a new representative, this enables her to infer, by period 2, $\mu_1 = \varepsilon / \mu_0$. By successive application of this logic, the voter will then always be *partially* informed of the representative's contemporaneous competence, ε_t. That is, she will have deduced that portion of the representative's competence which was previously relevant, μ_{t-1}, but will be uninformed as to the portion that will be relevant in the future, μ_t. However, as the voter wishes to maximize *future* benefits when electing a representative, it is the unobserved component of competence, μ_t, upon which the voter's decision rests.

The government's problem is as follows:

[4] Adding a component which is permanent or persists across elections would tend to give incumbents the advantage. We explore this in the next section with the model of influence-driven cycles under a strong party system.
[5] Elections can be made less frequent without altering the essential character of the results.

$$\underset{\tau,\tilde{s}_k}{Max}\sum_{k\in g}\log V_k = \left(\frac{N+1}{2}\right)\alpha\log(1-\tau)+(1-\alpha)\sum_{k\in G}\log s_k + \sum_{k\in G}\log I_k$$

$$s.t.\ N\tau = \sum_k \tilde{s}_k$$

$$s_k = \tilde{s}_k \varepsilon_k$$

The objective function can be simplified to:

$$\left(\frac{N+1}{2}\right)\alpha\log(1-\tau)+(1-\alpha)\sum_{j\in g}\log\tilde{s}_j + (1-\alpha)\sum_{j\in g}\log\varepsilon_j + \sum_{j\in g}\log I_j$$

Which makes it clear that the optimal tax-spend tradeoff doesn't depend on the ε_k-s. Thus the allocation is the same for all non-election periods. Taking first order conditions and solving yields:

$$\tau = (1-\alpha)$$

$$\tilde{s} = \gamma^{-1}(1-\alpha)$$

$$\gamma \equiv \left(\frac{N+1}{2N}\right)$$

Given our interest in political budget cycles, we postulate a form of separating equilibrium in election periods and then derive conditions for its existence.

Voters: reelect if and only if $\frac{s_{k,t}}{\mu_{k,t-1}} \geq s^*$ which is equivalent to $\tilde{s}_{k,t}\mu_{k,t-1} \geq s^*$.

Legislatures: characterize a legislature by *h*, the number of representatives who will be of high quality entering the next period: $\mu_{k,t} = \bar{\mu}$. A legislature with $h \geq h^*$ chooses to signal, implementing an allocation $\tilde{s} = \frac{s^*}{\bar{\mu}}$. As a result, high types meet the cutoff while low types do not.

The conditions for existence of such an equilibrium, derived in Appendix A, are:

$$h \geq h^*$$

$$\log K > \frac{\gamma N}{h}(\tilde{s}'' - \tilde{s}')\left\{\alpha\gamma\frac{1}{1-\tau'} - \frac{(1-\alpha)}{\tilde{s}'}\right\}$$

$$\log K < (q-1)\tilde{s}'\left\{\alpha\gamma\frac{1}{1-\tau'} - \frac{(1-\alpha)}{\tilde{s}'}\right\}$$

Signaling leads to re-election of high-types only. The first condition requires that a sufficient number of legislators be high quality that the re-election benefits from signaling are enough to result in signaling. In the second and third conditions, the term in brackets is the marginal benefit of increasing spending (and taxation). The second expression says that the benefit to holding office must be greater than the cost of increasing taxes and expenditures. The second expression says that the benefit of reelecting a low type must be less than the cost of increasing the spending high enough to imitate the high type.

Do these two restrictions admit a range of equilibria? It must be that:

$$\frac{\gamma N}{h}(\tilde{s}'' - \tilde{s}') < (q-1)\tilde{s}'$$

2.2 The Influence Model without Parties

In this version, we assume that all representatives are of equal competence. The value of public goods delivered to a district is equal to the value spent on that district:

$$s_{k,t} = \tilde{s}_{k,t} \quad \forall k,t$$

However, the value spent on each district varies with the influence of the district's representative. Specifically, the government maximizes the weighted joint utility of its members, where the weights are the representatives' utilities. Influence, like competence in the previous model, is a two-period geometric moving average of an underlying binary variable.

$$\varepsilon_t = \mu_{t-1} * \mu_t$$
$$\bar{\mu} > 1,\ \underline{\mu} < 1,\ \mu_0 = 1$$

Because ability is relative, each government contains the same fraction of high and low ability members but the assignment of high and low ability is independent from period to period. Thus in each period a fraction *p* of the members are high types and a fraction 1-*p* are low types. As with the competence case, voters can infer past draws of μ_{t-1} but cannot contemporaneously distinguish μ_t. Denote the average level of spending on a district by $\bar{s}_t$, then the budget constraint becomes:

$$N\tau_t = \sum_j s_{t,j} = \left(\frac{N+1}{2}\right)\bar{s}_j$$

And the government's maximization problem is:

$$\underset{\tau,\bar{s}_k}{Max} \sum_{k\in g} \log V_k = \alpha\sigma \log(1-\tau) + (1-\alpha)\sum_{k\in G} \varepsilon_k \log s_k + \sum_{k\in G} \log I_k$$

$$s.t.\ N\tau = \sum_k s_k$$

$$\sigma \equiv \sum_{k\in G} \varepsilon_k$$

Taking the first order conditions and solving gives the following solution:

$$s_k = \varepsilon_k \bar{s}/\sigma$$
$$\tau = (1-\alpha)$$
$$\bar{s} = \gamma^{-1}(1-\alpha)$$

Which is essentially equivalent to the solution for the competence model. The legislature chooses an average level of spending $\bar{s}$ based on the tax-spend tradeoff, and the spending delivered to each district is this base level times a measure of the district representative's influence.

In the context of a legislature, the common pool problem is the idea that an individual legislator fully internalizes the benefits of a project but does not fully internalize the costs when it is funded from the common tax base. Via log-rolling, a minority can therefore pass an inefficiently high amount of spending by ignoring that part of the tax cost which falls on those outside government. In this case, there is an increased benefit to spending in the election year—the inference of quality by the electorate—which exacerbates the common pool problem. Thus, electoral budget cycles are possible even with fully Ricardian voters.

2.3 The Influence Model with Strong Parties

We now modify the models to illustrate the role of a strong party system. One of the fundamental roles of the party is power broker. In most parliamentary systems, the cabinet and ministerial positions are appointed from sitting legislators. The first step is usually bargaining between coalition members over which positions will be filled by each party. The second step is the intra-party assignment of allotted positions to legislators. These assignments usually go according to some kind of seniority system based on prior service to the party.

While ministerial cabinets dominate the legislative process in many parliamentary systems, other systems give a greater role to legislative committees. There is a great deal of variance in the standing rules of legislative chambers designating the list of committees, jurisdiction, and rules for membership and tenure. These rules may also vary according to the nature of the committee: permanent, ad-hoc, oversight, or select. But

almost without exception, parties play a key role in assigning committee members and chairs.[6]

Whether the legislative committee system is strong and responsible for initiating and promoting legislation, or weak, and such expertise and authority lies mainly with the cabinet, the common theme is this: under a strong party system, parties control access to positions of legislative influence. As a result, party standing, based on seniority and prior service to the party, by determining the ministerial or committee assignment of an individual representative, determines that representative's legislative influence.

By contrast, in weak party systems—where parties are less stable and shorter lived, party-switching by candidates is common, the electoral value of parties is weak due to weak voter identification and few party resources, and parties rarely discipline members—seniority within the party is a less valuable commodity and candidates tend to run on their individual merits rather than emphasizing a party line. They also tend to frequently cross party lines on legislative votes. Consequently, party leaders have lesser influence on final legislation. In some cases, specific rules about legislative committees also contribute to the weakening of seniority. For example, in Brazil and many other Latin American countries, committee chairmanships rotate on an annual basis, further reducing the legislative influence from party seniority. In essence, in the absence of strong parties, the legislative environment is individualistic and legislative influence is less a function of seniority within a party. By contrast, under a strong party system, seniority within the party determines legislative influence.

The basic influence model is meant to embody the weak party system. We model the influence of a strong party system by changing the data generating process for legislative influence, ε. Rather than being a function of momentary advantages—favors owed, expertise on the issue at hand, visibility based on the scandal du jour—expertise is now a durable function of position within the party.

For the moment, both for simplicity and because the results are starkest, we assume a two-party system. In a strong party system, parties have an oligopoly on political entry: candidates running for office must choose a party and stick with it for life. Elections for district representative consist of two stages: an open primary in which the district median chooses the preferred nominee for each party and a general in which the district median chooses between the party nominees.[7] The party winning the majority of the seats forms a government strictly along party lines.

Under the party system, influence is a function of seniority. For simplicity we assume that seniority is binary: those who served in the legislature last term have seniority, newly elected representatives do not. As before, a fraction h of the government has high

[6] The Russian Duma is an interesting quasi-exception. Committees have no fixed size and legislators are free to choose whichever committees they wish. However, even here, committee chairs and deputy chairs are chosen on a party basis.

[7] The primary needn't be open. Because voters are homogeneous, a closed primary would be identical to an open one.

influence. These slots of high influence are assigned by seniority with ties broken by lottery.

The equilibrium in such a case is one in which incumbents are returned to office with certainty because they are more likely than challengers to have high influence. As a result, incumbents have no incentive to implement excess spending and there are no budget cycles.

To understand the equilibrium, consider the choice faced by the district median voter. If the district's representative was part of the government, then the choice in the primary is between the incumbent, who would enjoy seniority in the coming legislative term and a challenger, who would not. If the party does not return to government next term, then the issue is moot and the candidates are equivalent. But if the party does return to power, the incumbent is more likely to be of high influence than the challenger. Thus the incumbent is preferred in the primary. The general election then becomes a choice between the incumbent and a challenger from the out-party. In the absence of other sources of partisan preference, the district will prefer to elect whichever party will be in power. Thus there exists an equilibrium in which all incumbents from the governing party are returned to power. This ensures that the governing power remains in power. As a result, districts who previously elected representatives from the out-party prefer to switch to the governing party: seniority in the assured permanent minority is worthless. Assured of reelection on the basis of seniority, incumbents choose the basic non-election year optimal level of spending and no political budget cycle exists.

This is effectively a model of one-party government. Admitting oscillations of power requires partisan preferences. We will develop an explicit model of policy-based partisan preference in the next section. For the moment, simply assume that the representative agent of district *k* is endowed with observable preferences for parties L and R, $\sigma_{k,L}, \sigma_{k,R} \in [0, \infty)$ such that utility is:

$$U_{kt} = \sum_{l=0}^{\infty} \delta^{l-t} u_{kl}$$
$$u_{kt} = (1-\tau_t)^{\alpha_k} g_{kt}^{(1-\alpha_k)} \sigma_{k,P}$$

where subscript *P* denotes the party representing district *k* at time *t*. If the σ-s are time-invariant and sufficiently different from each other, then general elections are irrelevant. We no longer have a one-party system but we do have a permanent minority party whose elections are irrelevant. In the permanent majority party, incumbents are always reelected because their chance of seniority is *h* while a challenger's chance would be 0. Thus there are no incentives for political budget cycles.

Transfer of power between parties requires time-variation of partisan preferences. An incumbent of either party is preferred in the primary election on the basis of seniority. But an incumbent of the governing party now faces the possibility of losing his seat in the general election due to shifts in partisan preference within his district. This may lead to

spending as insurance against an adverse shift in partisan preferences, which we explore in the next section.

We can see that the dynamics of legislative influence are significantly affected by a seniority system. A weak-party system dominated by individualistic maneuver suggests legislative influence is a variable with limited persistence: voter popularity, accumulated favors, cabinet and ministerial positions can all be fleeting, depending on recent performance. A strong party system suggests precisely the opposite: the path of legislative influence is largely an upward trajectory. The resulting durable incumbent advantage obviates the need for signaling via fiscal profligacy.

2.4 The Competence Model with Parties

In reality, voters care not only about local public goods, but also about a host of public policy issues on which candidates and parties espouse a wide range of views. Nonetheless, voters are busy and gathering information to properly evaluate their own preferences over legislators' positions on these various policy issues is costly. It has long been recognized that one primary role of the party is packaging a variety of different policy positions into a coherent ideology that serves as the party brand, and by further promoting and advertising that brand, to reduce the cost of information gathering and improve voter information. The literature on party institutionalization emphasizes that the development of strong parties tends to transform the basis of electoral competition from individualized, client politics where candidates emphasize their ability to deliver patronage to their base into ideological, partisan politics where politicians emphasize the ideological superiority of their party brand. The purpose of this model is to show how this happens and, in so doing, eliminates legislative budget cycles.

The timing in the model is thus:

No Parties	Strong Parties
	Parties Simultaneously Choose Policy Platforms: $\{\varphi_L, \varphi_R\}$
Shock to voter preferences, η_t, realized	
Voters simultaneously choose between incumbent and challenger	
PM chosen randomly and government formed	

Period 1 policy chosen
Period 2 policy chosen

Voters

Starting from the basic competence model, amend the voters' utility function to include a term for a catchall policy dimension, φ such that utility to a voter in district *k* becomes:

$$U_{kt} = \sum_{l=0}^{\infty} \delta^{l-t} u_{kl}$$
$$u_{kt} = (1-\tau_t)^{\alpha_k} g_{kt}^{(1-\alpha_k)} - \left|\varphi_t - \varphi_k^*\right|$$

Assume heterogeneity across districts in the representative agent's ideal point, φ_k^*. We will specify the evolution of this ideal point for both the strong-party and the weak-party cases.

The policy space is restrained to a single dimension whose interpretation is deliberately left vague. The purpose is simply to highlight the switch in emphasis from targetable transfers to cross-cutting policy issues that is engendered by the introduction of informative parties. A voter has a preferred policy, φ*, which we call her ideology, and single-peaked preferences. Voter ideal points in any district are distributed along the real line admitting a district median voter with ideal point φ_k^*. We have deliberately suppressed heterogeneity in tax-and-spend preferences so this median voter in policy-space can be taken to be the district representative agent. Voter ideologies are not stable, but change randomly at the beginning of each electoral cycle. For tractability, we assume a common shock for all voters, η_t, and the parameter of the shock, *v*, is common knowledge.

$$\varphi_{k,t}^* = \begin{cases} \varphi_{k,t-1}^* + \eta_t & \textit{election year} \\ \varphi_{k,t-1}^* & \textit{otherwise} \end{cases}$$

$$\eta_t \sim U[-v, v]$$

Note that t indexes the legislative period and we have assumed two legislative periods between elections. Define the national median φ_M^* to be the median of the district medians. Again for tractability, we assume that N district ideal points are distributed uniformly across the interval [-½, ½]. Moreover, our interest is solely on the relative position of party platforms and district medians: the time-evolution of the absolute median is not of interest. Thus we adopt the convention of defining a relative preference

space, $\tilde{\varphi}$, in which the national median is always at the origin. Thus while the preference shock, η, conceptually acts on district medians, in the relative preference space, it is party positions which shift by –η. Finally, we assume that it takes parties one period to learn about these fluctuations and thus parties set their policy positions based on *last period's* distribution of medians. Thus fluctuations make it possible that representatives in moderate districts lose their seats (because these districts unexpectedly favor the other party) generating the possibility that control of parliament oscillates between the parties.

The Party System

Our purpose is to contrast two extremes: (i) a system of individual legislators unconstrained by parties and (ii) a system of strong parties. To do so, we make three strong assumptions about the effects of a party system. First, in the absence of parties, voters have no direct information as to a candidate's ideology. Voters may infer the ideology of an incumbent from the policy enacted while he was in government but have no information about challengers and incumbents who were out of government. Similarly, candidates are not directly informed about the preferences of the voters and thus have no direct information about the district median's ideal point, φ_k^*. Candidates and representatives *are* informed about representatives' policy preferences and may thus infer past values of φ_k^* from prior elections *if such a relationship exists*. By contrast, under a strong-party system, voters are costlessly and perfectly informed about the party's ideology. In both cases, candidates are presumed to have imperfect information about district median ideal points.

Comment [CMC1]: Justify this strong assumption for the no-party case by appealing to fluid policy situation and difficulty understanding what position a given politician will take on a new issue in absence of a brand/ideology.

Second, strong parties have a monopoly over electoral access: under the party system a candidate must run under one of the parties. And third, parties exert perfect discipline in legislative voting. As a result (and because we have no seniority in this model), candidates from the same party are interchangeable and we thus dispense with primaries. As a result, parties set their policy platforms $\{\varphi_L, \varphi_R\}$ and publicize them to voters who believe them because parties follow through. We also assume that parties can credibly commit to these positions. We do not explicitly model the choice of whether the party should cheat or not, simply assuming that voters punish parties who renege on their platforms and parties are long-lived actors who value their credibility.

Government and Policy

In the absence of parties, we assume government is formed as in the basic model above. Namely, a PM is chosen at random and proposes successive coalitions. Legislators included in the proposal may accept or decline. If they all accept, the proposal becomes the government. If any of them decline, the proposal fails and the PM makes a new proposal. If all possible coalitions are rejected, a government fails to form and a default utility of –F is assigned to all legislators.

We assume spatial policy is, like fiscal policy, chosen by the government. We could either include this in the Nash bargaining solution or model it separately as a vote resulting in the median voter's preferences. For symmetric distributions of φ* within the coalition, these are identical so we will adopt the latter for convenience.

Under the party system, the government consists of all representatives from the party with the majority of the seats. The party implements its ideological platform, φ_P, and chooses taxes and transfers to maximize the welfare of the legislators as per the basic and no-party cases.

No Party Equilibrium

The randomly selected PM wishes to assemble a minimal-winning coalition in which her ideal point is the median and thus prevailing ideology. Notice that this does not restrict her choice of coalition partners because she can always choose a "median-preserving spread" to change coalition partners while preserving her preferred policy.[8] Why would a representative accept an offer to be part of a coalition promoting a policy very different from his own ideal point? Because his rejection will not stop this policy—the PM can simply offer to a different coalition—it will only delay it. Thus, given the inability to affect the policy, he prefers to be in the coalition and at least reap the benefits of spending for his district. As a result, voters can infer nothing about the ideology of their own representative. In this situation, both the challenger and the incumbent are identically unknown quantities along the ideological dimension so the voter chooses solely based on perceived competence. Thus the model reduces to the base case presented in section 2.1 and admits electoral budget cycles.

Party Equilibrium

The mix of policy and office-holding motives with uncertain district medians prevents full Downsian convergence. Candidates must choose a party and perfect party discipline implies that candidates always vote the party line which is the publicized platform. Because candidates must choose a party and must vote the party line, there is seemingly little need to discuss the candidate's own ideology, or the process by which candidates of different ideologies choose parties. This is decidedly not a model of citizen candidates.

Nonetheless, we must specify from whence the parties derive the ideal points by which they make their platform decisions. The proper modeling choice depends on one's conceptualization of the party decision apparatus. One view would be that party decisions are a function of the elected legislators. In this view, the party ideology might be the median of its representatives in the legislature. Depending on the relative value of holding office and the volatility in voter's ideal points, such a view could admit

[8] Notice that a PM who is more extreme than the 25th or 75th percentile within the government cannot achieve her preferred policy because there are insufficient extremists to make their ideal point the median in the government. The best she can do is achieve the 25th or 75th percentile. Nonetheless, she still has a choice of coalitions: in a 101-member legislature numbered from 0 to 100 according to ideology, the median of both {0-50} and {0-25,51-75} is the 25th legislator. It is true that these extreme coalitions require the participation of all the most extreme legislators, which could conceivably give them bargaining power in negotiations over formation. But the effect of any one legislator's rejection would be simply to move the achievable coalition one legislator to the center. By ruling out this behavior, we assume that the pork-barrel benefits of being in government outweigh this effect on policy. In essence, individual legislators have too little bargaining power to shift the equilibrium policy enough to dissuade them from accepting the transfers that come with being in government.

interesting feedback loops where minority parties become more extreme and thus shrink even further. But this view misses one of the key characteristics of parties. Institutionalized parties are long-lived entities trying to win votes and elections in *all* districts. Members who are not currently serving in the legislature have a say in the decision process that contributes to the platform. Since this modeling decision is not actually important to our results, we opt for simplicity. Party ideal points are assumed to be [-0.25, 0.25] in the transformed policy-space, representing the median of their "natural" constituencies. Because parties learn of preference shocks only after the election, party ideal points are based on last period's distribution of district ideal points. Because voters assume a candidate's effective ideal point to be that of the party, a district will prefer the candidate from whichever party's national policy is closer to the district level median, modified by their knowledge of the candidate's quality.[9]

Given symmetry of the parties and the fluctuations, we look for symmetric Nash equilibria in the parties' platform decisions. Because we assume that parties care about voters in all districts, we assume that the party's objective function contains only two terms: the spatial policy and the benefits to office-holding. Thus the party's maximization problem is:

$$\underset{\varphi_R}{Max} \quad N_R K - \left|\varphi - \varphi_R^*\right|$$

Taking φ_L as given where K denotes the per-representative benefit to holding office, N_R denotes the number of seats the party wins, φ_R is the party's platform, φ_R^* is the party's ideal point, and φ is the policy enacted by the party that wins power. We show in appendix C that parties do not converge to the national median.

Given the change in policy that would result from losing power, control of the legislature is clearly a prize worth fighting for. Successfully signaling quality could convince a district on the wrong side of but sufficiently close to the breakpoint to reelect the incumbent for his competence despite misgivings about the party policies. Thus one might imagine that a party would, to retain power, spend and signal in marginal districts that are most likely to need this additional boost. Such signaling would be credible only if it revealed the incompetent politicians as well as the competent ones thus signaling will result in the loss of some low-quality seats as well as the gain of some high-quality seats. Under certain conditions, this is true. But in appendix D, we show that the incentive to signal is limited to a very few marginal districts. As a result, the magnitude of the politial budget cycle is greatly dampened. Party competition stifles the political budget cycle by focusing electoral competition on a few battleground districts.

[9] Actually, a district would also prefer to elect a representative that will be part of the government (thus earning pork for the district) but for tractability we assume voters do not behave strategically in this manner: they simply weigh a candidate's quality and his party's ideological position.

3. Data and Variable Definitions

The data come from a variety of sources. The fiscal data are taken from Brender and Drazen (2005), extended through 2006 using data from the IMF's International Financial Statistics where available and from Government Financial Statistics databases where further coverage is necessary. Trade openness (X+M/Y), population, inflation, and GDP data come from the World Bank's World Development Indicators. Data on exchange rate regimes come from an updated version of Reinhart and Rogoff (2004). Data on inflation targeting regime dates are taken from Rose (2006). The definition of a country's fiscal year was taken from the CIA World Factbook. We restrict our data to democracies: countries whose polity score, from the polity IV database, is greater than zero. We also take a measure of constraints on the executive from the polity IV dataset. Other political variables come from the World Bank's database of political institutions. Further data on elections was gathered by hand from a variety of sources, chief among them the IPU Parline Database on National Parliaments.[10] Our data cover 85 democracies between 1980 and 2006 including 645 elections.

Following Brender and Drazen, we have calculated a measure of the output gap as the log-difference between real per capita GDP and its country-specific trend (computed using an HP filter). We also continue Brender and Drazen's attempts to match elections with the proper corresponding fiscal year. In most countries, fiscal years correspond with the calendar year, but in many countries the fiscal year starts on a different date such as October 1st (the US) or July 16th (Nepal). So the US election of November 4th, 2008 actually took place during the second month of FY 2009. When we refer to "the year of the election" we mean the fiscal year rather than the calendar year.

From the Reinhart and Rogoff data we generate a binary indicator of whether a country is currently employing a fixed exchange rate system. Our first indicator, pegA, takes the value 1 if a country is classified as a 1 under the Reinhart-Rogoff coarse classification system (1-4 under the fine classification system). This includes countries without separate legal tender, pre-announced currency boards or pegs, pre-announced horizontal bands that are narrower than +/-2%, and de facto pegs. Our second indicator, pegB, takes the value 1 for coarse classifications 1 and 2 (fine classifications 1-8) which includes the first set plus pre-announced and de-facto crawling pegs and crawling bands narrower than +/-2%.

Basic Results

For comparability, we adopt the specification and notation of Brender and Drazen:

$$f_{i,t} = \sum_k b_k f_{i,t-k} + c' X_{it} + d \cdot ELEC_t + \mu_i + \varepsilon_{i,t}$$

[10] Other sources include The African Elections Database, Elections Watch, The Georgetown Political Database of the Americas, Adam Carr's Psephos, Election Guide, and the Binghamton Election results Archive.

where $f_{i,t}$ is the fiscal indicator (expenditures, revenues, or budget surplus as a percent of GDP) in country i in year t, $x_{i,t}$ is a vector of controls, $ELEC_t$ is an indicator of whether an election took place during fiscal year t, and μ_i is a country fixed effect. The controls include real GDP per capita, trade openness, measures of the fraction of the population aged 15-64 and 65+, and the output gap. We have estimated both with fixed effects and using an Arellano-Bond dynamic panel GMM procedure.

Our panel is both wider and shorter than that of Brender and Drazen. Nonetheless, our basic results confirm the political budget cycle found both by Shi and Svensson and Brender and Drazen. Our coefficient of -0.508 is insignificantly different from that of Brender and Drazen (-0.507) when restricted to our sample.

Table 1: Basic Results

	Fixed Effects		Arellano-Bond	
	Brender-Drazen	Shelton	Brender-Drazen	Shelton
	[1]	**[2]**	**[3]**	**[4]**
Election	-0.435**	-0.560***	-0.507***	-0.508*
	(0.18)	(0.21)	(0.19)	(0.28)
Observations	779	1047	784	1119
Countries	45	83	45	85
Avg. Length of Series	17.3	12.6	17.4	13.2

Std. errors in parentheses: ***p<0.01, **p<0.05, * p<0.10
Controls include: fraction of population between 15 and 64, fraction of population over 65, log of per capita real GDP, log of estimated potential real GDP, trade openness, and a constant

Support for the Legislative Model of Political Budget Cycles

Before we continue on to discuss institutional fixes for political budget cycles, we need to establish whether the legislative model of political budget cycles presented in section 2 is more compelling than the standard executive model weakened by Brender and Drazen (2008). To do so, recall the results from Milesi-Ferretti, Perotti, and Rostagno (2002), henceforth MFPR. MFPR established a link between electoral systems and public spending. Their key insight is that public goods tend to be geographically targetable, while transfers tend to be demographically targetable. Legislators from single-member districts are largely accountable to a geographically defined constituency. Because public goods are geographically targetable, these members prefer them to transfers, which are demographically targetable. Legislators from multi-member districts are largely accountable to demographic groups who prefer transfers. Thus they predict that legislatures elected from multi-member districts under proportional rule tend to spend more on transfers while legislatures elected under single-member districts with majority rule tend to spend more on public goods. They find evidence supporting this hypothesis in a cross-sectional regression of 30-year spending averages for a panel of 20 OECD and 20 Latin American countries.

In our model of legislative budget cycles, we have not explicitly modeled the electoral system, it remains general. Legislators succeed or fail in securing reelection on the basis of targeted government spending reaching their constituents but we have not specified the electoral districts or the basis by which the resulting constituencies are defined. We believe the insights from MFPR apply to electoral budget cycles, *provided such cycles are driven by legislative dynamics*. In our model, legislative budget cycles arise because legislators increase targeted spending to demonstrate competence or influence. If this is so, then such increases ought to be in those categories of spending which are most easily targeted to their constituents. MFPR argues that such spending is transfers for proportional systems and public goods for majoritarian systems.

As a test of the validity of the legislative model of political budget cycles, we rerun the basic specification for transfers and public goods for countries with proportional and majoritarian electoral systems. The results, reported in table 2, are reasonably supportive. The political budget cycle in proportional rule countries is skewed toward transfers while the political budget cycle in majoritarian countries is skewed toward government consumption. Nonetheless, given the scarcity and generally low quality of the data on categories of expenditure, the sample is smaller and the standard errors larger and it must be admitted the results are not as conclusive as one would hope.

Table 2: The Effects of Electoral System on the Type of Budget Cycles

	Fixed Effects				Arellano-Bond			
	Transfers		Govt. Cons.		Transfers		Govt. Cons.	
	PR	Maj	PR	Maj	PR	Maj	PR	Maj
	[5]	**[6]**	**[7]**	**[8]**	**[9]**	**[10]**	**[11]**	**[12]**
Election	0.769	-0.239	0.226	0.643**	0.414	-0.576	-0.078	0.583**
	(0.505)	(0.368)	(0.291)	(0.289)	-0.554	(0.524)	(0.281)	(0.289)
Observations	351	245	354	249	388	270	391	274
Countries	32	27	32	28	37	29	37	29
Avg. length of Series	11.0	9.1	11.1	8.9	10.49	9.3	10.6	9.4

Std. errors in parentheses: ***p<0.01, **p<0.05, * p<0.10
Controls include: fraction of population between 15 and 64, fraction of population over 65, log of per capita real GDP, log of estimated potential real GDP, trade openness, and a constant

The Importance of Checks on the Government

Given this support for a legislative model of political budget cycles, we now turn to the importance of constraints on the legislature. We argued in section 2 that political budget cycles occur because elections exacerbate the common pool problem by increasing the rewards to targeted spending resulting in increased log-rolling. As discussed in section 1, there is reason to believe that political budget cycles can be limited by institutional checks on the fiscal discretion of the government. To test this hypothesis, we look first at the effectiveness of a variety of monetary policy rules. We

look at soft pegs, hard pegs, and explicit inflation targeting regimes. In each of these cases, the monetary policy authority is credibly committed to neutralizing the effects of the budget cycle. In such a case, increases in district-specific spending would be accompanied by increases in interest rates. Presumably, by eliminating the expected output benefits, this would remove the incentive for the government to reduce the surplus, especially in light of the negative view of deficits that voters seem to take.[11]

Table 3: Effectiveness of Various Monetary Regimes

	Fixed Effects			Arellano-Bond		
	Hard Peg	Soft Peg	IT	Hard Peg	Soft Peg	IT
	[13]	**[14]**	**[15]**	**[16]**	**[17]**	**[18]**
Election (d)	-0.634***	-0.489*	-0.640***	-0.48	-0.323	-0.602*
	(0.216)	(0.285)	(0.229)	(0.297)	(0.397)	(0.309)
Hard Peg	0.566			0.232		
	(0.486)			(0.381)		
Hard Peg * Election (g_1)	0.886*			0.809		
	(0.538)			(0.747)		
Soft Peg		0.677**			-0.17	
		(0.333)			(0.273)	
Soft Peg * Election (g_2)		0.016			-0.045	
		(0.398)			(0.542)	
Inflation Targeting			0.501			0.634
			(0.655)			(0.526)
IT * Election (g_3)			0.405			0.639
			(0.524)			(0.731)
Observations	1008	1008	1073	1076	1076	1148
Countries	83	83	85	86	86	88
Avg. length of series	12.1	12.1	12.6	12.5	12.5	13.1
F-stat: $\hat{d} + \hat{g}_i = 0$	0.26	2.97	0.25	0.23	0.97	0.00
Prob > F	0.609	0.085	0.617	0.632	0.324	0.956

Std. errors in parentheses: ***p<0.01, **p<0.05, * p<0.10
Controls include: fraction of population between 15 and 64, fraction of population over 65, log of per capita real GDP, log of estimated potential real GDP, trade openness, and a constant

[11] It is worth noting that this hypothesis is not particular to the legislative model of political budget cycles; it applies equally well to the standard model with a unitary fiscal authority.

Table three displays the results.[12] Looking at a combination of the coefficients and the test statistics, we can put together a picture of the extent to which monetary rules limit fiscal electioneering. While the Arellano-Bond estimator tends to dampen the significance, the general picture is that hard pegs and explicit inflation targeting regimes convincingly eliminate the political budget cycles while soft pegs seem to have much less effect. This is perhaps not too surprising. A hard peg means a currency board, narrow horizontal band, fixed rate, or dollarization, none of which offer much leeway for monetary policy to accommodate fiscal expansion for purposes of electioneering. But a soft peg includes crawling pegs and crawling bands, each of which likely give more such leeway, or at least give the fiscal authority the impression that their stimulus might be allowed to pass un-neutralized. So it is perhaps understandable that a soft peg has less effect on the political budget cycle.

Thus armed with evidence that sufficiently strict monetary rules do induce fiscal restraint, we turn to the trickier business of constraints on the fiscal authority itself. In principle, the ability of the incumbent government to enact fiscal stimulus ought to depend on its ability to enact such legislation in the legislative chambers. It is reasonable to expect that the opposition would oppose such legislation either on the grounds that it is wasteful spending or simply on the grounds that, if successful in convincing the voters, it may relegate them to remaining in the opposition. Thus we might expect a strong opposition—to be defined—to dampen the political budget cycle.

The model of legislative budget cycles presented in section 2 suggests that an incumbent government consists of a fixed set of legislators forming a minimal winning coalition who simply logroll to pass a set of targeted spending bills beneficial to the districts of each member of government. In practice, a governing coalition rarely displays perfect coherence. Either because they cannot assure unified support from their own members, in order to meet super-majority requirements, or for political cover, a governing coalition often seeks the support of members of the opposition to pass spending bills. It is reasonable to expect that the government's ability to pass these spending bills thus depends on the unity of the opposition.

Naturally, the unity of the opposition depends on both within- and between-party discipline. Within-party discipline is likely a function of a variety of institutional features of party organization. Unfortunately, there is no good measure of within-party discipline available for such a large panel of countries. Thus we focus mainly on the friction between the various opposition parties. A multi-party opposition may be engaged in tit-for-tat retributions or bargaining over other issues that make it easier for the government to peel off supporters. We have used the Herfindahl index of concentration of the vote share of opposition parties to measure the opposition's cohesiveness. Along similar lines,

[12] Notice that coefficient d on its own is the estimate of the political business cycle in countries not under the monetary regime in question. So the weakness of the coefficient for the soft peg and strength of coefficient for the hard peg is already an indication that countries without a hard peg do suffer cycles while countries without a soft peg do not necessarily suffer cycles. The sum of coefficients $d+g$ is the strength of the budget cycle in countries under the monetary regime in question. The F-test checks for significance away from zero. Notice that we can reject the absence of budget cycles for the soft peg but not for the hard peg or IT regimes.

it is also reasonable to suppose that the fewer seats held by the opposition, the less often the governing coalition would need to attempt to peal off members, and thus the easier time they would have legislating fiscal electioneering. So we have also included a measure of the seat share of the opposition.[13]

Opposition seat share and cohesion are clearly just two of many factors that affect the ability of an opposition to obstruct the will of the government. In addition to this direct measure of the power of the opposition, we have also included a measure of whether the election in question was deemed fraudulent. This is used as a proxy: if the government is able to electioneer via illegal pressure of the electorate, it is likely that there are few constraints on their power to electioneer via fiscal policy.

Table 4: Full Specification with Fiscal and Monetary Constraints

	Fixed Effects		Arellano-Bond	
	[17]	**[18]**	**[19]**	**[20]**
Election	-1.459**	-1.376**	-1.328*	-1.104
	(0.664)	(0.665)	(0.763)	(0.768)
Hard Peg	0.456	0.52	0.078	0.196
	(0.483)	(0.481)	(0.367)	(0.366)
Hard Peg * Election	1.232**	1.287**	1.354*	1.431*
	(0.623)	(0.622)	(0.737)	(0.734)
Opposition Herfindahl	-0.602	-0.65	0.916*	0.952*
	(0.700)	(0.697)	(0.495)	(0.494)
Opp. Herf. * Election	1.178	1.068	1.112	0.911
	(0.926)	(0.927)	(1.030)	(1.033)
Opposition Seat Share	-0.003	-0.003	0.000	0.001
	(0.004)	(0.004)	(0.003)	(0.003)
Opp. Share * Election	0.002	0.003	0.002	0.002
	(0.003)	(0.003)	(0.004)	(0.004)
Fraud		1.369**		1.034**
		(0.595)		(0.426)
Fraud * Election		-2.458**		-2.523**
		(1.076)		(1.118)
Observations	869	866	907	905

[13] One could alternately argue that it is the seat share of the governing coalition that matters, rather than the seat share of the opposition (notice these are not direct complements due to the presence of unaligned legislators). The larger the governing majority, the larger the cushion against intransigent members and the less frequent the need to seek support outside the coalition. We prefer to think of unaligned legislators as relatively easy to co-opt; that the challenge lies in peeling away a member of the dedicated opposition. Nonetheless, specifications with government seat share instead of opposition seat share give the same, insignificant result that we report in table 4.

Countries	75	75	78	78
Avg. length of series	11.6	11.6	11.6	11.6

Std. errors in parentheses: ***p<0.01, **p<0.05, * p<0.10
Controls include: fraction of population between 15 and 64, fraction of population over 65, log of per capita real GDP, log of estimated potential real GDP, trade openness, and a constant

The results, displayed in table 4, suggest that a coherent opposition is more important than a large opposition. Perhaps more importantly, they suggest that the quality of the legislative opposition is less important than a monetary policy rule or whichever other constraints are picked up by the WDI fraud indicator.

These results suggest a role for soft institutions in the amplification or damping of the political budget cycle. We are currently developing measures of party institutionalization for our sample to enable tests of the central hypothesis of our models.

4. Conclusion

Our models of a legislative political budget cycle potentially address the puzzles arising from Brender and Drazen's (2008) results. They show that executives are punished for increased deficits even in countries that exhibit political budget cycles. Why then, do these cycles persist? They also show (Brender and Drazen 2005) that political budget cycles are found predominantly in new democracies while established democracies exhibit no such phenomenon. What part of the democratization process explains this amelioration? We suggest that the answers to both puzzles lie in the system of accountability.

Unless executives are strangely unaware of the fact that voters hold them accountable for deficits, it must be that executives are not in full control of the budget process. It is reasonable to note that budgeting takes place at the legislative level and is not, even in parliamentary systems where the PM is elected by the legislature, under the full control of a unitary policy-maker. The existence of political budget cycles then further implies that legislators are able to reap electoral benefits from increased spending, even when voters are sufficiently forward-looking that they punish executives for presiding over deficits.

We develop a class of models to show that political budget cycles are possible in the legislative context. As per the standard rational political budget cycle models (Rogoff-Siebert 1988, Persson and Tabellini 1990), the budget cycle is driven by the fact that voters cannot perfectly observe the quality of their representative and thus the representative attempts to signal her quality in advance of an election by increased spending. In the legislative context, we believe representatives can differ on two dimensions of quality. First, just like executives, representatives vary in their ability to identify and pass the most productive projects given a fixed budget, which we label *competence*. But representatives may also vary in their ability to win a larger portion of a

fixed pie for their constituency, which we label *influence*. We show that political budget cycles can be driven by attempts to signal either competence or influence.

Our models further show that the development of a strong party system can dampen both of these types of legislative budget cycles. A seniority system implies that legislative influence is independent of legislator quality and delivers sufficient incumbent advantage to preclude the need for signaling. Meanwhile, political parties enable voters and representatives to learn of each others' ideological preferences and thus transform electoral competition from a personalized politics of clientelism to a partisan politics of ideology. In the process, the incentives to signal via excess spending are limited to those few districts which are ideologically up-for-grabs.

In sum, political budget cycles are a legislative phenomenon and institutionalization of the legislature limits the scope of this form of electioneering.

Appendix A

To confirm the existence of this equilibrium we need to establish that h^* and $\underline{s}$ exist such that:

(a) a legislature above h^* prefers to signal while
(b) a legislature below h^* prefers not to signal and
(c) no legislature prefers to "super-signal", increase spending sufficiently to enable low types to meet the voters' threshold.

Denote the non-election allocation by $\tilde{s}'_{t,j}$

A signal is: $\tilde{s}''_{t,j} = s^* / \overline{\mu}$

A super-signal is: $\tilde{s}'''_{t,j} = s^* / \underline{\mu}$

It should be clear that, given the voting rule, and the fact that increasing taxes and spending above the non-election year levels, s' and τ', is inefficient, we need not consider other levels of spending.

Signaling

The benefit of signaling is $h \log K$ while the cost is the difference between the government utility of the required threshold spending and the non-election spending:

$$\gamma N \left\{ \alpha \log\left(\frac{1-\tau'}{1-\tau''} \right) + (1-\alpha) \log\left(\frac{\tilde{s}'}{\tilde{s}''} \right) \right\}$$

Using the budget constraint to write taxes in terms of spending, this becomes:

$$\gamma N \left\{ \alpha \log\left(\frac{1-\gamma\tilde{s}'}{1-\gamma\tilde{s}''} \right) + (1-\alpha) \log\left(\frac{\tilde{s}'}{\tilde{s}''} \right) \right\}$$

Because the $(\tau', \tilde{s}')$ allocation maximizes welfare, we know this must be negative. We also know that $(\tilde{s}'' - \tilde{s}') > 0$. We can now show that the welfare gap increases monotonically with $\tilde{s}''$.

Taking the derivative with respect to $\tilde{s}''$ yields:

$$\gamma N \left\{ \frac{\alpha\gamma}{1-\gamma\tilde{s}''} - \frac{(1-\alpha)}{\tilde{s}''} \right\}$$

Meaning we need to show that:

$$\frac{(1-\alpha)}{\tilde{s}''} < \frac{\alpha\gamma}{1-\gamma\tilde{s}''}$$

Cross-multiply, simplify, and we require:

$$(1-\alpha)-\gamma\tilde{s}''+\alpha\gamma\tilde{s}''<\alpha\gamma\tilde{s}''$$
$$(1-\alpha)<\gamma\tilde{s}''$$
$$\tau'<\gamma\tilde{s}''$$
$$\gamma\tilde{s}'<\gamma\tilde{s}''$$

Which is true. So we have shown that the net benefit to signaling is decreasing in $\tilde{s}''$ and increasing in *h*. Thus for every *h* there is a cutoff $\tilde{s}''$ above which signaling is not worthwhile and below which it is.

Super-signaling

Now we derive the threshold for which super-signaling is not efficient. Compared to no-signal, super-signaling achieves benefits of $\left(\frac{N+1}{2}\right)\log K$ at the cost of:

$$\gamma N\left\{\alpha\log\left(\frac{1-\gamma\tilde{s}'}{1-\gamma\tilde{s}'''}\right)+(1-\alpha)\log\left(\frac{\tilde{s}'}{\tilde{s}'''}\right)\right\}$$

The cost is clearly greater than the cost of signaling, but so are the benefits. We need some condition that compares the two to show that we can have an instance where signaling pays off but super-signaling does not.

Difference in benefits is: $\left(\frac{N+1}{2}-h\right)\log K$

Difference in costs is: $\gamma N\left\{\alpha\log\left(\frac{1-\gamma\tilde{s}''}{1-\gamma\tilde{s}'''}\right)+(1-\alpha)\log\left(\frac{\tilde{s}''}{\tilde{s}'''}\right)\right\}$

First take the Taylor series expansion of the first term, doing the top and bottom separately, to get:

$$\gamma N\left\{\alpha\frac{\gamma}{(1-\gamma\tilde{s}')}(\tilde{s}'''-\tilde{s}'')+(1-\alpha)\log\left(\frac{\tilde{s}''}{\tilde{s}'''}\right)\right\}$$

Then recall that $\tilde{s}'''_{t,j}=\tilde{s}''_{t,j}q$ and rewrite the cost difference

$$\gamma N\left\{\alpha\frac{\gamma}{(1-\gamma\tilde{s}')}(q-1)\tilde{s}''-(1-\alpha)\log q\right\}$$

If we assume q is not too much larger than 1, then log(q) ≈ q-1 so our expression for the increase in cost required to *super*-signal becomes:

$$\gamma N\left\{\alpha\frac{\gamma\tilde{s}''}{(1-\gamma\tilde{s}')}-(1-\alpha)\right\}(q-1)$$

The expression in brackets is positive according to the following:

$$\alpha\tau''>(1-\tau')(1-\alpha)$$
$$\alpha\tau''>1-\alpha-\tau'+\alpha\tau'$$
$$\alpha\tau''>\alpha\tau'$$

Now, can we show that this increased cost is greater than the increased benefit for some value of *h*?

Net Cost of super-signaling: $\gamma N\left\{\alpha\frac{\gamma\tilde{s}''}{(1-\gamma\tilde{s}')}-(1-\alpha)\right\}(q-1)>0$

Net Gain of super-signaling: $\left(\frac{N+1}{2}-h\right)\log K>0$

Clearly, when h = (N+1)/2, then the net gain is zero and super-signaling will not take place. The largest temptation to cheat comes when h = 0.

$$\left(\frac{N+1}{2}\right)\log K<\gamma N\left\{\alpha\frac{\gamma\tilde{s}''}{(1-\gamma\tilde{s}')}-(1-\alpha)\right\}(q-1)$$
$$\log K<\left\{\alpha\frac{\tau''}{(1-\tau')}-(1-\alpha)\right\}(q-1)$$

If this inequality does not hold then there is an interior h* above which the legislature super-signals. If it does hold, then there is no level of h* for which the legislature signals. Thus we must assume K is small enough so that this holds.

But the final step has to be to show that, even with such a small value for log *K*, signaling is still worthwhile.

Take the Taylor expansion of $\log(1-\gamma\tilde{s}'')$ and $\log(\tilde{s}'')$ around $\tilde{s}'$ and simplify to get the cost of the allocation.

$$\gamma N\left\{\alpha\gamma\frac{(\tilde{s}''-\tilde{s}')}{1-\gamma\tilde{s}'}-(1-\alpha)\frac{(\tilde{s}''-\tilde{s}')}{\tilde{s}'}\right\}$$

Signaling requires this be less than the benefit:

$$h \log K > \gamma N \left\{ \alpha\gamma \frac{(\tilde{s}'' - \tilde{s}')}{1 - \gamma\tilde{s}'} - (1-\alpha)\frac{(\tilde{s}'' - \tilde{s}')}{\tilde{s}'} \right\}$$

We can simplify this expression:

$$\log K > \frac{\gamma N}{h}(\tilde{s}'' - \tilde{s}')\left\{ \alpha\gamma \frac{1}{1-\tau'} - \frac{(1-\alpha)}{\tilde{s}'} \right\}$$

to make it comparable to the expression for no super-signaling:

$$\log K < (q-1)\tilde{s}'\left\{ \alpha\gamma \frac{1}{1-\tau'} - \frac{(1-\alpha)}{\tilde{s}'} \right\}$$

The term in brackets is the marginal benefit of increasing spending (and taxation).
The first expression says that the benefit to holding office must be greater than the cost of increasing taxes and expenditures. The second expression says that the benefit of reelecting a low type must be less than the cost of increasing the spending high enough to imitate the high type. (The factor q-1 is the excess necessary to imitate when type is low, s' is approximately the base amount of spending since we have assumed s''' ≈ s''≈ s'.)

Do these two restrictions admit a range of equilibria? It must be that:

$$\frac{\gamma N}{h}(\tilde{s}'' - \tilde{s}') < (q-1)\tilde{s}'$$

Voters
Given that legislatures signal but do not super-signal, and given that voters have the following preferences: high competence incumbent > challenger > low competence incumbent, it is fairly clear that voters will reelect if and only if $s_k/\mu_{k,t-1} \geq s^*$. If the voter observes $\frac{s_{k,t}}{\mu_{k,t-1}} = s^*$, then she infers a high type with certainty, hence reelection is optimal. If the voter observes $\frac{s_{k,t}}{\mu_{k,t-1}} = \frac{s^*\underline{\mu}}{\bar{\mu}} = \frac{s^*}{q} < s*$, then she can infer with certainty a low type and election of the challenger is optimal. Other values are off the equilibrium path so Bayesian inference is undefined but we might reasonably expect a distribution of the likelihood of errors which supports the rule.

One last condition is required to support these voter beliefs. We must assume that $h \geq h^*$ always holds. If $h < h^*$, the legislature does not find it worthwhile to signal via excess spending because too few members are high quality and thus the aggregate benefits of signaling are insufficient to justify the costs of excess spending. One might suspect that

lack of a signal simply results in voters rejecting the entire legislature because they infer such low spending is associated with low types. However, the existence of non-signaling legislatures undermines the voters' beliefs that underpin the equilibrium. Namely, legislatures that don't increase spending still contain high types and those high types will be distinguishable from the low types because they will deliver greater effective spending even under the non-signaling level of spending. Thus, if such no-spending were to occur with non-zero probability, a rational voter would assign a probability of one to the high type when seeing $s'\varepsilon_H$ which would unravel the equilibrium.

Appendix B

We confirm here two aspects of the equilibrium asserted for the competence model without parties. First, we establish that no-party legislatures produce governments with moderate ideologies. Second, we establish that with little information on ideology, voters prefer to elect based on quality, resulting in an incentive for legislative budget cycles.

There exists a distribution, χ, which describes the density of district median ideal points in ideology space. We have assumed that the distribution of representative's ideal points in government mirrors this distribution. As before, one representative is randomly chosen as PM to form a government. A PM will always prefer a minimal winning coalition whose ideological median is as close as possible to the PM's ideal point. Given the assumption that PMs must form compact coalitions, this involves offering to the set of legislators that are ideologically closest to the PM's ideal point. Note that if the PM is sufficiently extreme—beyond the inter-quartile range—then she cannot achieve her ideal policy. However, the process of government formation ensures that coalitions will actually be even more constrained toward the ideological median. Consider a PM with ideal point at the 25th percentile of φ. She would prefer a coalition comprising the members with the 0th through 50th percentiles of φ. But will the 50th legislator accept the offer? Under minimal assumptions regarding time preferences, he will not. He knows he will be part of any coalition and he also knows that any future coalition will deliver a policy he weakly prefers to the one that would result from the current offer. He knows this latter because failure of this coalition results in the designation of a new PM, any PM with ideal points below the 25th percentile can achieve a government median no more extreme than the 25th percentile; any PM with ideal point above the 75th percentile can achieve a median no higher than the 75th percentile and thus no worse to Mr. 50 than the current offer; and any PM with ideal point within the inter-quartile range will deliver a more moderate policy strictly preferred by Mr. 50 to the coalition on offer. As a result, Mr. 50 will accept only if the cost of delay is greater than the expected improvement in policy (which is 50% likely). Thus with minimal assumptions regarding time preferences during government formation, the 25th percentile coalition is not possible.

In equilibrium, there is a value $\hat{\varphi}$<50 which defines the lower boundary on the government median. There is a similar upper bound which, if χ and f are symmetric, will be symmetric about the median legislator's ideal point. Assuming such symmetries, we then have the range of acceptable coalition medians: $[\hat{\varphi}, 1-\hat{\varphi}]$. Under assumptions of perfect information regarding legislator ideal points and proposed coalitions, the equilibrium will involve no delay. A PM will propose a compact coalition whose median is the point within this range that is closest to her ideal point. All legislators in this coalition will accept. The value of $\hat{\varphi}$ is determined as that for which the marginal member $\hat{\varphi} + 25\,pctile$ is indifferent between accepting and rejecting. Notice that under this equilibrium, such a voter will be part of every coalition and is thus simply weighing the cost of delay against the prospect of a more favorable policy.

A government delivers a policy equal to the ideology of the median member. Voters whose representative is in power can infer their representative's ideology from the fact the he was invited to be part of a government that delivered φ^*. Refer to the expected value of this range as $E(\varphi^*)$. The voters must then choose between the incumbent with expected ideology $E(\varphi^*)$ and the challenger, about whom they have no information and whose expected ideology is thus the national median: φ_m.

A governing coalition will choose to signal competence via excess spending if the benefits from this ideological component are sufficiently small that such insurance is necessary. Without parties, incumbents do not reliably know the district median ideology. Thus the incumbent's best guess of their district median is the national median. They thus expect the ideological dimension to weigh against them and feel the need to overcome it via signaling of quality.

Voters whose representative is out of government learn nothing about the competence of their representative but they do learn about the ideology of their representative by learning that he was not invited to join the government whose revealed median ideology is φ^*. But frankly, we do not strongly care about the fate of representatives who are not members of government because they do not contribute to the existence or lack of a political budget cycle.

Appendix C

The objective function becomes:

$$E[N_R \mid \varphi_L, \varphi_R] \cdot K - prob[R\ majority \mid \varphi_L, \varphi_R] \cdot f\left(\frac{1}{4} - \varphi_R\right)$$
$$- prob[L\ majority \mid \varphi_L, \varphi_R] \cdot f\left(\frac{1}{4} - \varphi_L\right)$$

The probability of party X achieving a majority is equivalent to the probability that the median voter is closer to party X's platform. These probabilities are:

$$prob\left[R\ majority \mid \varphi_L, \varphi_R\right] = \frac{\left(\frac{\varphi_L + \varphi_R}{2}\right) + v}{2v}$$

$$prob\left[L\ majority \mid \varphi_L, \varphi_R\right] = \frac{-\left(\frac{\varphi_L + \varphi_R}{2}\right) + v}{2v}$$

The fraction of the legislature captured by party R is equal to the fraction of the district medians that are closer to party R's platform after the preference shock, η. The expected number of legislators is thus this fraction integrated over the range of η times the number of legislators, N.

$$N \cdot \int_{-v}^{v} \left[\frac{1}{2} - \left(\frac{\varphi_L + \varphi_R}{2}\right) + \eta\right] d\eta = \left[\frac{1}{2} - \left(\frac{\varphi_L + \varphi_R}{2}\right)\right] \cdot N$$

Thus the party's objective function simplifies to:

$$\left[\frac{1}{2} - \left(\frac{\varphi_L + \varphi_R}{2}\right)\right] \cdot N \cdot K$$
$$- \left\{ \frac{\left(\frac{\varphi_L + \varphi_R}{2}\right) + v}{2v} \cdot f\left(\frac{1}{4} - \varphi_R\right) + \frac{\left(\frac{\varphi_L + \varphi_R}{2}\right) + v}{2v} \cdot f\left(\frac{1}{4} - \varphi_L\right) \right\}$$

Taking the first order condition, imposing symmetry, and simplifying yields and implicit expression for φ_R for which the solution is generally non-zero.

$$f'\left(\frac{1}{4}-\varphi_R\right)=NK+\frac{1}{2v}\left[f\left(\frac{1}{4}-\varphi_R\right)-f\left(\frac{1}{4}+\varphi_R\right)\right]$$

For example, if we assume linear policy preferences, $f(x)=x$, then the equilibrium position is:

$$\varphi_R=v(NK-1)$$

Appendix D

The equilibrium consists of the following actions: (1) parties choose platforms, (2) governing party signals for districts near median, (3) election. We address them via backwards induction.

[3]
Voter utility is:

$$u_k = \alpha \ln(1-\tau) + (1-\alpha)\ln \tilde{s}_k - \left|\varphi - \varphi_k^*\right|$$

The district median's choice without signaling is simple: elect the candidate for whichever party's platform is nearest the district median's ideal point. But for districts where the governing party has chosen to signal, the voter must trade off information about next period's competence against *two* periods of the party's policy. The important result is the maximum policy distance a voter is willing to give up to reelect a competent incumbent, $\overline{\chi}$ and the minimum policy distance the voter must receive to re-elect an incompetent incumbent, $\underline{\chi}$.

$$\overline{\chi} = \frac{1}{2}(1-\alpha)(1-p)\ln \underline{\mu} s'$$

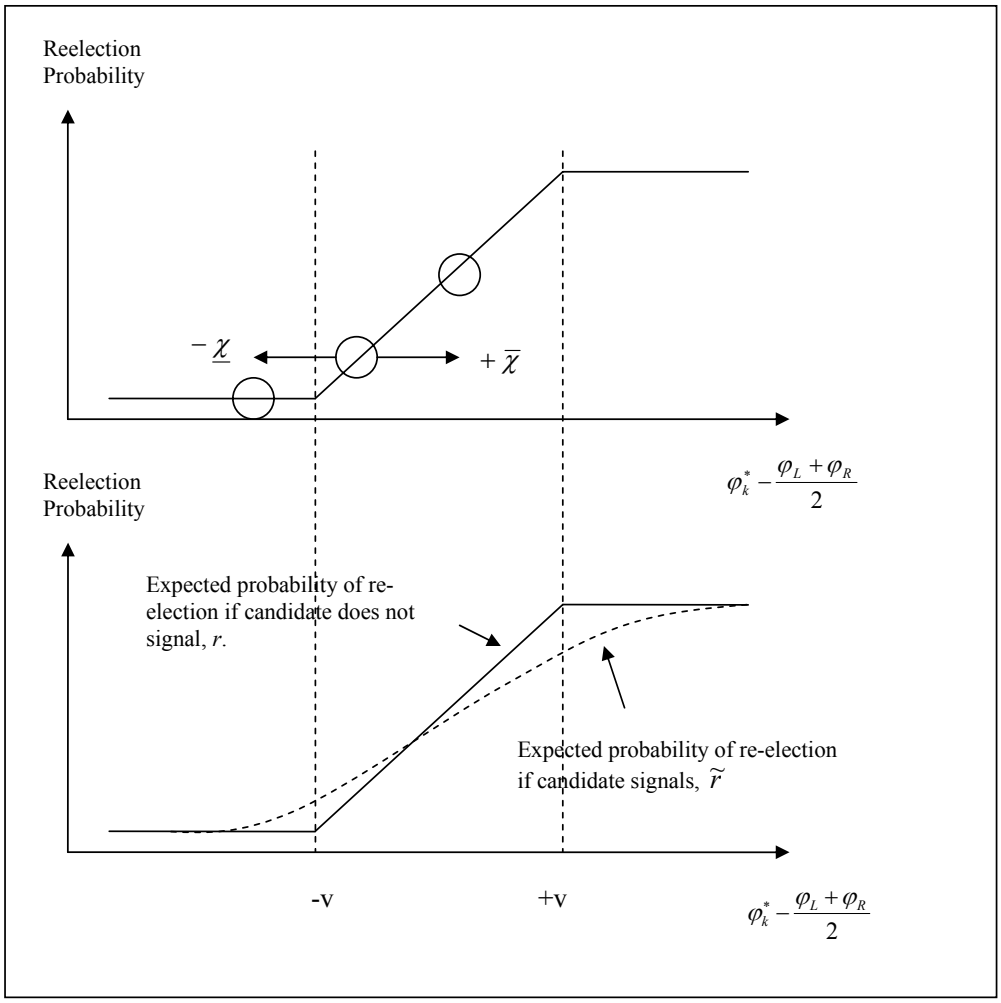
$$\underline{\chi} = \frac{1}{2}(1-\alpha)p \ln \overline{\mu} s'$$

[2]
As in the no-party case, we assume the government has the ability to choose which districts to signal, but the quality of its members is not-verifiable and thus stimulus cannot be conditioned on quality. The government will signal in a district only if the expected net benefits are positive. Net benefits are essentially the difference between the increased probability of office-holding and the net cost of excess expenditures. In the absence of signaling, voters have no information on the incumbent's quality, thus a representative's chance of retaining office is a function of the position of his district median, φ_k^*, relative to the point of indifference between the two parties, $(\varphi_L + \varphi_R)/2$. From the government point of view, signaling is like taking a lottery: it could reveal low quality, damaging the incumbent's chances, or it could reveal high quality, improving them. Having translated the quality effects into equivalent positional shifts $\overline{\chi}$ and $\underline{\chi}$, we can think of this as choosing a lottery in position space.[14] Without signaling, the probability of reelection for the (right-party) governing incumbent of district *k* is:

[14] Why would a low quality candidate choose to accept the stimulus, revealing himself as low quality? Because if his district is in the "stimulus zone" where high quality candidates would receive stimulus, then he would reveal himself by *not* taking it as well. Thus he might as well take the extra spending for his district.

$$r\left(\varphi_k^*\right)=\begin{cases}0 & if \quad \left[\varphi_k^*-\dfrac{\varphi_L+\varphi_R}{2}\right]<-v \\ \dfrac{1}{2v}\left[\varphi_k^*-\dfrac{\varphi_L+\varphi_R}{2}\right]+\dfrac{1}{2} & if \quad -v<\left[\varphi_k^*-\dfrac{\varphi_L+\varphi_R}{2}\right]<v \\ 1 & if \quad \left[\varphi_k^*-\dfrac{\varphi_L+\varphi_R}{2}\right]>v\end{cases}$$

While the ex-ante (prior to knowledge of either the shock, η, or the candidate's quality μ_t) expected probability of reelection of the candidate if the government chooses to signal in that district is: $\tilde{r}\left(\varphi_k^*\right)=p\cdot r\left(\varphi_k^*+\overline{\chi}\right)+\left(1-p\right)\cdot r\left(\varphi_k^*-\underline{\chi}\right)$



The figure illustrates the ex-ante expected probability of re-election for both choices: signaling and no-signaling. The electoral benefits to the government from signaling (due to office-holding) is the increased expected probability of victory times the benefits to holding office: $\left[\tilde{r}\left(\varphi_k^*\right) - r\left(\varphi_k^*\right)\right] \cdot \left(\textit{benefits to office}\right)$. Both r and $\tilde{r}$ are weakly monotonic in $\varphi_k^* - \left(\varphi_L + \varphi_R\right)/2$ but the difference is not. However, the difference is zero for $\varphi_k^* - \left(\varphi_L + \varphi_R\right)/2 < -\left(v + \overline{\chi}\right)$ and returns to zero by $\varphi_k^* - \left(\varphi_L + \varphi_R\right)/2 = \underline{\chi} - v$ at the latest. The cost of providing the signal (increase in taxes on all districts less the benefits of spending in the single district) is fixed in $\varphi_k^* - \left(\varphi_L + \varphi_R\right)/2$, thus there are cutoff points and a definite region in which the government chooses to signal in equilibrium. This region is in the neighborhood of $\varphi_k^* - \left(\varphi_L + \varphi_R\right)/2 = -v$: essentially those incumbents who would have zero or very little chance of re-election because they are well beyond the new breakeven point. These are the moderate districts that the governing party managed to win due to a favorable ideological shock last period but which, under the modified platforms, are likely to revert to the opposition party without a second successive favorable shock.

Further note that the government cannot signal the quality of its own legislators in districts within this region under the control of the opposition. Thus signaling occurs only in districts that are both within the cutoff region and in control of the government. Only in periods with large governing majorities (periods following large ideological shocks, η) is this likely to contain any districts.

[1]
When choosing platforms, parties ought to take into account the effects of signaling. For the moment, for tractability we make the assumption they do not. Thus positioning remains as in Appendix C. We would like to relax this assumption in the future. However, we strongly suspect the critical result—lack of Downsian convergence—will go through even if parties account for the signaling by the government when choosing platforms. Essentially, the existence of signaling changes the distribution of partisan advantage across districts from U[-½,½] by modifying the positions of those districts targeted for excess spending. Because the resulting distribution function may not have nice properties, multiple equilibria are theoretically possible, but in general full Downsian convergence is not one of them.

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